

*Final*  
**Environmental Assessment of Constructing and Operating  
an Explosives Ordnance Disposal Field Training Area  
at Fort A.P. Hill, Virginia**



*Prepared for:*

**FORT A.P. HILL, VIRGINIA**

*by:*

**U.S. ARMY CORPS OF ENGINEERS  
MOBILE DISTRICT**

July 2008

## ***ENVIRONMENTAL ASSESSMENT ORGANIZATION***

This Environmental Assessment considers the proposed action to add approximately 1,025 acres to the Explosives Ordnance Disposal (EOD) field training area evaluated in the *Final Environmental Impact Statement: Implementation of Base Realignment and Closure (BRAC) Recommendations and Other Army Actions at Fort Lee, Virginia, and Fort A.P. Hill, Virginia* (February 2006), resulting in the construction and operation of a contiguous EOD field training area of approximately 2,059 acres at Fort A.P. Hill, Virginia. It has been developed in accordance with the National Environmental Policy Act and implementing regulations issued by the Council on Environmental Quality (Title 40 of the *Code of Federal Regulations* [CFR] 1500–1508) and the Army (32 CFR 651). Its purpose is to inform decision makers and the public of the likely environmental and socioeconomic consequences of the proposed action and alternatives.

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

### ***CONTENTS***

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

***SECTION 2.0: PROPOSED ACTION AND ALTERNATIVES*** describes the proposed action to construct and operate a contiguous EOD field training area of approximately 2,059 acres at Fort A.P. Hill and examines alternatives to implementing the proposed action.

***SECTION 3.0: AFFECTED ENVIRONMENT AND CONSEQUENCES*** describes the existing environmental and socioeconomic setting at Fort A.P. Hill and identifies potential effects of implementing the proposed action.

***SECTION 4.0: CONCLUSIONS*** summarizes the environmental and socioeconomic effects of implementing the proposed action.

***SECTION 5.0: REFERENCES*** provides bibliographical information for cited sources.

***SECTION 6.0: PERSONS CONSULTED*** provides a listing of persons and agencies consulted during preparation of this Environmental Assessment.

***SECTION 7.0: LIST OF PREPARERS*** identifies the persons who prepared the document.

***SECTION 8.0: DISTRIBUTION LIST*** indicates recipients of this Environmental Assessment.

***APPENDICES***

- A*** Agency Consultation Letters
- B*** Record of Non-Applicability
- C*** Coastal Zone Consistency Determination
- D*** Economic Impact Forecast System Model Results

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



**FINAL**  
**ENVIRONMENTAL ASSESSMENT OF CONSTRUCTING AND OPERATING**  
**AN EXPLOSIVES ORDNANCE DISPOSAL FIELD TRAINING AREA**

**AT FORT A.P. HILL, VIRGINIA**

*Prepared by:*

**U.S. ARMY CORPS OF ENGINEERS**  
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**MICHAEL S. GRAESE**  
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Fort A.P. Hill, Virginia

*Dep COR*

**Finding of No Significant Impact**  
**Environmental Assessment of Constructing and Operating**  
**an Explosives Ordnance Disposal Field Training Area**  
**at Fort A.P. Hill, Virginia**

Pursuant to the Council on Environmental Quality regulations (40 *Code of Federal Regulations* [CFR] Parts 1500–1508) for implementing the procedural provisions of the National Environmental Policy Act of 1969 (42 *United States Code* 4321 et seq.) and 32 CFR Part 651 (*Environmental Analysis of Army Actions*), Fort A.P. Hill has prepared an environmental assessment (EA) of the potential environmental and socioeconomic effects associated with adding approximately 1,025 acres to the explosives ordnance disposal (EOD) field training area evaluated and approved in the Record of Decision for the *Final Environmental Impact Statement: Implementation of Base Realignment and Closure (BRAC) Recommendations and Other Army Actions at Fort Lee, Virginia and Fort A.P. Hill, Virginia* (February 2006), resulting in the construction and operation of a contiguous EOD field training area of approximately 2,059 acres.

**Proposed Action**

The proposed action is to construct a field training area that includes EOD training sites, observation bunkers, training towers, a range operations headquarters building, a robotics range support building, range storage buildings, covered training areas (bleachers), and a water supply treatment building. The Army also proposes to construct an 80-person barracks for students' use. These facilities at Fort A.P. Hill would support Ordnance Munitions and Electronic Maintenance School field training requirements.

**Alternatives**

Fort A.P. Hill and Fort Lee staffs, working with Redstone Arsenal EOD personnel proposed portions of Training Areas 26, 27, and 28 for siting of the field training area after reviewing all potential sites that could meet the targeted needs. This previously approved location of 1,034 acres provides a safe distance from the installation's impact area; acceptable terrain features; availability of fragmentation safety arcs; suitable open areas for a mock airfield, battlefield, and several training sites; and adequate existing access roads.

The Army considered two alternatives for locating the EOD field training area. One alternative could have located the entire field training area to another part of Fort A.P. Hill. The second alternative could have been to retain the designated site in Training Areas 26 and 27, with the additional land requirement being satisfied with a non-contiguous parcel. Both these alternatives were, however, found not feasible. They were not evaluated in detail in the EA. Consistent with guidance issued by the Council on Environmental Quality, the EA evaluated the no action alternative.

**Environmental Consequences**

Implementing the proposed action would be expected to result in a mixture of short- and long-term minor adverse and short- and long-term minor beneficial effects on the subject environmental resources and conditions. The EA does not identify the need for any mitigation measures. For each resource area, the predicted effects from the proposed action and the no action alternative are summarized in Table 1.

**Public Review and Comment**

Copies of the final EA were available from the Environmental Division, Fort A.P. Hill and available for review at the Caroline Library, Port Royal Branch, Port Royal, Virginia, and the Bowling Green Library, Bowling Green, Virginia. Comments on the EA and draft FNSI were received from the Virginia Department of Environmental Quality (VDEQ) and members of the Portobago Bay Homeowners Association (PBHOA). VDEQ reviewed the EA for consistency with Virginia policies and regulations,

**Table 1**  
**Summary of Potential Environmental and Socioeconomic Consequences**

Resource	Environmental and socioeconomic effects of alternatives	
	Proposed Action	No Action
Land use	Long-term minor adverse	Long-term minor adverse
Aesthetic and visual resources	No effects	No effects
Air quality	Short- and long-term minor adverse	Short- and long-term minor adverse
Noise	Short- and long-term minor adverse	Short- and long-term minor adverse
Geology and soils	Short- and long-term minor adverse	Short- and long-term minor adverse
<b>Water resources</b>		
• Surface water	Short-term minor and long-term negligible adverse	Long-term minor adverse
• Hydrogeology/Groundwater	Long-term negligible adverse	Long-term minor adverse
• Floodplains and Wetlands	Long-term minor adverse	No effects
• Coastal zone management	No effects	No effects
<b>Biological resources</b>	Long-term minor adverse	Long-term minor adverse
<b>Cultural resources</b>	No effects	No effects
<b>Socioeconomics</b>		
• Economic Development	Short- and long-term minor beneficial	Long-term minor beneficial
• Housing	No effects	No effects
• Public services	Long-term minor adverse	Long-term minor adverse
• Schools, family services	No effects	No effects
• Environmental justice	No effects	No effects
• Protection of children	No effects	No effects
<b>Transportation</b>	Short- and long-term minor adverse	Short- and long-term minor adverse
<b>Utilities</b>	Long-term minor and negligible adverse	Short- and long-term minor beneficial and adverse
<b>Hazardous and toxic substances</b>	Short-term negligible and long-term minor adverse	Long-term minor adverse

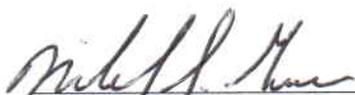
including consistency with the Virginia Coastal Management Program (VCP). The Commonwealth found that the project would have the potential to affect policies related to the Commonwealth's subaqueous lands management, wetlands management, non-point source pollution control, shoreline sanitation, air pollution control, and coastal lands management programs. VDEQ concurred with the EA in that the proposed activity would be consistent with the VCP, provided that Fort A.P. Hill complies with all requirements and applicable permits and other authorizations required by the project, which the Commonwealth provided complete details on in its comments.

Members of the PBHOA raised concerns about the potential for the proposed action to adversely affect their quality of life because of noise, surface water and groundwater contamination, reduced property value, and traffic impacts. Representatives of Fort A.P. Hill met with the PBHOA to discuss the proposed action and hear the group's concerns. Members of the PBHOA submitted written comments, and Fort A.P. Hill responded to the concerns. The comments and responses are an appendix to this FNSI. The proposed action was evaluated rigorously in the EA and is not expected to have significant adverse environmental effects. The PBHOA community lies within a noise zone considered acceptable for noise-sensitive land uses. The conclusion of no significant effect on water resources is based on the quantities of explosives to be used and the distances of detonation sites from those resources. Property value in the PBHOA community is not expected to fall as a consequence of implementing the proposed action because the action is not expected to adversely affect the area in any significant way. Traffic effects of the

proposed action are expected to be negligible because of the low number of trips that will be associated with the action and the trips generated by the action are expected to occur primarily during non-peak hours. The environmental effects of the proposed action as outlined in the EA do not involve any unique or unknown risks. None of the concerns raised by the members of the PBHOA or VDEQ changes the conclusion of the EA that the implementation of the proposed action would have no significant adverse environmental effects.

**Finding of No Significant Impact**

Based on the Environmental Assessment which is herewith incorporated, it has been determined that implementation of the proposed action would have no significant direct, indirect, or cumulative impacts on the quality of the human or natural environment. Because no significant environmental impacts will result from the implementation of the proposed action, an Environmental Impact Statement is not required.



MICHAEL S. GRAESE  
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Installation Commander  
Fort A.P. Hill, Virginia

3 NOV 08  
Date

## ENVIRONMENTAL ASSESSMENT

**LEAD AGENCY:** Fort A.P. Hill, Virginia

**TITLE OF PROPOSED ACTION:** Environmental Assessment of Constructing and Operating an Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia

**AFFECTED JURISDICTIONS:** Caroline County, Virginia, and Essex County, Virginia

**PREPARED BY:** Colonel Byron A. Jorns, Commanding, U.S. Army Corps of Engineers, Mobile District, Alabama

**APPROVED BY:** Lieutenant Colonel Michael S. Graese, U.S. Army, Installation Commander, Fort A.P. Hill, Virginia

**ABSTRACT:** This Environmental Assessment (EA) considers the proposed action to add approximately 1,025 acres to the Explosives Ordnance Disposal (EOD) field training area evaluated in the *Final Environmental Impact Statement: Implementation of Base Realignment and Closure (BRAC) Recommendations and Other Army Actions at Fort Lee, Virginia, and Fort A.P. Hill, Virginia* (February 2006), resulting in the construction and operation of a contiguous EOD field training area of approximately 2,059 acres. The EA identifies, evaluates, and documents the environmental and socioeconomic effects of facility construction, renovation, maintenance, and operation proposed to accommodate implementation of the proposed action. A No Action Alternative is also evaluated. Implementation of the proposed action is not expected to result in significant environmental impacts. Therefore, preparation of an Environmental Impact Statement is not required and a Finding of No Significant Impact (FNSI) will be published in accordance with the National Environmental Policy Act.

**REVIEW COMMENT DEADLINE:** The EA and draft FNSI are available for review and comment for 30 days from publication of a Notice of Availability (NOA). NOAs were published in the *Caroline Progress* and *Fredericksburg Freelance Star*. Copies of the EA and draft FNSI can be obtained by contacting Ms. Terry Banks, Chief, Environmental Division, at 804-633-8223, or by e-mail requests to [terry.banks1@us.army.mil](mailto:terry.banks1@us.army.mil). Copies of the EA and draft FNSI are available for review at the Caroline Library, Port Royal Branch, Port Royal, Virginia, and the Bowling Green Library, Bowling Green, Virginia. Comments on the EA and draft FNSI should be submitted to Ms. Banks no later than the end of the public comment period.

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## **Executive Summary**

### **ES.1 Introduction**

On September 8, 2005, the Defense Base Closure and Realignment Commission (BRAC Commission) recommended numerous realignment and closure actions for domestic military installations. On November 9, 2005, the recommendations became law, and they must be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510, as amended).

The Army evaluated realignment of Fort Lee in its *Final Environmental Impact Statement: Implementation of Base Realignment and Closure (BRAC) Recommendations and Other Army Actions at Fort Lee, Virginia, and Fort A.P. Hill, Virginia*. On May 11, 2007, the Army issued its Record of Decision (ROD) to relocate approximately 7,200 personnel to Fort Lee, to construct and renovate facilities at Fort Lee and Fort A.P. Hill, and to conduct operations and training at Fort Lee and Fort A.P. Hill. Included in the influx of personnel to Fort Lee is the Ordnance Munitions and Electronic Maintenance School (OMEMS) and the OMEMS, Explosive Ordnance Demolition, Training Department, which are currently located at Redstone Arsenal, Alabama.

Among the facilities projects evaluated in the environmental impact statement was establishing an explosives ordnance disposal (EOD) field training area that would cover approximately 1,034 acres at Fort A.P. Hill. Since publication of the ROD, ongoing planning by the Army revealed the need for an EOD field training area of approximately 2,059 acres. In addition, there is a need to train students in the Global Antiterrorism Operational Readiness course at night.

This environmental assessment (EA) describes and analyzes the potential environmental and socioeconomic effects of implementing the proposed action to add approximately 1,025 acres to the EOD field training area evaluated in the Fort Lee and Fort A.P. Hill BRAC EIS, resulting in the construction and operation of a contiguous EOD field training area of approximately 2,059 acres for student personnel being realigned to Fort Lee, Virginia.

### **ES.2 Proposed Action and Alternatives**

The proposed action is to construct a field training area that includes EOD training sites, observation bunkers, training towers, a range operations headquarters building, a robotics range support building, range storage buildings, covered training areas (bleachers), and a water supply and distribution system. The Army also proposes to construct an 80-person barracks for students' use. These facilities at Fort A.P. Hill would support OMEMS field training requirements.

Inclusion of the No Action Alternative is prescribed by Council on Environmental Quality regulations and serves as the benchmark against which federal actions can be evaluated. No Action assumes that an EOD field training area could be established as approved in the ROD for the Fort Lee BRAC EIS. The No Action Alternative is evaluated in detail in this EA.

### **ES.3 Environmental Consequences**

Implementing the proposed action would be expected to result in a mixture of short- and long-term minor adverse and short- and long-term minor beneficial effects on the subject environmental resources and conditions. The EA does not identify the need for any mitigation measures.

For each resource area, the predicted effects from both the proposed action and the No Action Alternative are summarized in Table ES-1.

**Table ES-1  
Summary of Potential Environmental and Socioeconomic Consequences**

Resource	Environmental and socioeconomic effects of alternatives	
	Proposed Action	No Action
<b>Land use</b>	Long-term minor adverse	Long-term minor adverse
<b>Aesthetic and visual resources</b>	No effects	No effects
<b>Air quality</b>	Short- and long-term minor adverse	Short- and long-term minor adverse
<b>Noise</b>	Short- and long-term minor adverse	Short- and long-term minor adverse
<b>Geology and soils</b>	Short- and long-term minor adverse	Short- and long-term minor adverse
<b>Water resources</b>		
• Surface water	Short-term minor and long-term negligible adverse	Long-term minor adverse
• Hydrogeology/Groundwater	Long-term negligible adverse	Long-term minor adverse
• Floodplains and Wetlands	Long-term minor adverse	No effects
• Coastal zone management	No effects	No effects
<b>Biological resources</b>	Long-term minor adverse	Long-term minor adverse
<b>Cultural resources</b>	No effects	No effects
<b>Socioeconomics</b>		
• Economic Development	Short- and long-term minor beneficial	Long-term minor beneficial
• Housing	No effects	No effects
• Public services	Long-term minor adverse	Long-term minor adverse
• Schools, family services	No effects	No effects
• Environmental justice	No effects	No effects
• Protection of children	No effects	No effects
<b>Transportation</b>	Short- and long-term minor adverse	Short- and long-term minor adverse
<b>Utilities</b>	Long-term minor and negligible adverse	Short- and long-term minor beneficial and adverse
<b>Hazardous and toxic substances</b>	Short-term negligible and long-term minor adverse	Long-term minor adverse

## ES.4 Conclusions

On the basis of the analyses performed in this EA, implementation of the proposed action would have no significant direct, indirect, or cumulative effects on the quality of the natural or human environment. Preparation of an environmental impact statement is not required. Issuance of a Finding of No Significant Impact would be appropriate.

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## **SECTION 1.0 PURPOSE, NEED, AND SCOPE**

### **1.1 INTRODUCTION**

On September 8, 2005, the Defense Base Closure and Realignment Commission (BRAC Commission) recommended numerous realignment and closure actions for domestic military installations. President Bush concurred with the 2005 BRAC Commission's report and sent it to Congress on September 15, 2005. On November 9, 2005, the recommendations became law, and they must be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510, as amended).

The Army evaluated realignment of Fort Lee in its Final Environmental Impact Statement: Implementation of Base Realignment and Closure (BRAC) Recommendations and Other Army Actions at Fort Lee, Virginia, and Fort A.P. Hill, Virginia. On May 11, 2007, the Army issued its Record of Decision (ROD) to relocate about 7,700 personnel to Fort Lee, to construct and renovate facilities at Fort Lee and Fort A.P. Hill, and to conduct operations and training at Fort Lee and Fort A.P. Hill. Included in the influx of personnel to Fort Lee is the Ordnance Munitions and Electronic Maintenance School (OMEMS) and the OMEMS, Explosive Ordnance Demolition, Training Department, which are currently located at Redstone Arsenal, Alabama.

Among the facilities projects evaluated in the environmental impact statement (EIS) was establishing an explosives ordnance disposal (EOD) field training area that would cover about 1,034 acres at Fort A.P. Hill.<sup>1</sup> Since publication of the ROD, ongoing planning by the Army revealed the need for an EOD field training area of about 2,059 acres. Need for the larger area is primarily because of the terrain of the proposed 1,034-acre site, which consists of many areas with steep slopes, resulting in only about 60 percent (600 acres) of the proposed area being suitable for training purposes. In addition, there is a need to train students in the Global Antiterrorism Operational Readiness (GATOR) course at night.

This environmental assessment (EA) evaluates the potential environmental and socioeconomic effects of constructing and operating the larger, 2,059-acre EOD field training area for student personnel being realigned to Fort Lee, Virginia.

### **1.2 PURPOSE AND NEED**

The proposed action is to add about 1,025 acres to the EOD field training area evaluated in the Fort Lee and Fort A.P. Hill BRAC EIS, resulting in the construction and operation of a contiguous EOD field training area of about 2,059 acres. The purpose of the proposed action is to provide adequate facilities for Army training functions being realigned to Fort Lee by BRAC 2005. The need for the proposed action is to carry out BRAC directives as required by law.

### **1.3 SCOPE**

This EA identifies, documents, and evaluates the environmental effects of realignment activities in accordance with the National Environmental Policy Act of 1969 (NEPA) and implementing

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<sup>1</sup> The Fort Lee BRAC EIS estimated the extent of the proposed EOD area at 1,200 acres. Further delineation of the originally proposed area resulted in a revised estimate of 1,034 acres.

regulations issued by the President's Council on Environmental Quality (CEQ) and the Army.<sup>2</sup> The purpose of the EA is to inform decisionmakers and the public of the likely environmental consequences of the proposed action and alternatives.

The Defense Base Closure and Realignment Act of 1990 specifies that NEPA does not apply to actions of the President, the Commission, or the Department of Defense (DoD), 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" (Public Law 101-510, as amended, Sec. 2905(c)(2)(A)). 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 BRAC 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.

The Army's BRAC EIS and related ROD proposed establishing a 1,034-acre field training area at Fort A.P. Hill. Construction of the 1,034-acre facility has not yet begun. Therefore, though the proposed action being evaluated in this EA is the addition of about 1,025 acres to the footprint evaluated in the BRAC EIS, the baseline condition for this EA is Fort A.P. Hill without a field training area.

This EA evaluates the potential environmental and socioeconomic effects of constructing and operating the new field training area in its entirety—the original 1,034 acres plus the additional 1,025 acres (a total of 2,059 contiguous acres).

## **1.4 PUBLIC INVOLVEMENT**

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

Public participation opportunities with respect to this EA and decisionmaking on the proposed action are guided by Title 32 of the *Code of Federal Regulations* (CFR) Part 651. Upon completion, the EA, along with a draft Finding of No Significant Impact (FNSI), will be made available to the public for 30 days. 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 the draft FNSI. As appropriate, the Army may then execute the FNSI and proceed with implementing the proposed action. If it is determined before a final FNSI is issued 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 EIS, commit to mitigation actions sufficient to reduce impacts to below significant levels, or not take the action.

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<sup>2</sup> Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, Title 40 of the Code of Federal Regulations (CFR) Parts 1500–1508, and Environmental Analysis of Army Actions, 32 CFR Part 651.

Throughout this process, the public may obtain information on the status of the proposed action and the EA through Fort A.P. Hill by calling Ms. Terry Banks, Chief, Environmental Division, at 804-633-8255.

On April 28, 2008, Fort A.P. Hill mailed letters informing agencies and the public of the proposed action and requesting their input regarding any concerns about the proposed action. Letters were mailed to those agencies and individuals listed in Appendix A. Responses received to the letters are also included in Appendix A.

## **1.5 IMPACT ANALYSIS PERFORMED**

An interdisciplinary team of environmental scientists, biologists, planners, economists, engineers, archaeologists, historians, and military technicians has analyzed the proposed action and alternatives in light of existing conditions and has identified relevant beneficial and adverse effects associated with the action. The proposed action and alternatives, including the No Action Alternative, are described in Section 2.0. Existing conditions and the expected effects of the proposed action are described in Section 3.0, Affected Environment and Environmental Consequences. For each environmental resource addressed in the EA, the expected effects are presented immediately following the description of the baseline conditions. Mitigation actions are identified for each aspect of the proposed action, as appropriate. Cumulative effects are discussed at the end of Section 3.0. Section 4.0 presents the Conclusions of the EA. Sections 5 through 8 provide the List of Preparers, Distribution List, References, and Acronyms and Abbreviations.

The resources addressed in this EA are land use, visual resources, air quality, noise, geology and soils, water resources, biological resources, cultural resources, socioeconomic resources, transportation, utilities, and hazardous and toxic materials.

## **1.6 REGULATORY FRAMEWORK**

### **1.6.1 BRAC Procedural Requirements**

The Defense Base Closure and Realignment Act of 1990 specifically addresses the applicability of NEPA to actions of the BRAC Commission and to actions of the President in approving or disapproving the BRAC Commission's recommendations, as well as the Congressional waiver of the procedural elements of NEPA where the actions of the DoD and the BRAC Commission in recommending bases for closure and realignment are concerned. The BRAC Commission procedures for identifying affected installations and bases are specified by this law. They are the DoD Force Structure Plan, selection criteria that were published in the *Federal Register* for public comment, DoD recommendations, review and recommendations by the BRAC Commission, and review by the President.

The Defense Base Closure and Realignment Act of 1990 requires that all closures and realignments must be initiated by no later than 2 years after the date on which the President transmits a report to Congress including the recommendations for closures and realignments (Pub. L. 101-510, as amended, Sec. 2904 (a)(3)) and completed by no later than the end of the 6-year period beginning on the same date (Pub. L. 101-510, as amended, Sec. 2904(a)(4)). President Bush concurred with the 2005 BRAC Commission's report and sent it to Congress on September 15, 2005. Therefore, the BRAC actions must be completed by no later than September 15, 2011.

### **1.6.2 Relevant Statutes and Executive Orders**

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. In addressing environmental considerations, the Army is guided by relevant statutes (and their implementing regulations) and Executive Orders (EOs) that establish standards and provide guidance on environmental and natural resources management and planning. These include the Clean Air Act, Clean Water Act, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Noise Control Act, Endangered Species Act, Energy Independence and Security Act of 2007, National Historic Preservation Act, Archaeological Resources Protection Act, Resource Conservation and Recovery Act (RCRA), and Toxic Substances Control Act. EOs bearing on the proposed action include EO 11593 (*Protection and Enhancement of the Cultural Environment*), EO 11988 (*Floodplain Management*), EO 11990 (*Protection of Wetlands*), EO 12088 (*Federal Compliance with Pollution Control Standards*), 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*), and EO 13423 (*Strengthening Federal Environmental, Energy, and Transportation Management*). These authorities are addressed throughout this EA when relevant to particular environmental resources and conditions. Full descriptions of these laws, regulations, and EOs are available on the Defense Environmental Network & Information Exchange Web site at <http://www.denix.osd.mil>.

## **SECTION 2.0**

### **PROPOSED ACTION AND ALTERNATIVES**

#### **2.1 INTRODUCTION**

As a result of BRAC Commission recommendations, EOD training must relocate from Redstone Arsenal, Alabama, to Fort Lee, Virginia. The Army proposes to accommodate EOD field training requirements at a new field training area at Fort A.P. Hill. The field training area would be sufficient to support more than 4,200 students annually. The general location of the proposed field training area is shown in Figure 2-1.

#### **2.2 PROPOSED ACTION**

The Army proposes to add about 1,025 acres to the EOD field training area evaluated in the Fort Lee and Fort A.P. Hill BRAC EIS, resulting in the construction and operation of a contiguous EOD field training area of approximately 2,059 acres. Facilities proposed to be constructed within the field training area include the EOD training sites, observation bunkers, training towers, a range operations headquarters building, a robotics range support building, range storage buildings, covered training areas (bleachers), and a water supply and distribution system. The Army also proposes to construct an 80-person barrack for student use. These facilities at Fort A.P. Hill would support OMEMS field training requirements.

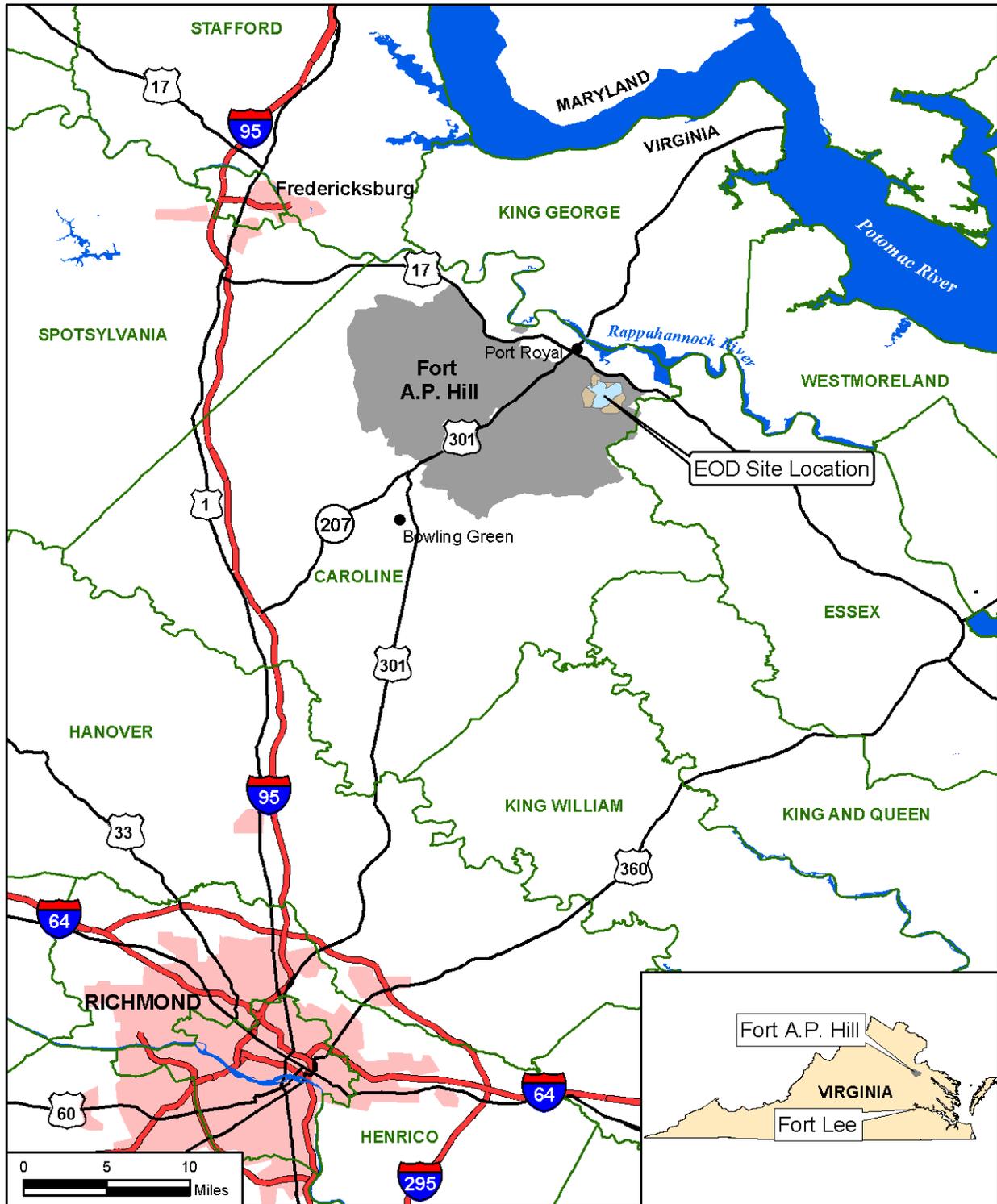
##### **2.2.1 Field Training Area Facility Components**

**EOD training sites.** These would include discreet, site-specific training areas for demolition operations (requiring buried-conduit firing systems and protective observation bunkers); post-blast analysis; improvised explosive device disposal; artillery round disposal; chemical incident handling; weapon cache/booby trap disposal; airfield operations; war zone training (i.e., training for depleted uranium hazards, unexploded ordnance, lodged projectile removal, and download procedures for artillery and tanks); minefield extraction; ammunition supply point operations; mobile Missions on Urban Terrain (MOUT); forward operating base entry control point safety; tactical driver training, team building, and staging; and tunnel complex operations. Five observation bunkers (680 square feet [SF] total) would be constructed. Training site clearing and grubbing would occur over about 260 acres.

**Range operations headquarters building.** This 21,500-SF (0.5-acre) facility would include classrooms (9,500 SF), administrative space (4,600 SF), special functional use areas (4,300 SF), and general support space (3,100 SF). The classrooms and administrative spaces would be Internet-capable. The special functional use areas would include a robotics maintenance area and a 1,020-SF high-bay vehicle maintenance facility training area with a hoist, team equipment storage, and a shop with a welding station, an eyewash station, and compressed air for pneumatic tools. The high-bay maintenance area would be large enough for two Joint EOD Rapid Response Vehicles (JERRVs).<sup>3</sup> A 78,500-SF (1.8-acre) gravel parking lot for 58 military vehicles would be provided adjacent to the facility.

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<sup>3</sup> The JERRV, a variant of the Mine-Resistant, Ambush-Protected vehicle, is designed for missions such as convoy lead, troop transport, ambulance, EOD, and combat engineering. Its maximum weight is 52,000 lbs.



- LEGEND**
- Fort A.P. Hill
  - 1,034-acre EOD Site
  - EOD Expansion Areas
  - County Boundary
  - Surface Water
  - Urban Area
  - Interstate
  - U.S. Route
  - State Highway

## EOD Site Location

Figure 2-1

**Robotics range support building.** This 2,800-SF facility would include space for robot training (operation, maintenance, and cleaning of robots) and an advanced robotics (urban) obstacle course consisting of stairs, doorways, sharp turns, and uneven terrain for robot navigation.

**Additional training facilities.** Covered bleachers would be provided at 12 training sites at various locations throughout the field training area for students' use. Training towers would be erected at sites for entry control point training and the mock airfield. An overpass would be erected for specialized training at the airfield training site.

**Supporting facilities.** The supporting facilities would include electric, water, and sewer services; paving, gravel parking (48,600 SF, or 1.1 acre) (separate from the gravel parking for the Range Operations Headquarters building), walks, curbs, and gutters; fencing and gates; and building information systems. In addition, 21 minor support and storage buildings (8,700 SF total) would be constructed at various locations within the field training area. An estimated 369,000 SF (8.5 acres, or about 3.5 miles) of gravel roads would be constructed. A security fence, about 7.7 miles long, would enclose the entire field training area and would require clearing a 10-foot-wide path for it, resulting in about 9.3 acres of cleared area. There would also be a water supply and distribution system building (100 SF). Heating and air conditioning systems would serve all occupied structures. Structures would meet criteria established for achieving a Silver level rating under the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system and for the Energy Policy Act of 2005.

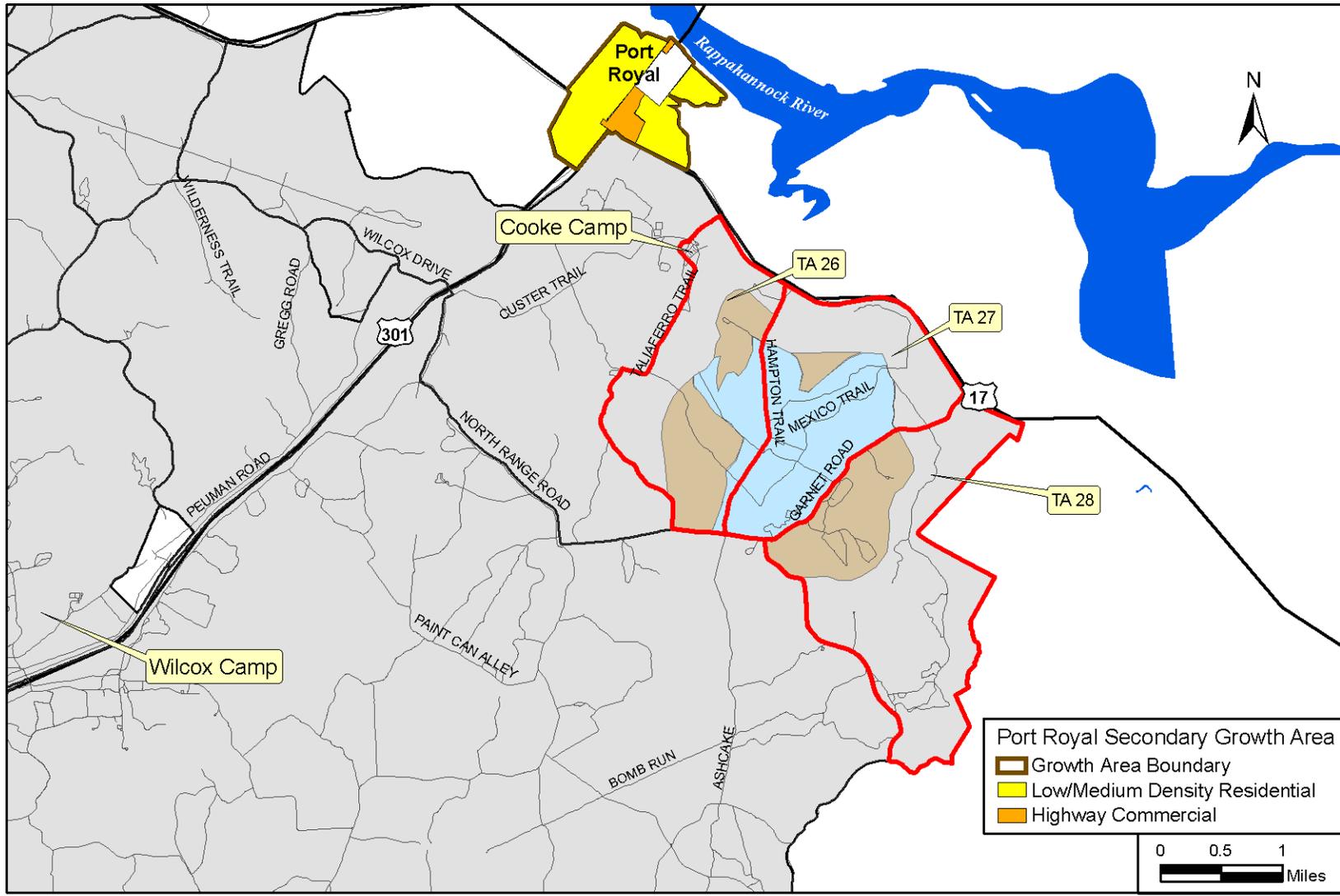
The structures and facilities proposed to be built to support EOD training at Fort A.P. Hill under the proposed action are summarized in Table 2-1.

**Table 2-1  
Facilities and Structures Under the Proposed Action  
Enlarged EOD Field Training Area, Fort A.P. Hill**

<b>Facility</b>	<b>Size (square feet)</b>	<b>Area (acres)</b>
Range operations headquarters building	21,500 SF	0.5 AC
Robotics range support building	2,800 SF	0.06 AC
Minor support and storage buildings	8,700 SF	0.2 AC
Water supply and distribution building	100 SF	0.002 AC
Student barracks	30,630 SF	0.7 AC
<b>Additional Structure</b>		
Gravel parking lot (range operations headquarters building)	78,500 SF	1.8 AC
Additional gravel parking	48,600 SF	1.1 AC
Gravel roads	369,000 SF	8.5 AC
Cleared areas for training sites and access roads		269 AC
Perimeter fence		9.3 AC

### 2.2.2 Location

The enlarged EOD field training area would be located in Fort A.P. Hill's Training Areas 26, 27, and 28 in the eastern portion of the installation (Figure 2-2). Multiple specific training sites would



# EOD Training Area

**LEGEND**

<span style="display:inline-block; width:15px; height:15px; background-color:lightgray; border:1px solid black;"></span> Installation Property	<span style="display:inline-block; width:15px; height:15px; border:2px solid red;"></span> Training Area (TA)
<span style="display:inline-block; width:15px; height:15px; background-color:lightblue;"></span> 1,034-acre EOD Site	<span style="display:inline-block; width:15px; height:15px; background-color:blue;"></span> Surface Water
<span style="display:inline-block; width:15px; height:15px; background-color:tan;"></span> EOD Expansion Areas	

Note: About 45 individual training sites would be distributed throughout the 2,059-acre expanded EOD training area.  
 Source: Fort A.P.Hill GIS, 2006, 2008.

Figure 2-2

be developed near existing roads.<sup>4</sup> Most training sites would have a radius of 620 feet, which defines the fragmentation safety arc appropriate for the use of 5 pounds (lbs) of explosives. In most cases, each training site would occupy about 28 acres.

Three training sites would be used for basic demolition training, energetic tools training, and protective works training. Training at these sites would involve detonations using from 10 lbs net explosive weight (NEW) up to 50 lbs NEW, resulting in safety arcs from 1,230 feet (a footprint of 109 acres) to 4,386 feet (a footprint of 1,387 acres). These three sites would be near the center of the EOD area to minimize noise impacts outside the installation.

### **2.2.3 Concept of Operations**

The enlarged EOD field training area would support 4,143 students per year. Each student would be assigned to a course on the basis of his or her military occupational specialty and the level of training required. The field training area would support seven courses. Of the 4,143 students attending training annually at the EOD range, 1,458 would be billeted at Fort A.P. Hill during their training and 2,685 would take most of their classes at Fort Lee and travel to Fort A.P. Hill for only 1 or 2 days.

Each training site would be authorized for the use of 5 lbs NEW. Detonations at most sites are expected to involve only a quarter pound (0.25 lb) of explosive, similar to the current training detonations at Redstone Arsenal. Detonations at the training sites to be used for energetic tools training, basic demolition training, and protective works training would be authorized for use of 10 lbs NEW, 25 lbs NEW, and 50 lbs NEW, respectively. Another site would be authorized for up to 5 lbs NEW, except for one time per quarter, when a larger explosive weight (up to 50 lbs NEW) would be used.

During practical-exercise lessons, students would work in teams of two or three. Students staying at Fort A.P. Hill would be billeted at Fort A.P. Hill's Wilcox Camp until the construction of new barracks was completed (see Section 2.2.4, below).

The training strategy for the courses for students who do most of their training at Fort Lee would be to have the students and instructors travel from Fort Lee to Fort A.P. Hill and return the same day. Students would be under the control of their instructor and operate as a class rather than in small groups. Operation of the range would be similar to that of an Army standard weapons qualification range. That is, students would go to the firing line, perform their assigned task, and leave the firing line. Once all students completed their tasks to standard, they would leave the range and return to Fort Lee.

### **2.2.4 Student Barracks**

In conjunction with construction of the field training area, the Army proposes to construct a barracks for students attending the Basic Non-commissioned Officer, GATOR, and Tactical Post Blast courses. The 30,630-SF (0.7-acre) project would provide a 1+1 standard-design barracks at Wilcox Camp. Room modules would include private sleeping rooms with closets, shared kitchenette, and semi-private baths. Luggage storage, laundry room, mud room, break area, and a duty officer desk would be provided. At present, there are no adequate barracks at Fort A.P. Hill to support the extended stay of these students. The maximum utilization of this barracks facility

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<sup>4</sup> Placement of training sites near existing roads would reduce the length of site ingress and egress routes and help facilitate movement of students from one training site to the next.

would be 80 junior noncommissioned officers, who would be billeted one soldier per room (two soldiers per barracks module). The specific site for the barracks, though not yet chosen, would conform to Fort A.P. Hill's land use planning scheme for Wilcox Camp.

### **2.2.5 Schedule**

Construction of the field training area would take about one year, beginning in April 2009. Construction would have to be completed by the September 2011 deadline to comply with the BRAC requirement to relocate affected personnel and missions. Barracks construction would begin in March 2011 and extend for one year.

## **2.3 ALTERNATIVES**

The Fort A.P. Hill and Fort Lee staffs, working with Redstone Arsenal EOD personnel, and after reviewing all potential sites, proposed portions of Training Areas 26, 27, and 28 for siting of the field training area. This location, approved for 1,034 acres in the ROD for the BRAC EIS, provides a safe distance from the installation's impact area; acceptable terrain features; availability of fragmentation safety arcs; suitable open areas for a mock airfield, battlefield, and several training sites; and adequate existing access roads.

The Army considered two alternatives for locating the EOD field training area. One alternative could have located the entire field training area to another part of Fort A.P. Hill. The second alternative could have been to retain the designated site in Training Areas 26 and 27, with the additional land requirement being satisfied with a non-contiguous parcel.

### **2.3.1 Different Fort A.P. Hill Location**

Locating the enlarged EOD field training area at Fort A.P. Hill to a site other than Training Areas 26, 27, and 28 would necessitate approximately 2,000 acres not already dedicated to other types of field training. The Fort A.P. Hill garrison commander reviewed all potential sites and found none that were not already dedicated to particular uses. Placing the enlarged EOD field training area at an existing range or other training site would necessitate relocation of the existing activity and duplication of existing built facilities. Pursuit of this alternative, having a domino effect and displacing existing training capabilities, would incur unnecessary costs. This alternative was found not feasible and, accordingly, it is not evaluated in detail in this EA.

### **2.3.2 Additional, Non-contiguous Parcel**

This alternative would retain use of the approved EOD field training area site in Training Areas 26 and 27 and provide a separate, non-contiguous parcel of approximately 1,000 acres elsewhere at Fort A.P. Hill. The concept of operations for personnel at the EOD field training area is to have students arrive from Fort Lee early in the day, conduct their required training at various stations within the field training area, and return to Fort Lee in the evening. In some cases, students would be billeted overnight at Fort A.P. Hill. Use of two sites would require duplication of facilities for range control, after action review, field mess, communications, and infrastructure. Use of non-contiguous parcels would also necessitate transporting students from one area to another. This would impose additional costs and potential loss of valuable training time to such an extent that completion of training in one day might not be possible. For these reasons, this alternative was found not feasible and, accordingly, it is not evaluated in detail in this EA.

## 2.4 NO ACTION ALTERNATIVE

The CEQ regulations prescribe inclusion of the No Action Alternative, which serves as the benchmark by which federal actions can be evaluated. No Action assumes that an EOD field training area could be established as approved in the ROD for the Fort Lee BRAC EIS. This EA incorporates by reference the discussion of the EOD field training area contained in the Fort Lee BRAC EIS. Specific information is provided below. The No Action alternative is evaluated in this EA.

Under the No Action Alternative, EOD training would be conducted on ranges constructed within an area of about 1,034 acres in the eastern portion of the installation in Training Areas 26 and 27. The structures and facilities that could be built to support EOD training at Fort A.P. Hill under the No Action Alternative are listed in Table 2-2. Similar to the proposed action, the No Action Alternative would involve constructing a barracks to support the EOD training mission in the vicinity of Wilcox Camp near Route 301 and classroom facilities within Training Areas 26 or 27.

**Table 2-2  
Structures and Facilities Under the No Action Alternative  
EOD Field Training Area, Fort A.P. Hill**

Facility	Quantity/Size	Capacity (each)
Classroom/lab	14	1,000 sf
Classroom	6	625 sf
Ordnance identification lab	2	1,000 sf
Motor park (paved or rock)	1	2 acres
Perimeter fence	1	Around building
Lights (exterior, night operations)	1	N/A
Ammunition supply points	1	To be determined
Demolition ranges	14	330-foot to 1.5-mile safety arcs
Mobile MOUT	1	To be determined
Instructor offices	78	To be determined

## **SECTION 3.0**

### **AFFECTED ENVIRONMENT AND CONSEQUENCES**

#### **3.1 LAND USE**

##### **3.1.1 Affected Environment**

###### **3.1.1.1 Regional Geographic Setting and Location**

Fort A.P. Hill is in Caroline and Essex counties about 75 miles south of Washington, DC, and 70 miles north of Fort Lee, Virginia. The political jurisdictions surrounding the installation are Caroline County, Essex County, King George County, Spotsylvania County, and the towns of Port Royal and Bowling Green). The location of the installation is shown in Figure 2-1. Climate in the area is temperate with mild winters and hot, humid summers. Prevailing winds in the region are from the north and northwest in winter and autumn and from the south in spring and summer (NCDC 1998).

###### **3.1.1.2 Installation Land Use**

Fort A.P. Hill is a field training installation in the northeastern portion of Caroline County, Virginia. The Army owns 75,794 acres of the installation and leases about 111 acres from two private citizens (FAPH 2000). About 85 percent of the installation is forested and is used to conduct training exercises. The remaining acreage is divided among grassland, shrub, and agricultural areas. Overall land use can be divided into several major categories: Training and Range (72,921 acres, or 96 percent of the installation that is predominantly woodlands), Administration, Family Housing, and Airfield areas (3,165 acres). The cantonment area is in the southwest along Route 301; it consists of the headquarters, support buildings, and related facilities.

The area of Fort A.P. Hill of particular concern with respect to the proposed action is the proposed 1,025-acre expansion of the EOD field training area in the eastern part of the installation. The additional area is split among four parcels, all of which are contiguous with the 1,034-acre EOD field training area that was proposed and analyzed in the 2006 Fort Lee and Fort A.P. Hill BRAC EIS (Figure 2-1). The enlarged EOD field training area would consist of a 2,059-acre tract of land in the eastern portion of the installation. The proposed enlarged EOD area is near the east-central boundary of the installation. Because the original 1,034-acre site proposed in the BRAC EIS has not yet been constructed and because the entire 2,059-acre EOD field training area is proposed to be constructed as a unified EOD training range, the entire 2,059-acre site and its immediate surroundings are discussed in this section.

The proposed enlarged EOD field training area is classified entirely as Training/Range land use. Historically, the U.S. Army Engineer School used the area for field training exercises, inert mine and countermine training, and live demolitions. The area is now used for dismounted maneuvers; it has field artillery firing points. It is predominantly forested land, half or more of which is steep land that slopes down to tributaries of the Rappahannock River. Most of the area has not been recently disturbed, but electric and telephone lines run along Hampton Trail that passes through the proposed site.

###### **3.1.1.3 Surrounding Land Use**

The off-post developed area nearest to the proposed enlarged EOD field training area is the Port Royal settlement, which is about 4 miles north of the proposed site in Caroline County, Virginia (Figure 2-1). The Caroline County Comprehensive Plan designates Port Royal as a secondary-

growth area for the county. The plan projects low- to medium-density residential development along the boundaries of the settlement shared with Fort A.P. Hill. A consistent increase in growth pressures in the region indicates continued commercial development at the intersection of Routes 17 and 301, as well as along the route corridors. Port Royal is committed to protecting the small-town character of the community through use of traditional neighborhood designs and low-impact development techniques (Port Royal 2004).

South of Fort A.P. Hill from Route 301 to the Essex County boundary, land uses are predominantly Agricultural Preservation and Floodplain/Open Space. Areas northwest, west, and southwest of the proposed enlarged EOD field training area are installation land.

The northern portion of Essex County east of the proposed enlarged EOD area is designated an agricultural preservation area. The designation prohibits commercial development and restricts residential development to low-density land use. Subdivisions are limited to one to five lots, and development is restricted to one lot per 20 acres. Some land areas along the installation boundary near the proposed enlarged EOD field training area are owned by private entities and managed for conservation purposes (U.S. Army 2007a).

#### **3.1.1.4 State Coastal Management Program**

The Virginia Coastal Zone Management Program is discussed in Section 3.6, Water Resources.

#### **3.1.1.5 Current and Future Development in the Region**

Secondary growth around Port Royal and along the Route 17 and Route 301 corridors is expected, though no specific future development in areas outside the installation and within the area of concern with respect to the proposed action is known to be planned (Caroline County 2001).

### **3.1.2 Environmental Consequences**

#### **3.1.2.1 Proposed Action**

Long-term minor adverse effects on surrounding land use northeast and east of the installation would be expected. The proposed EOD area is close to the installation border, and using the area for demolitions training could make some off-installation areas less suitable for residential use because of the noise that would be generated. Further discussion of the issue is in the Noise section (Section 3.4). The proposed enlarged EOD area would retain a Training/Range Area land use designation on the installation, though the type of training that would occur on the area would change to predominantly demolition training. Implementing the proposed action would not require that surrounding counties rezone any affected areas.

No effects on regional land use planning or zoning at Fort A.P. Hill would be expected.

#### **Best Management Practices**

No best management practices (BMPs) for land use would be necessary. BMPs for noise effects are discussed in Section 3.4, Noise.

#### **Cumulative Effects**

A minor adverse cumulative effect on surrounding land use would be expected. Two reasonably foreseeable actions are planned that, when combined with the proposed action, might have cumulative adverse effects on the noise environment surrounding Fort A.P. Hill and, therefore, on

surrounding residential area land use. The two actions are establishment of the Asymmetric Warfare Group (AWG) training range complex and establishment of the Naval Special Warfare Explosive Center of Excellence (NSWECE). Further discussion of the cumulative effect is provided in Section 3.4, Noise.

### 3.1.2.2 No Action Alternative

**Incorporation.** This EA incorporates by reference the land use discussion related to the 1,034-acre EOD training area contained in the Fort Lee BRAC EIS. Specific information is provided below.

A long-term minor adverse effect on surrounding land use would be expected from implementing the No Action Alternative. The EOD training area proposed in the Fort Lee BRAC EIS would be established close to the installation border and close enough to the Port Royal settlement that the noise from explosions of large charges could create an incompatibility with nearby residential areas. No impacts on installation land uses would be expected.

## 3.2 AESTHETIC AND VISUAL RESOURCES

### 3.2.1 Affected Environment

The proposed enlarged EOD field training area is largely undeveloped and forested, with varied terrain. The site is not visible from land off the installation.

### 3.2.2 Environmental Consequences

#### 3.2.2.1 Proposed Action

No adverse effects on the aesthetic and visual environment would be expected. Though limited facilities (Range Operations Center, airfield, JERRV training site, and various specialty training sites) are proposed to be constructed under the proposed action, a limited amount of site clearing (estimated at 9 acres for access roads, 9.3 acres for a perimeter fence, and 260 acres for training sites [U.S. Army 2007b]) would occur. Each training site would be isolated from the others, and the sites would not be visible except from ingress and egress routes specifically constructed to access them (Figure 3-1). The entire area would continue to be used and maintained for military training.



**Figure 3-1 Example Training Site Layout**

Ingress and egress roads are planned to extend from existing roads to serve individual training sites. This would minimize site clearing and vegetation disturbance. Each site would generally not be visible from other training sites. Dashed circles represent safety arcs.

### **Best Management Practices**

No BMPs for the aesthetic and visual aspects of the proposed action would be necessary.

### **Cumulative Effects**

No cumulative effects on aesthetic and visual resources would be expected.

#### **3.2.2.2 No Action Alternative**

***Incorporation.*** This EA incorporates by reference the aesthetic and visual resources discussion related to the 1,034-acre EOD training area contained in the Fort Lee BRAC EIS. Specific information is provided below.

No adverse effects on the visual environment would be expected under the No Action Alternative. Facilities proposed for the 1,034-acre EOD training area would be visible only from the immediate surroundings of the facilities and ranges created under the alternative, and they would not change the overall impression of the area as forested and primarily undeveloped.

### **3.3 AIR QUALITY**

#### **3.3.1 Affected Environment**

##### **3.3.1.1 National Ambient Air Quality Standards and Attainment Status**

***National Ambient Air Quality Standards and Local Ambient Air Quality.*** U.S. Environmental Protection Agency (EPA) Region 3 and the Virginia Department of Environmental Quality (VDEQ) regulate air quality in Virginia. EPA established primary and secondary National Ambient Air Quality Standards (NAAQS) at Title 40 of the *Code of Federal Regulations*, Part 50. The NAAQS set acceptable concentration levels for seven criteria pollutants: particulate matter (PM<sub>10</sub>), fine particulate matter (PM<sub>2.5</sub>), sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), nitrous oxides (NO<sub>x</sub>), ozone (O<sub>3</sub>), and lead. Short-term NAAQS (1-, 8-, and 24-hour periods) have been established for pollutants that contribute to acute health effects, while long-term NAAQS (annual averages) have been established for pollutants that contribute to chronic health effects. Each state has the authority to adopt standards stricter than those established under the federal program; however, the Commonwealth of Virginia accepts the federal standards.

EPA regulations designate Air-Quality Control Regions (AQCRs) in violation of the NAAQS as nonattainment areas. AQCRs not in violation of the NAAQS are attainment areas. Fort A.P. Hill is within the Northeastern Virginia Intrastate AQCR (AQCR 224), which is an attainment area for all criteria pollutants. Therefore, neither an applicability analysis nor a formal conformity determination under the General Conformity Rule is required for the proposed action.

##### **3.3.1.2 Local Ambient Air Quality**

Existing ambient air quality conditions near Fort A.P. Hill can be estimated from measurements conducted at air monitoring stations close to the installation. The most recently available data from nearby monitoring stations is provided in Table 3-1 (USEPA 2008).

**Table 3-1  
2006 Local Ambient Air Quality Monitoring**

Pollutant and averaging time	Primary NAAQS <sup>a</sup>	Secondary NAAQS <sup>a</sup>	Monitored data <sup>b</sup>	Location where maximum was recorded
<b>CO</b>				
8-hour maximum <sup>c</sup> (ppm)	9	(None)	NA	NA
1-hour maximum <sup>c</sup> (ppm)	35	(None)		
<b>NO<sub>2</sub></b>				
Annual arithmetic mean (ppm)	0.053	0.053	U.S. Geological Survey Center Caroline County	0.003
<b>O<sub>3</sub></b>				
8-hour maximum <sup>d</sup> (ppm)	0.08	0.12	Widewater Elem. Sch., Stafford County	0.089
<b>PM<sub>2.5</sub></b>				
Annual arithmetic mean <sup>e</sup> (µg/m <sup>3</sup> )	15	15	Big Meadows	10.3
24-hour maximum <sup>f</sup> (µg/m <sup>3</sup> )	65	65	Madison County	31
<b>PM<sub>10</sub></b>				
Annual arithmetic mean <sup>g</sup> (µg/m <sup>3</sup> )	50	50	East Market Street	21
24-hour maximum <sup>c</sup> (µg/m <sup>3</sup> )	150	150	Charlottesville	53
<b>SO<sub>2</sub></b>				
Annual arithmetic mean (ppm)	0.03	(None)		
24-hour maximum <sup>c</sup> (ppm)	0.14	(None)	NA	NA
3-hour maximum <sup>c</sup> (ppm)		0.5		

ppm = parts per million

µg/m<sup>3</sup> = micrograms per cubic meterNO<sub>2</sub> = nitrogen dioxide

Notes:

<sup>a</sup> Source: 40 CFR 50.1–50.12.<sup>b</sup> Source: USEPA 2008.<sup>c</sup> Not to be exceeded more than once per year.<sup>d</sup> The 3-year average of the fourth highest daily maximum 8-hour average ozone concentrations over each year must not exceed 0.08 ppm.<sup>e</sup> The 3-year average of the weighted annual mean PM<sub>2.5</sub> concentrations from must not exceed 15.0 µg/m<sup>3</sup>.<sup>f</sup> The 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor must not exceed 65 µg/m<sup>3</sup>.<sup>g</sup> The 3-year average of the weighted annual mean PM<sub>10</sub> concentration at each monitor within an area must not exceed 50 µg/m<sup>3</sup>.

### 3.3.1.3 Existing Installation Emissions

Based on the installation's potential to emit, Fort A.P. Hill is a minor source of criteria pollutants. Stationary sources of air emissions at the installation include boilers, generators, degreasers, and gasoline dispensers. Fort A.P. Hill has a minor Stationary Source Permit to Operate (Permit no. 40306). The installation must submit comprehensive emission statements to VDEQ annually. Table 3-2 summarizes 2006 on-post emissions from stationary sources.

**Table 3-2**  
**Fort A.P. Hill 2006 Stationary Source Total Emissions (Tons Per Year)**

SO <sub>2</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>x</sub>	VOC
10.6	N/A	0.4	0.12	4.1	1.3

Source: FAPH 2007a.

Note: VOC = volatile organic compound.

### 3.3.2 Environmental Consequences

Air quality impacts would be considered minor unless the estimated emissions would contribute to a violation of any federal, state, or local air regulation or would contribute to a violation of Fort A.P. Hill's air operating permit.

#### 3.3.2.1 Proposed Action

Short- and long-term minor adverse effects on air quality would be expected from implementation of the proposed action. The effects would be primarily from non-road vehicle exhaust and fugitive dust emissions during construction and operational emissions from emergency backup generators, heating boilers, and demolition activities. The proposed action would not cause or contribute to a violation of any federal, state, or local air regulation, nor would it contribute to a violation of Fort A.P. Hill's air operating permit.

Implementation of the proposed action would introduce a limited number of new sources of air emissions at Fort A.P. Hill. There would be limited construction and operation of new permanent facilities with boilers, emergency generators, or other point sources of air emissions. Additional personnel stationed on the installation and student Soldiers transported to Fort A.P. Hill to conduct necessary training activities would create a minor to negligible increase in vehicular air emissions. Air emissions from demolition activities would also be minor.

#### General Conformity

The Clean Air Act mandates the General Conformity Rule (GCR) to ensure that federal actions in nonattainment and maintenance areas do not interfere with a state's timely attainment of the NAAQS (40 CFR 93.153). Because the proposed action is in an area that is in attainment for all criteria pollutants, the GCR does not apply and an applicability analysis is not required. The proposed action is exempt from the GCR (40 CFR 95.153); a Record of Non-Applicability is provided as Appendix B.

#### Regulatory Review and Air Permit Requirements

All construction would be accomplished in full compliance with Virginia Regulations for the Control and Abatement of Air Pollution, particularly Title 9 of the *Virginia Administrative Code* (VAC), Agency 5, Chapter 40, Part II. Articles of particular relevance are the following:

- Article 1, Visible Emissions and Fugitive Dust/Emissions (9 VAC 5-40-60 to 120)
- Article 40, Open Burning (9 VAC 5-40-5600 to 5645)
- Article 42, Portable Fuel Containers Spillage Control (9 VAC 5-40-5700 to 5770)

The new facilities would be equipped with emergency generators and other stationary sources of air emissions. These sources would be subject to federal and state air permitting requirements. The requirements include, but would not be limited to, Nonattainment New Source Review

(NSR), Prevention of Significant Deterioration (PSD), Title V, New Source Performance Standards, and National Emission Standards for Hazardous Air Pollutants (NESHAP). Table 3-3 lists some of these regulations and explains how they might affect the proposed action at Fort A.P. Hill.

**Table 3-3**  
**Air Quality Regulatory Review for Proposed Stationary Sources at Fort A.P. Hill**

Regulation	Project status
New Source Review	Fort A.P. Hill would not become a major source of air emissions and is in an attainment region. Therefore, NSR would not apply to the new facilities.
Prevention of Significant Deterioration (40 CFR Part 52)	Potential emissions would not exceed the 250-ton-per-year PSD threshold. Therefore, the project would not be subject to PSD review.
Title V and Stationary Source Permitting	Fort A.P. Hill is not a major source of air emissions under the Title V provisions. Therefore, it operates under a minor air-operating permit.
National Emission Standards for Hazardous Air Pollutants (40 CFR Parts 61 and 63)	Potential hazardous air pollutant emissions would not exceed NESHAP thresholds. Therefore, the use of MACT would not be required.
New Source Performance Standards (40 CFR Part 60)	New emergency generators and boilers greater than 10 MMBTU installed would have to comply with the New Source Performance Standards.

Note: MACT = maximum achievable control technology; MMBTU = million British thermal units.

### Best Management Practices

***Fugitive Dust Control.*** The grading and site-preparation phases of constructions would generate fugitive dust emissions. Fort A.P. Hill's air-operating permit does not outline specific installation-wide limitations on construction-phase emissions of criteria pollutants. Virginia's Administrative Code (9 VAC 5-40-90 and 9 VAC 5-50-90) does require reasonable precautions to prevent particulate matter from becoming airborne. Such precautions include using water for dust control when demolishing existing buildings or structures and during construction operations, road grading, or land clearing.

***Open Burning.*** Project activities would likely include the burning of land-clearing debris. Open burning of demolition and construction debris is not permitted. Land-clearing debris may be burned after properly coordinating with the Fort A.P. Hill Environmental Division for VDEQ reporting, and the receipt of a fire department burn permit. In addition, incidental wildfires and resulting smoke could occur as a result of training activities. Vegetation would be cleared within a certain distance of detonation points to minimize the chance of wildfires.

### Cumulative Effects

No cumulative adverse effects on air quality would be expected. The Commonwealth of Virginia takes into account the effects of all past, present, and reasonably foreseeable emissions during the development of its State Implementation Plan to implement the Clean Air Act. It is understood that a project of this limited size and scope would not interfere with the attainment status of the region.

#### 3.3.2.2 No Action Alternative

***Incorporation.*** This EA incorporates by reference the air quality discussion related to the 1,034-acre EOD training area contained in the Fort Lee BRAC EIS. Specific information is provided below.

Short- and long-term minor adverse effects on air quality would be expected from implementation of the No Action Alternative. Vehicle and fugitive dust emissions during facility construction and later operational emissions from generators, boilers, and other internal combustion sources associated with the 1,034-acre EOD training area would account for the adverse effect. No violations of federal, state, or local air regulations or Fort A.P. Hill's air operating permit would be expected.

### 3.4 NOISE

#### 3.4.1 Affected Environment

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics (intensity and frequency) of the noise, the distance between the noise source and the receptor, receptor sensitivity, and time of day. A scale relating sounds encountered in daily life to their approximate decibel values is provided in Table 3-4.<sup>5</sup>

**Table 3-4  
Common Sound Levels**

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

Source: Harris 1998.

Notes: dBA = A-weighted decibel (see footnote for explanation). Sound level provided is as generally perceived by an operator or a close observer of the equipment or situation listed.

#### 3.4.1.1 The Military Noise Environment and Land Use Compatibility

The military noise environment consists primarily of three types of noise: transportation noise from aircraft and vehicles, noise from firing at small-arms ranges, and impulsive noise from large-caliber weapons firing and demolition operations. Army Regulation 200-1 defines recommended limits to noise from Army activities for established uses of land (U.S. Army 1997b). Three noise zones are defined in the regulation:

- Zone I: Relatively quiet noise environment. Acceptable for housing, schools, medical facilities, and other noise-sensitive land uses. Zone I includes all areas not contained within Zone II or Zone III.
- Zone II: Moderately loud noise environment. Normally not recommended for housing, schools, medical facilities, and other noise-sensitive land uses. These noise-sensitive land

<sup>5</sup> The unit used to describe sound intensity is the *decibel* (dB); the unit for sound frequency is the *Hertz*. An *A-weighted decibel* (dBA) approximates the human frequency response to sounds to better express the perception of sound by people. Generally, a change in noise level of 3 dBA is barely perceptible to most listeners. *C-weighted decibels* (dBC) are similar to dBA, except they incorporate more low-frequency noise. C-weighting is predominately used to describe noise that has a component of rumble or the potential for noise-induced vibrations. It has been used traditionally to describe extreme impulse-type sounds, such as the sounds from large-caliber weapons firing and demolition operations (FICUN 1980).

uses are normally not recommended to be in this zone unless measures have been taken to attenuate interior noise levels.

- **Zone III: Loud noise environment.** Not recommended for housing, schools, medical facilities, and other noise-sensitive land uses.

The metric used in defining noise zones for small-arms ranges is *peak level* (dBP). Peak level is the maximum instantaneous sound level that occurs during an acoustic event. In the case of small arms, it is the maximum instantaneous sound level made by a given weapon at a given distance. Peak level for small-arms weapons is strongly correlated with community annoyance (Hede and Bullen 1982). Other metrics used by the Army to quantify the noise environment at Army installations are the *C-weighted and A-weighted day-night average sound levels* (CDNL and ADNL). *Day-night average sound level* (DNL) is a time-weighted average sound energy over a 24-hour period; a 10-dB penalty is added to the nighttime levels (10 p.m. to 7 a.m.). These characteristics make it a useful descriptor for continuous noise, such as a busy highway, aircraft noise, or the ongoing components of repetitious blast noise. Table 3-5 outlines noise limits and zones for land use planning for small arms firing, aircraft, and large-caliber weapons firing and demolition operations.

**Table 3-5  
Noise Limits for Noise Zones**

Noise zone	General Level of Noise	Small-arms	Aircraft (ADNL)	Large-Caliber Weapons (> 20 mm) and Demolition(CDNL)	Recommended Uses
I	Low	< 87 dBP	< 65 dBA	< 62 dBC	Noise-sensitive land uses acceptable
II	Moderate	87–104 dBP	65–75 dBA	62–70 dBC	Noise-sensitive land uses normally not recommended
III	High	> 104 dBP	> 75 dBA	> 70 dBC	Noise-sensitive land uses not recommended

Source: U.S. Army 2008.

### 3.4.1.2 **Potential for Complaints Regarding Large-Caliber Weapons and Demolition Noise**

The use of explosives and large-caliber weapons are common causes of complaint among people living near military installations. Community annoyance due to steady-state noise is typically assessed by averaging noise levels over a protracted period. This approach can be misleading because it does not assess community noise effects due to relatively infrequent, yet loud, impulsive noise events. For example, for a demolition range at which several hundred charges are detonated each year, peak sound levels can exceed 140 dB in areas where annual DNL values indicate that residential land use is recommended for the noise level (i.e., within the military's zone 1). Therefore, to better describe the noise environment, this section discusses individual acoustical events. Peak noise contours provide the absolute maximum sound level for an individual acoustical event, not an average over several events or over a period of time like the DNL. Although not a good descriptor of the overall noise environment like the DNL, peak levels better indicate the potential for concern and possibility of complaints among people living near the boundary of an installation after an individual event. Table 3-6 lists risk of noise complaints guidelines using peak noise levels for impulsive noise.

**Table 3-6**  
**Risk of Noise Complaints by Level of Noise**

<b>Risk of noise complaints</b>	<b>General description of individual demolition event</b>	<b>Large-caliber weapons (&gt; 20 mm) and demolition</b>
Low	Audible and distant	< 115 dBP
Medium	Clearly audible	115–130 dBP
High	Loud	130–140 dBP
Risk of structural damage claims	Very loud	> 140

Source: U.S. Army 2008.

### 3.4.1.3 Existing Ambient Noise Levels

The noise generated by military aircraft and weapons extends to areas outside the installation boundary. The noise from industrial-type operations and the movement of heavy military vehicles does not have a considerable effect on the surrounding civilian communities or military housing areas (USACHPPM 1999). Fort A.P. Hill, though not subject to local noise policies or ordinances, has no existing activities that conflict with local standards and guidelines related to human health and safety.

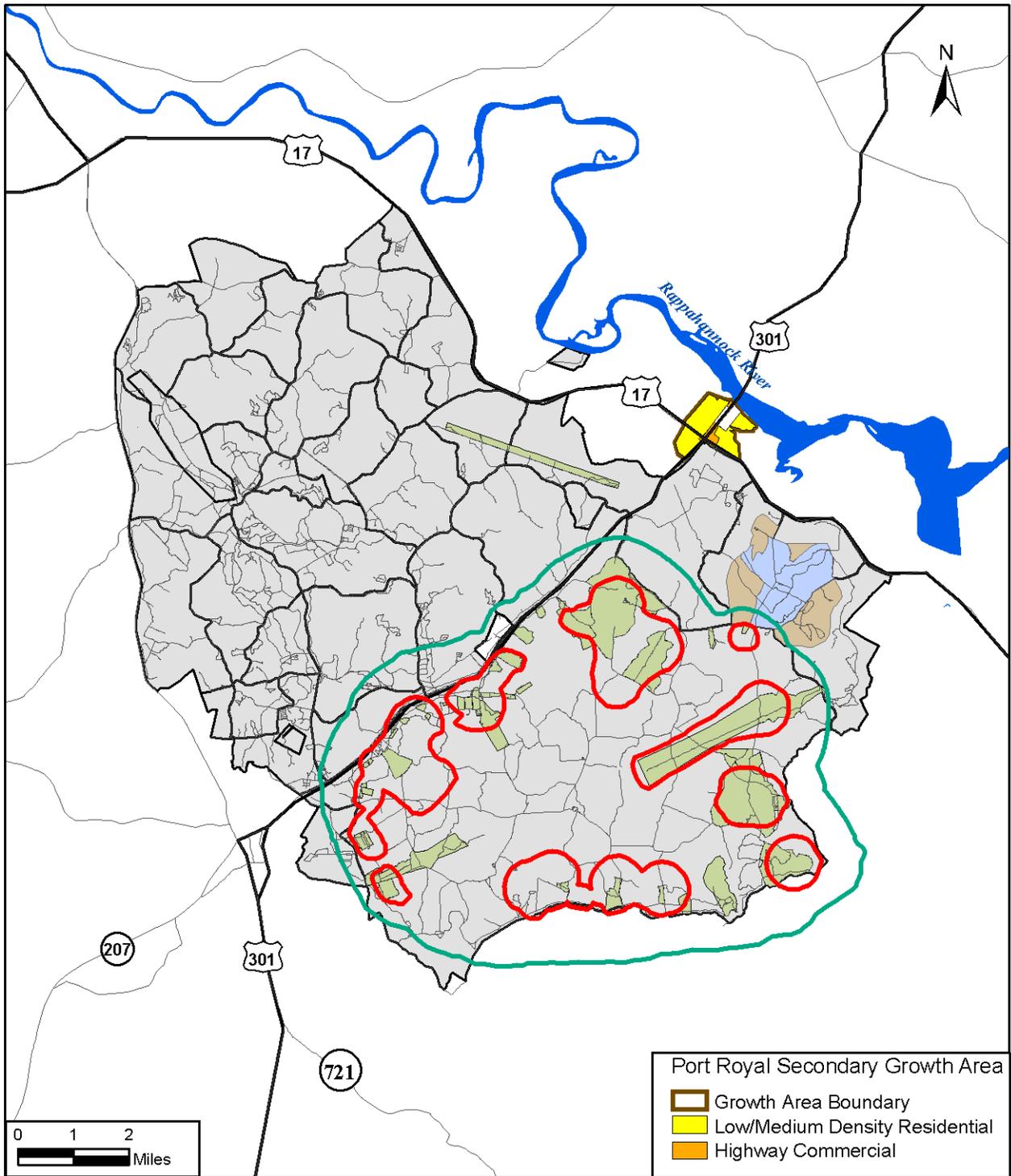
Fort A.P. Hill has one Army airfield, one drop zone (with one assault airstrip), and many authorized landing zones to support aviation training for rotary and fixed-wing aircraft. The Army airfield, on the southeast side of the main gate on Route 301, is used only for rotary-wing operations. Fixed-wing aircraft operations are conducted primarily at the drop zone, which is in the northwest portion of the installation. The daily number of operations at the Army airfield is low—fewer than 10 per day. Residents living near the installation in the Port Royal area (close to the proposed EOD area), along the eastern boundary (e.g., near Supply, Virginia), and near the northwest corner (e.g., near Long Branch and Corbin, Virginia) are exposed to aircraft noise at Fort A.P. Hill.

The existing small-caliber weapons noise contours are shown Figure 3-2.<sup>6</sup> The firing lines of small-arms ranges are at least 1,300 feet from any installation boundary, enough distance that people are not annoyed by small-arms fire. The small-arms noise zone II (see Table 3-5) extends beyond the eastern boundary about 0.7 mile, beyond the southern boundary 0.4 to 1 mile, and beyond the western boundary less than 0.2 mile. Noise zone III (see Table 3-5) extends beyond the southern boundary less than one-quarter mile.

The existing large-caliber weapons CDNL contours are shown in Figure 3-3. Large-caliber noise zone II extends beyond the southern boundary less than one-quarter mile. Noise zone III is completely contained within the installation boundary. During periods of intense training, the short-term CDNL at a particular range is larger than that depicted in Figure 3-3. Such periods of intense activity occasionally lead to complaints, particularly when artillery firing takes place at night. As expected, some noise complaints have been documented and investigated after large-caliber training events.

The existing large-caliber weapons peak level contours are shown in Figure 3-4. The existing 115-dBP contour extends beyond the northeastern and eastern boundary less than 1.5 miles and beyond the southern boundary less than 2 miles. The 130-dBP noise contour extends beyond the

<sup>6</sup> Common Army small arms are the M16 rifle (5.56-millimeter [mm] ammunition), the M240 (7.62 mm) and M249 (5.56 mm) machine guns, and the .50-caliber machine gun.



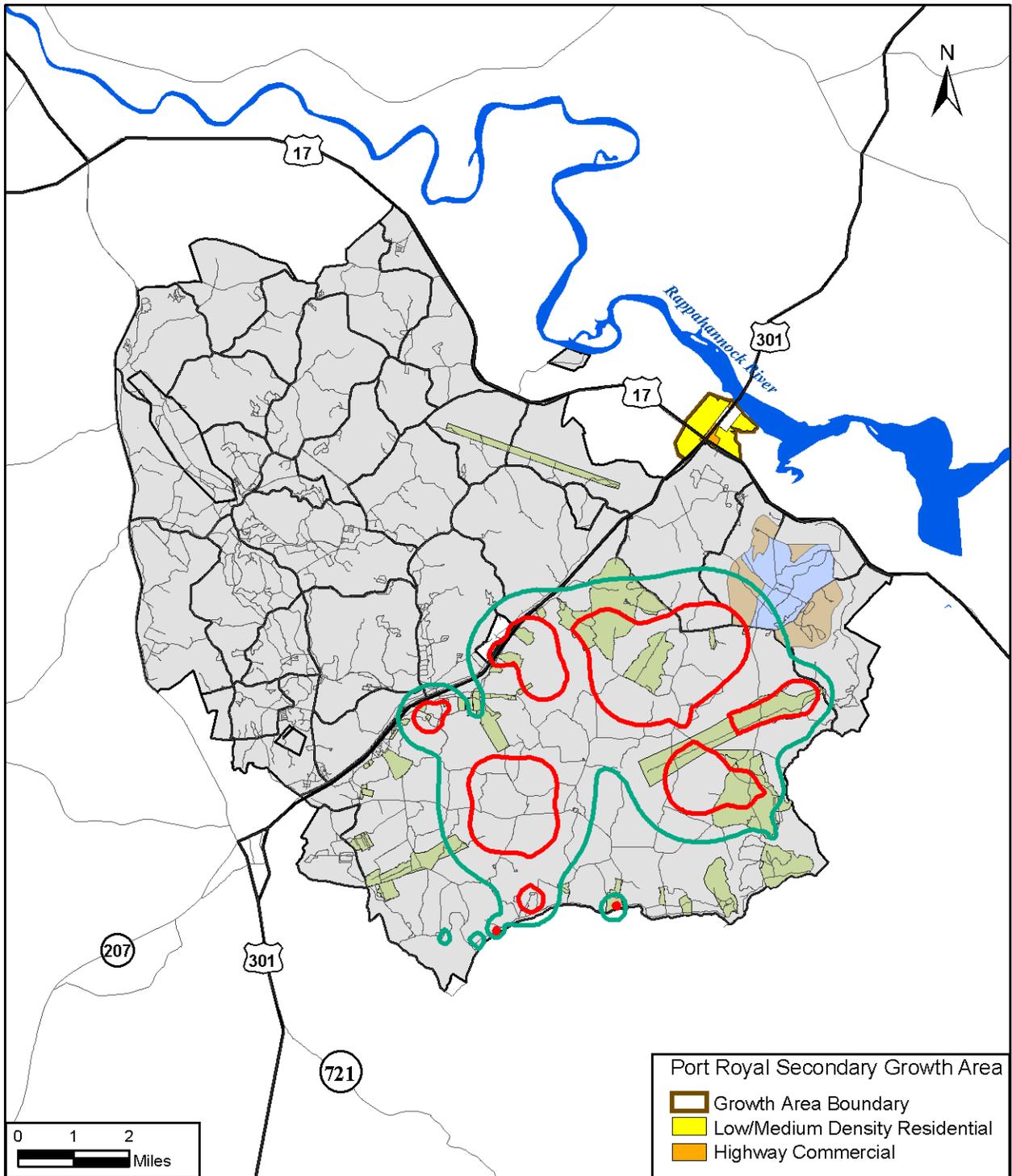
**LEGEND**

Installation Property	Surface Water
Road	<b>Noise Zones</b>
Live Fire Range	Zone II
1,034-acre EOD Site	Zone III
EOD Expansion Areas	

**Existing Small Arms  
Noise Contours**

**Figure 3-2**

Sources: Fort A.P. Hill GIS, 2006; USACHPPM, 2008.



**LEGEND**

Installation Property	Surface Water
Road	<b>Noise Zones</b>
Live Fire Range	Zone II
1,034-acre EOD Site	Zone III
EOD Expansion Areas	

**Existing Large Caliber and Demolitions Noise (CDNL) Contours**

**Figure 3-3**

Sources: Fort A.P. Hill GIS, 2006; USACHPPM, 2008.

southern boundary less than three-quarters of a mile. The contours indicate that there is a moderate probability of receiving noise complaints for these areas. Figure 3-5 shows peak noise contours for the Mine Clearing Line Charge (MICLIC). The MICLIC is detonated only a few times a year, if at all. It is shown as a separate item because of its size and infrequency. The contours indicate that there is a moderate probability of receiving noise complaints when the MICLIC is detonated. As expected, some noise complaints have been documented and investigated after MICLIC training events.

The installation has ongoing efforts to minimize noise due to operations. Aircraft no-fly zones have been established around Bowling Green, Port Royal, and a wildlife refuge; the minimum altitude for military aircraft flying over land adjacent to the boundary is 1,200 feet above ground level; and helicopter traffic is routed along the boundary rather than over private property. Small-arms ranges have been located to provide adequate distance from the installation boundary such that the weapons fired should not disturb neighbors. To protect its neighbors from annoying levels of demolitions noise, Fort A.P. Hill imposes weight limits on its demolition ranges. All demolitions training is restricted to less than or equal to 100-lb equivalent trinitrotoluene (TNT). This limit drops to 50-lb equivalent TNT at dusk or in overcast and cloudy conditions when noise can propagate more readily. Exceptions to these limits are granted case by case. In addition, the MICLIC is fired toward the north to ensure that the higher noise levels that come from the side of the MICLIC are not directed toward the nearest homes (USACHPPM 1999).

### **3.4.2 Environmental Consequences**

The following is a discussion about the changes in the noise environment due to the proposed action. Effects would be considered minor unless the areas in noise zone III (high levels of noise not recommended for noise-sensitive land uses) were to increase substantially. Additional information on the potential risk of complaint after individual acoustic events, and the effects of vibrations on historic structures is included to better characterize the proposed action with respect to noise.

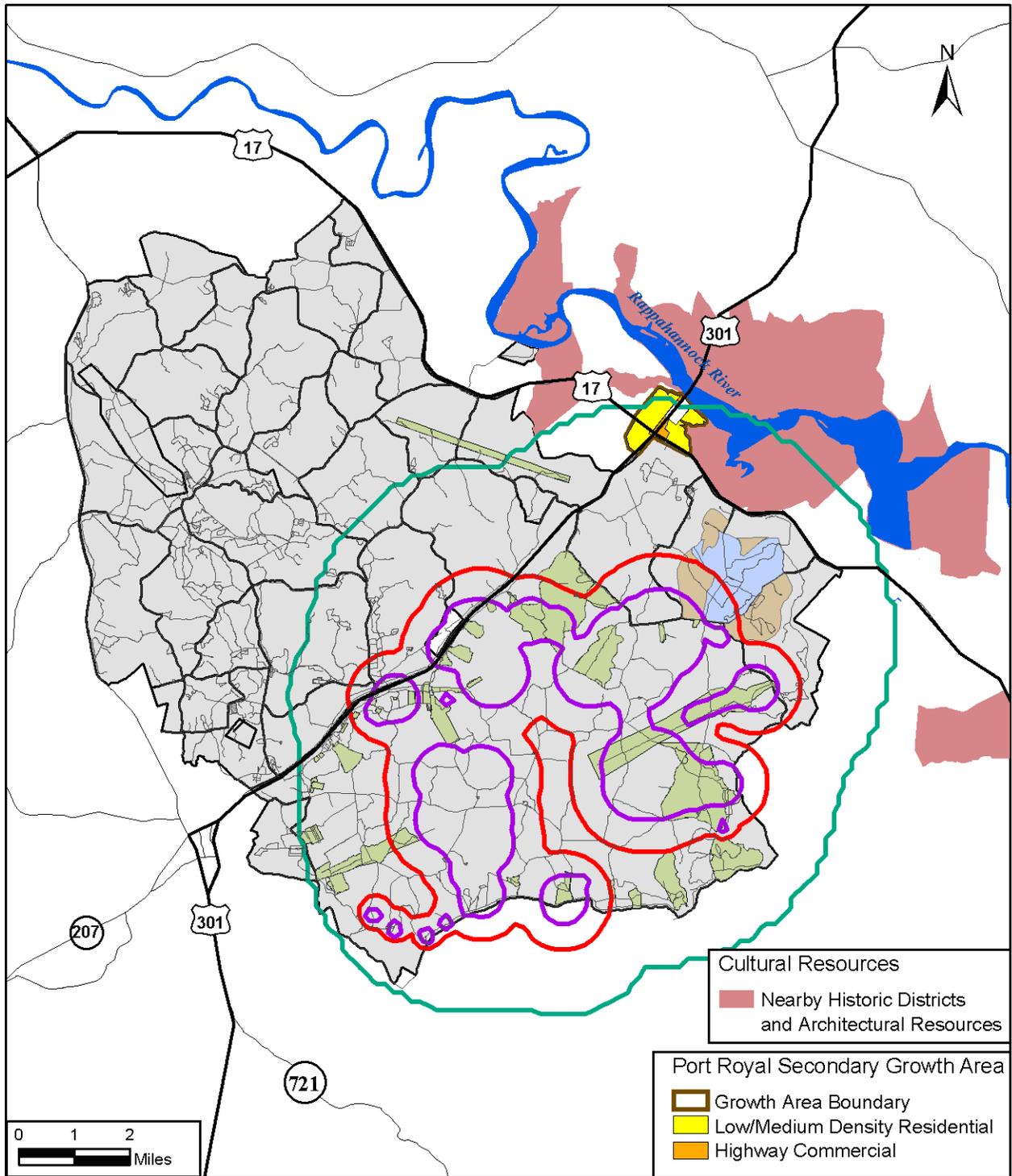
#### **3.4.2.1 Proposed Action**

Short- and long-term minor adverse effects on the noise environment would be expected with implementation of the proposed action. The effects would be primarily due to heavy equipment noise during construction and the operation of the proposed EOD range.

##### **Noise from Construction Activities**

The zone of relatively high construction noise typically extends 400 to 800 feet from the site of major equipment operations. Locations more than 1,000 feet from construction sites seldom experience noteworthy levels of construction noise. Given the temporary nature of proposed construction activities and the limited amount of noise that construction equipment would generate, this effect would be considered minor (USEPA 1971).

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



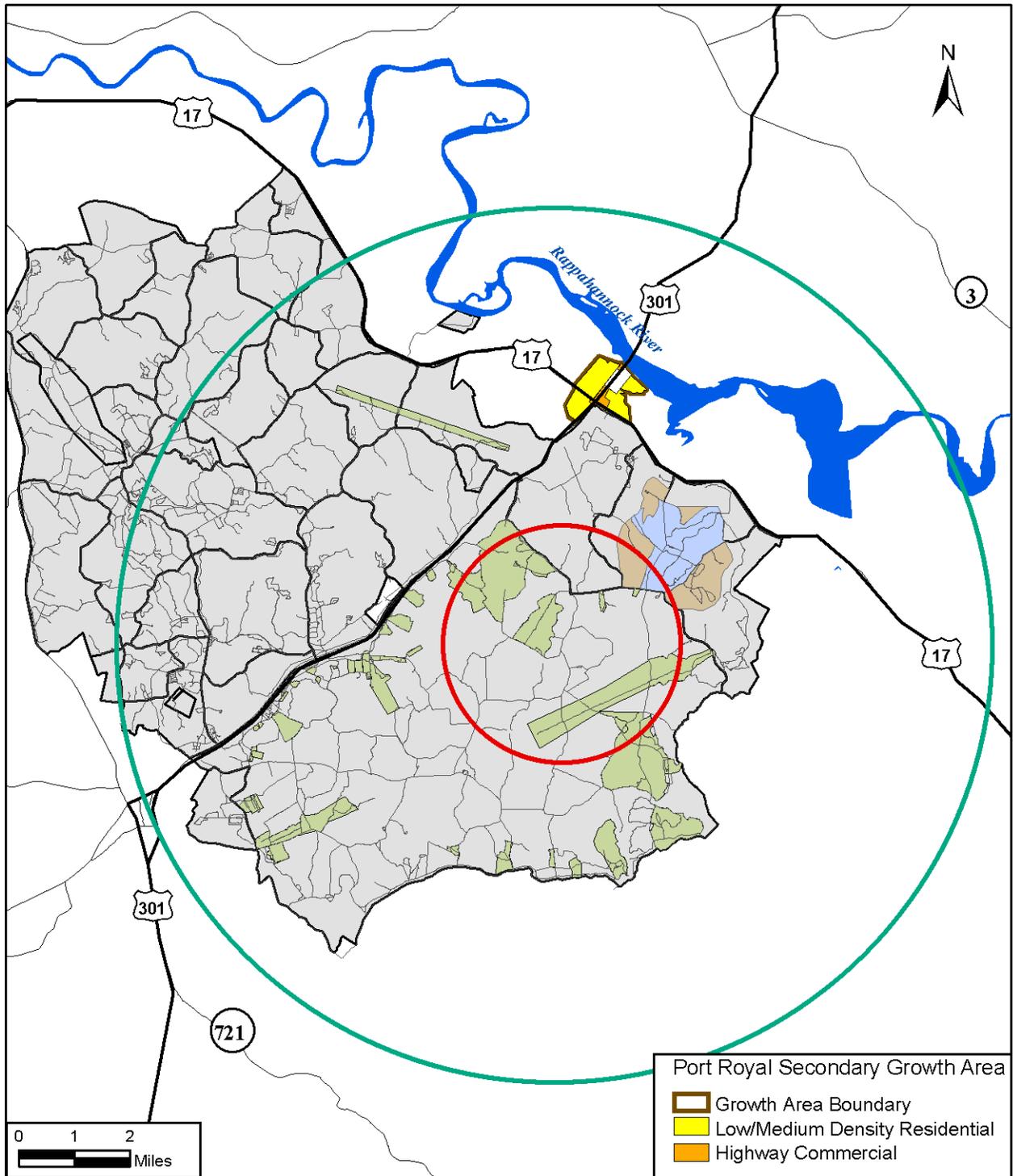
**LEGEND**

Installation Property	Noise Zones 115 dB
Road	Noise Zones 130 dB
Live Fire Range	Criteria for Damage Claim Evaluation (140dB)
1,034-acre EOD Site	
EOD Expansion Areas	

## Existing Large Caliber and Demolitions Noise (Peak Level) Contours

Figure 3-4

Sources: Fort A.P. Hill GIS, 2006; USACHPPM, 2008.



**LEGEND**

Installation Property	Surface Water
Road	<b>Noise Zones</b>
Live Fire Range	115 dB
1,034-acre EOD Site	130 dB
EOD Expansion Areas	

**Existing Mine Clearing Line  
Charge Noise (Peak Level) Contours**

**Figure 3-5**

Sources: Fort A.P. Hill GIS, 2006; USACHPPM, 2008.

### Noise from Aircraft and Small-Arms Activities

The proposed action would not introduce new aircraft training, new small-arms ranges, or changes in small-arms weapons used at Fort A.P. Hill. Therefore, both aircraft noise and small-arms range noise would remain as described in section 3.4.1.

### Noise from Proposed EOD Range Activities

The proposed enlarged EOD field training area would facilitate demolitions training with TNT charges of 50 lbs or less. The types and number of charges expected to be used under the proposed action are outlined in Table 3-7. Notably, nighttime activities would be limited to 0.5-lb charges.

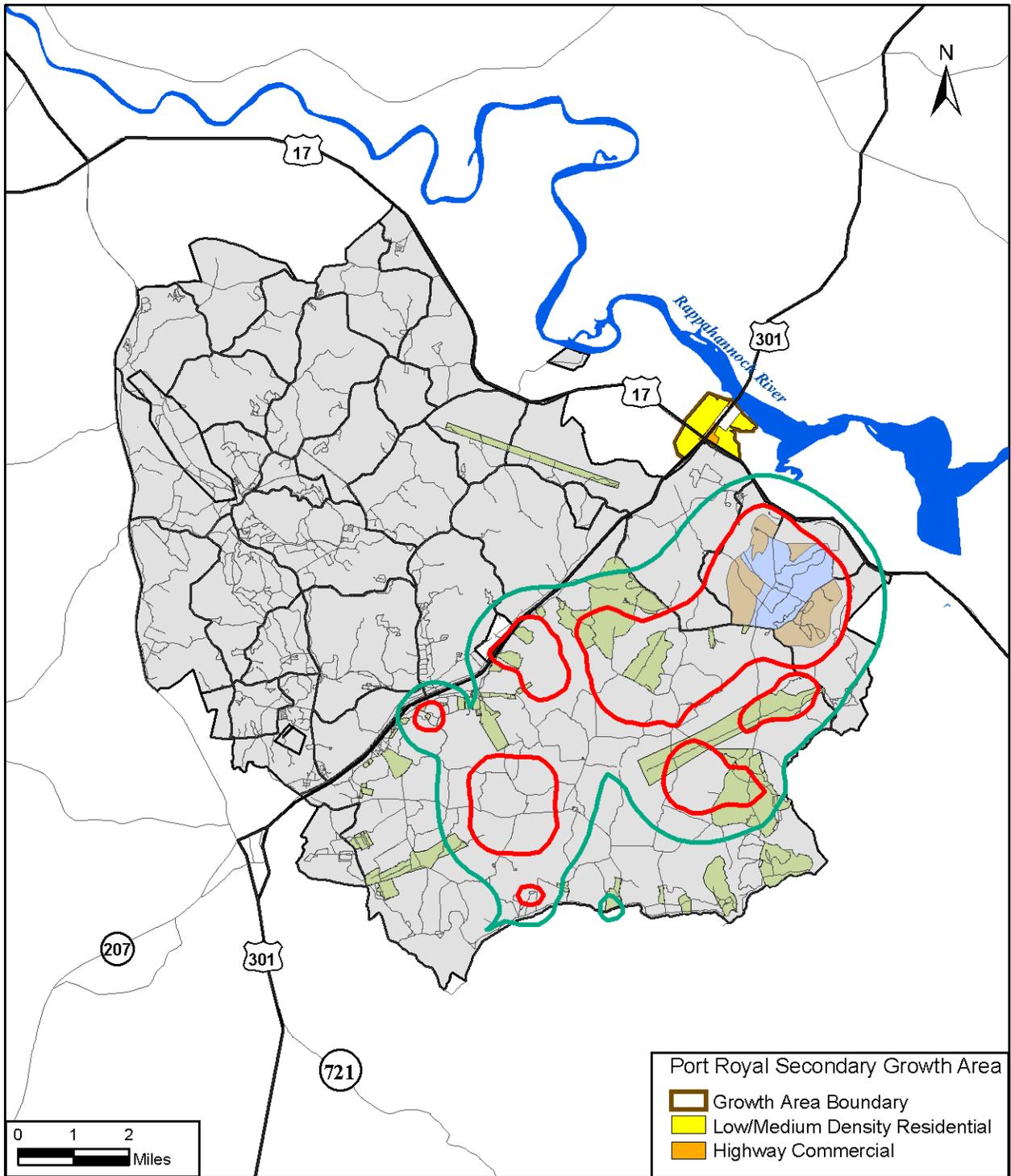
**Table 3-7  
New Demolitions Charges Due to the Proposed Action**

Size of charge	TNT equivalent weight (lb)	Frequency (charges/year)	
		Daytime (7 a.m.– 11 p.m.)	Nighttime (11 p.m.– 7 a.m.)
Small	0.5	8,200	800
	0.25	3,447	0
Medium	1.25	3,970	0
	2.5	1,242	0
Large	25	276	0
	50	40	0

Note: (1) Demolition activity restricted to 5 lbs or less after 10 p.m. (2) Assumed no large charges and 5% of medium charges occur between 10 p.m. and 11 p.m. (3) Nighttime activity would not include any large or medium charges.

The average-weighted (CDNL) contours with the implementation of the proposed action are shown in Figure 3-6. With the proposed action, noise zone III (high levels of noise) would not extend beyond the borders of the installation. Noise zone II (moderate levels of noise) would extend beyond both the northern and eastern boundaries about 0.6 mile, in addition to extending about 0.2 mile beyond the southern boundary. Persons within these areas would be exposed to louder and more frequent noise than they are now. Areas off the installation that would newly fall within noise zone II are low-density residential, undeveloped, or agricultural areas; there is no substantial growth anticipated for these areas (Caroline County 2001); and the proposed action would create only a minor increase in land within the military noise zone normally not recommended for residential use. Therefore, impacts on the noise environment would be minor.

The proposed action would introduce about 316 demolition training activities greater than or equal to 25 lb. The demolition peak noise contours for the proposed action are shown in Figure 3-7. There would be a medium risk of noise complaints within the 130-dBP noise contour. With the proposed action, that contour would extend about 0.7 mile beyond the eastern boundary of the installation. There would be a low risk of noise complaints within the 115-dBP noise contour. With the proposed action, that contour would extend about 3.5 miles (about 2 miles farther than existing conditions) off the eastern boundary of the installation. Although moderately loud, demolitions using 25 lb or more of explosives would be infrequent and changes in the overall noise environment (CDNL) would result in only a minor increase in land within the military noise

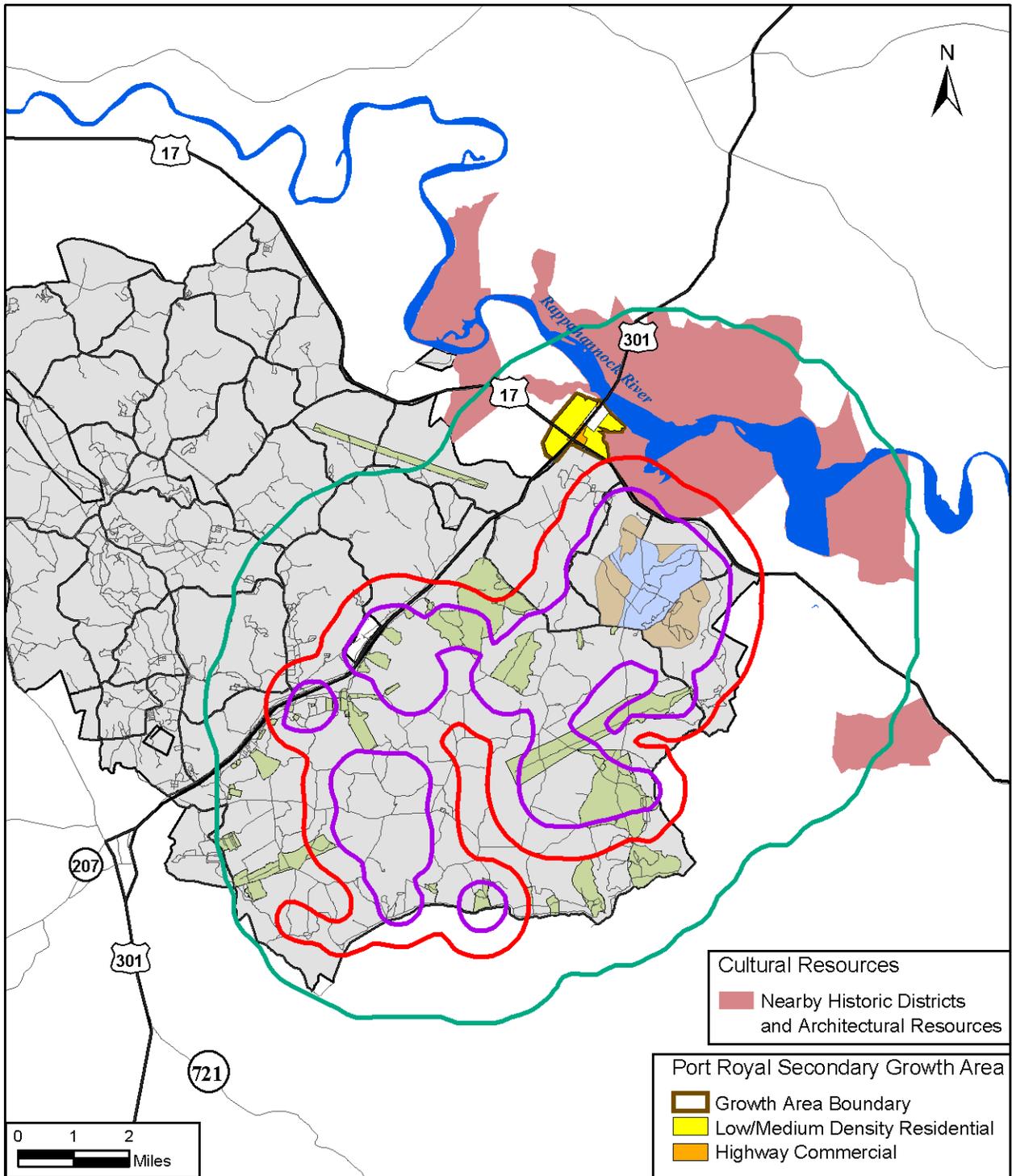


**LEGEND**  
 Installation Property  
 Road  
 Live Fire Range  
 1,034-acre EOD Site  
 EOD Expansion Areas  
 Surface Water  
 Noise Zones  
 Zone II  
 Zone III

**Proposed Action Large Caliber and Demolitions Noise (CDNL) Contours**

**Figure 3-6**

Sources: Fort A.P. Hill GIS, 2006; USACHPPM, 2008.



**LEGEND**

Installation Property	<b>Noise Zones</b>
Road	115 dB
Live Fire Range	130 dB
1,034-acre EOD Site	Criteria for Damage
EOD Expansion Areas	Claim Evaluation (140dB)

**Proposed Action Large Caliber and Demolitions Noise (Peak Level) Contours**  
**Figure 3-7**

Sources: Fort A.P. Hill GIS, 2006; USACHPPM, 2008.

zone normally not recommended for residential use. Therefore, impacts on the noise environment would be minor.

The proposed action would introduce about 800 demolition training activities equal to 0.5 lb at the proposed EOD range during nighttime hours (11 p.m. to 7 a.m.). On average, two or three of these small charges (0.5 lb) per night would be detonated at different training sites. Depending on weather conditions and the training sites used for nighttime detonations, areas adjacent to the installation boundary could be exposed to training noise that would vary from clearly audible (>115 dBP) to, more rarely, loud (>130 dBP).

The Peumansend Creek Regional Jail is on a parcel completely surrounded by Fort A.P. Hill. It is about 4 miles west of the proposed enlarged EOD range (surrounded by Fort A.P. Hill property) and adjacent to existing ranges. The overall noise environment at the jail would not be expected to change with the implementation of the proposed action (Figures 3-6 and 3-7). Nighttime operations under the proposed action would be limited to 0.5-lb charges, and at that distance they would not likely interfere with normal jail operations.

Demolition noise is expected to dominate the soundscape for all on-range personnel. Army personnel would wear adequate personal hearing protection to limit exposure and ensure compliance with federal health and safety regulations.

### **Vibration from EOD Range Activities**

The impulsive sound pressure from firing large weapon systems and detonating explosive charges can cause structures to vibrate. This vibration is perceived by occupants as the rattling of loose windows and objects on shelves. In the past, homeowners in the historic district of Port Royal have expressed concern about vibration causing damage to their residences in the Historic District of Port Royal. This section addresses the two types of vibrations that would occur with implementing the proposed action: airborne and ground-borne vibration.

***Airborne Vibrations.*** Damage caused by airborne vibrations would be primarily fractured window glass. Damage such as plaster cracking is very rare, and when it occurs it is always accompanied by window breakage. The threshold level used to evaluate window damage claims against the Army is 140 dBP (U.S. Army 2008) (Table 3-6). Below this level, airborne vibrations do not have sufficient energy to damage structures.

The 140-dBP noise contour would extend approximately 0.1 mile off the eastern boundary of the installation, encompassing about 35 acres of land in two small areas and a single residence (Figure 3-7). These areas are low-density residential, undeveloped, or agricultural. Individual demolition events would be loud and have a remote chance of causing structural damage (cracking a window) in these areas.

The Port Royal Historic District lies between the 115 dBP and the 130 dBP noise contours (Figure 3-7). As such, the worst-case peak sound level expected in the district would be between these noise levels, or about 125 dBP. This is enough to introduce vibration levels just barely perceptible to people, though it is also great enough to generate concern from homeowners (Siskind 1989). The level of airborne vibration expected with implementation of the proposed action would not be great enough to cause physical damage to structures outside the installation, including structures within the Port Royal Historic District.

Since 1996, the installation has received three claims of structural damage to houses in the Port Royal area. These claims were not within the downtown Port Royal Historic area. In 1997, the Army performed vibration measurements and a structural survey in response to a reported claim near the MICLIC site. During the survey, it was determined that the vibrations from worst-case demolition events (250-, 315-, and 1,700-lb charges) were only a fraction of what would be necessary to cause a window to crack (USACHPPM 1997). Demolitions under the proposed action would be limited to 50-lb charges—much smaller than the smallest charge used during the survey.

**Ground-borne Vibration.** The effects of ground-borne vibrations on structures in the Port Royal Historic District would be negligible. Although house shaking is commonly blamed on ground-borne vibration, the effects of vibration due to demolition-type activities on structures are predominantly related to airborne vibration—the dominant cause of vibrations beyond about 250 feet from detonation points. For a 100-lb charge, ground-borne vibration would be the dominant cause of house vibration only for houses less than 500 feet from the detonation point. The training activities under the proposed action would be limited to charges of no more than 50 lb.

### **Best Management Practices**

The new demolition activities would comply with existing noise-control policies and procedures. The installation Environmental Noise Management Plan that outlines all efforts to minimize noise and is updated every 5 years. Measures in the plan include complaint management and investigation, community outreach and education, pre-notification for unusually loud events, and the Installation Compatible Use Zone Program (USACHPPM 1999).

As part of the Environmental Noise Management Plan, Fort A.P. Hill has a 100 lb limit for demolitions at the installation. The largest charge for the proposed operations would be 50 lb, and it would be detonated relatively infrequently (about 40 times per year). This would be much lower than the 100 lb limit.

If necessary, Fort A.P. Hill would expand the perimeter noise monitoring system to add a noise monitor in the area of concern. The monitors would allow the installation to evaluate operations under varied weather conditions and assess how noise levels can affect neighbors off-post. Mission permitting, locations or scheduling of training activities could be adjusted to lower off-post noise levels. The installation would continue to promote an open dialogue with neighboring localities, including rezoning reviews; education and outreach with local communities; and a comprehensive, proactive noise-complaint management program.

### **Cumulative Effects**

Within the same time frame as the proposed action, there are two reasonably foreseeable actions that, when combined with the proposed action, might have cumulative effects on the noise environment surrounding Fort A.P. Hill: establishment of the AWG training range complex and establishment of the NSWECE. These are described in more detail below.

The AWG training range complex would consist of one indoor firing range, one 800-meter (875-yard) firing range, and one demolition range for AWG mission-essential training. The indoor firing range and 875-yard firing range would be internal to the installation and would not introduce training activities that would change the small-arms peak noise contours off the installation. The proposed AWG demolition range would be near the proposed EOD range in the eastern portion of the installation within the borders of Training Area 25C east of Route 301 and North Range Road.

The proposed NSWECE would include an administrative area, a training area, and a demolition area in three separate areas. The area for demolition training would be used for explosive charges up to 35 lb.

The average-weighted (CDNL) contours for the proposed action and establishment of the additional ranges are shown in Figure 3-8. With the combined activities, noise zone III (high levels of noise) would not extend beyond the borders of the installation. Noise zone II (moderate levels of noise) would extend beyond the eastern boundary about 0.7 miles into predominantly undeveloped and low-density residential areas, increasing slightly the amount of land within the military noise zone normally not recommended for residential use. Therefore, cumulative impacts on the noise environment surrounding Fort A.P. Hill would be minor. Fort A.P. Hill prepared separate environmental assessments for the proposed AWG and NSWECE actions (FAPH 2006; FAPH 2008).

The peak noise contours with the proposed action and the establishment of the other ranges are shown in Figure 3-9. The 140-dBP and 130-dBP noise contours for the combined activities (AWG, NSWECE, and the proposed action) would be the same as those for the proposed action alone. The 115-dBP noise contour would extend 2.83 miles of the eastern installation boundary; farther north along Route 17. There would be a low risk of noise complaints within these additional areas within 115-dBP noise contour. This extension of the 115-dBP contour would result from the NSWECE action, with or without the establishment of the EOD range. The likely increase in noise-related complaints would be considered a minor cumulative effect.

The cumulative condition for airborne vibrations (the 140-dBP noise contour) would be the same as that for the proposed action.

### **3.4.2.2 No Action Alternative**

**Incorporation.** This EA incorporates by reference the noise discussion related to the 1,034-acre EOD training area contained in the Fort Lee BRAC EIS. Specific information is provided below.

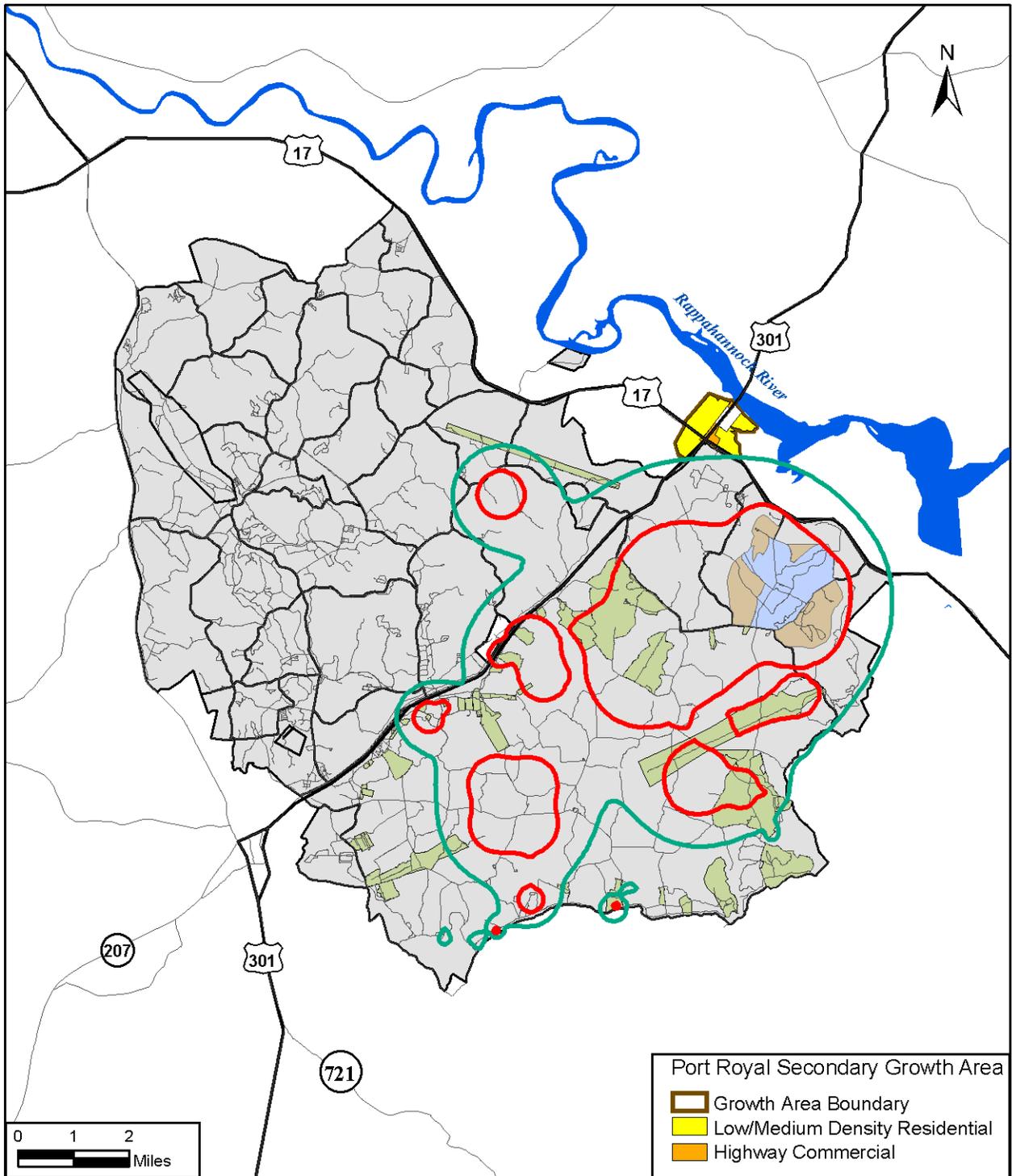
Short- and long-term minor adverse effects on the noise environment would be expected with the implementation of the No Action Alternative. The effects would be due to heavy equipment noise during construction and the operation of the proposed 1,034-acre EOD area.

## **3.5 GEOLOGY AND SOILS**

### **3.5.1 Affected Environment**

#### **3.5.1.1 Geologic and Topographic Conditions**

Fort A.P. Hill is in the Atlantic Coastal Plain Physiographic Province. Land features on the installation range from smooth uplands and plateaus to V-shaped stream valleys and ravines that rise abruptly from floodplains. The dominant geomorphic process is active riverine erosion of surface land features, such as rolling terrain that has been influenced by the effects of fluvial dissection by rivers and streams and deposition during overbank flooding. The elevations on Fort A.P. Hill vary considerably—from 10 feet above mean sea level in the northeast to 242 feet above mean sea level at the intersection of A.P. Hill Drive and Shackleford Road (Paciulli, Simmons & Associates 2004).



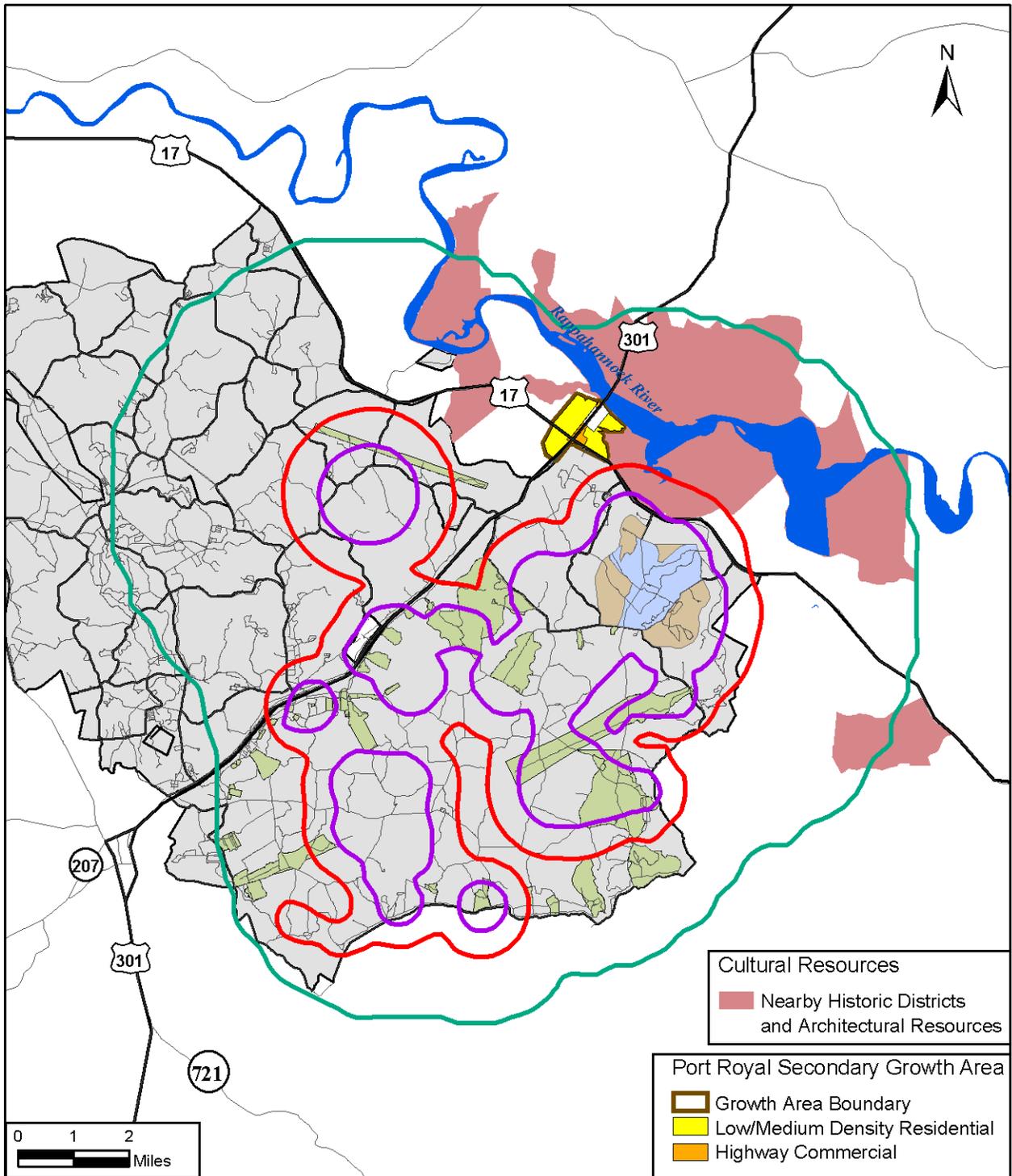
**LEGEND**

Installation Property	Surface Water
Road	<b>Noise Zones</b>
Live Fire Range	Zone II
1,034-acre EOD Site	Zone III
EOD Expansion Areas	

**Cumulative Large Caliber and Demolitions Noise (CDNL) Contours**

**Figure 3-8**

Sources: Fort A.P. Hill GIS, 2006; USACHPPM, 2008.



**Cumulative Large Caliber and Demolitions Noise (Peak Level) Contours**  
**Figure 3-9**

Sources: Fort A.P. Hill GIS, 2006; USACHPPM, 2008.

### 3.5.1.2 Soils

There are 26 unique soil series on Fort A.P. Hill, three of which comprise most of the soil types within the proposed enlarged EOD field training area (FAPH GIS 2008, USDA 2006). These predominant soil series are briefly described below. The soil types within these series are listed on Table 3-8, along with ratings of suitability for particular uses.

**Table 3-8**  
**Soil Series on the Proposed EOD Field Training Area at Fort A.P. Hill**

Soil Type	Map Symbol	Prime Farmland	Dwellings with basements	Dwellings without basements	Septic tank absorption fields	Local roads	Approximate Percentage of Proposed EOD	Approximate Acreage in Proposed EOD
Kempsville-Emporia-Remlik complex, 15 to 50 percent slopes	10E	No	VL	VL	VL	VL	47%	1040
Kempsville-Emporia complex, 6 to 10 percent slopes	11C	SI	SL	SL	SL	SL	25%	550
Kempsville-Emporia complex, 2 to 6 percent slopes	11B	Yes	NL	NL	SL	NL	15%	330
Wickham fine sandy loam, 2 to 6 percent slopes, very rarely flooded	29B	Yes	VL	VL	VL	SL	5%	110
Altavista fine sandy loam, 2 to 6 percent slopes, very rarely flooded	1B	Yes	VL	VL	VL	SL	3%	75
Nevarc sandy loam, 15 to 50 percent slopes	13E	No	VL	VL	VL	VL	1%	30
Bibb-Chastain complex, 0 to 2 percent slopes, frequently flooded	4A	No	VL	VL	VL	VL	1%	25
Slagle-Kempsville complex, 2 to 15 percent slopes	21C	SI	SL	SL	VL	SL	1%	20
Altavista fine sandy loam, 0 to 2 percent slopes, very rarely flooded	1A	Yes	VL	VL	VL	SL	<1%	15
Chastain silt loam, 0 to 2 percent slopes, very rarely flooded	7A	No	VL	VL	VL	VL	<1%	14
Wehadkee silt loam, 0 to 2 percent slopes, frequently flooded	28A	No	VL	VL	VL	VL	<1%	4

Note: NL = not limited, SI = Farmland of Statewide Importance, SL = somewhat limited, VL = very limited.

- *Kempsville*. Kempsville is moderately steep to very steep and very deep. Typically, the surface layer is sandy loam from 7 to 17 inches thick with a moderately low content of organic matter. The seasonal high water table is at a depth of more than 6 feet.
- *Wickham*. Wickham is nearly level to moderately steep, well-drained soil on stream terraces. The surface layer is fine sandy loam about 6 inches thick. The subsoil is from 6 to 50 inches thick; it is sandy clay loam in the upper and middle part and sandy loam in the lower part. From 50 to 78 inches, it is sand and loamy sand. Slopes range from 0 to 25 percent.

- *Altavista*. *Altavista* is moderately well drained, nearly level, and gently sloping soil on stream terraces and old floodplains. The surface layer is fine sandy loam about 8 inches thick. The subsurface layer is fine sandy loam 4 inches thick. The subsoil extends to 42 inches and is clay loam and sandy clay loam in the upper 20 inches and sandy loam in the lower 7 inches. Slopes are 0 to 6 percent.

The Chastain loam soil series that occurs on the proposed EOD field training area is considered hydric and prone to ponding. This series is present on small portions of the floodplains of tributaries of Mill Creek along the western boundary of the site. Three of the soil types are highly erodible, and four are potentially highly erodible.

### **3.5.1.3 Prime Farmland Soils**

Prime farmland soils are protected under the Farmland Protection Policy Act of 1981 (7 CFR Part 658).

Fort A.P. Hill has 17 soil series identified as prime farmland. Of the soils that occur on the proposed EOD area, prime farmland soils include soils in the Kempsville, Wickham, and *Altavista* soil series (USDA 2006). The proposed enlarged EOD area contains about 512 acres of prime farmland soils and 548 acres of prime farmland soils of statewide importance.

## **3.5.2 Environmental Consequences**

### **3.5.2.1 Proposed Action**

Short- and long-term minor adverse effects on soils would be expected during construction and operation under the proposed action. The effects would primarily occur during removal of vegetation during construction activities, temporarily exposing soils and potentially increasing soil erosion and sediment runoff rates. Continual explosives training would result in long-term soil disturbance at detonation sites, and firing points would be designed to limit the potential for soil loss and storm water runoff. No effects on geology or topography would occur, and because of the long-term use of the area for military purposes, areas with prime farmland soils would not qualify as prime farmland and no violation would occur under the Farmland Protection Policy Act. Because of the highly variable topography of the site, a moderate amount of grading and site development would occur; however, existing contours would be followed wherever possible to minimize excavation and grading. Tree and brush clearing would be limited to those areas required for access roads to training sites and the training sites themselves. The amount of site clearing estimated to support the proposed action is about 278 acres (U.S. Army 2007b).

Fort A.P. Hill would obtain storm water construction permit coverage for these projects from the Virginia Department of Conservation and Recreation (VDCR) under the Virginia Stormwater Management Program (VSMP). A site-specific storm water pollution prevention plan would be developed and implemented in accordance with the VSMP general construction permit, and an erosion and sediment control plan would be developed in accordance with Virginia's Erosion and Sediment Control law and regulations. Areas with slopes of 6 percent or greater are designated Highly Erodible Land, and they would be avoided for development to the maximum extent practicable (USACE Mobile District 2007).

### **Best Management Practices**

Best management practices, including limiting land disturbance on each affected area to no more than what is necessary for the desired use, using temporary crossing bridges or mats to minimize

soil compaction, and following erosion and sediment control measures for storm water control, would adequately limit the adverse impact of the proposed action on soils.

### **Cumulative Effects**

No cumulative effects on geology or soils would be expected.

#### **3.5.2.2 No Action Alternative**

***Incorporation.*** This EA incorporates by reference the geology and soils discussion related to the 1,034-acre EOD training area contained in the Fort Lee BRAC EIS. Specific information is provided below.

Short- and long-term minor adverse effects on soils would occur under the No Action Alternative. No effects on geology, topography, or prime farmland would occur with construction and operation of the 1,034-acre EOD area. All disturbed areas would be stabilized and revegetated before construction activities were completed. Roads, parking areas, and other constructed facilities would have gravel or another suitable surface treatment that would minimize soil loss due to erosion. Use of the area for explosives training would result in continual soil disturbance at detonation sites throughout the life of the training area. Erosion control measure would be implemented in accordance with an erosion and sediment control plan developed for the project to control soil loss during construction and the training area's long-term operation.

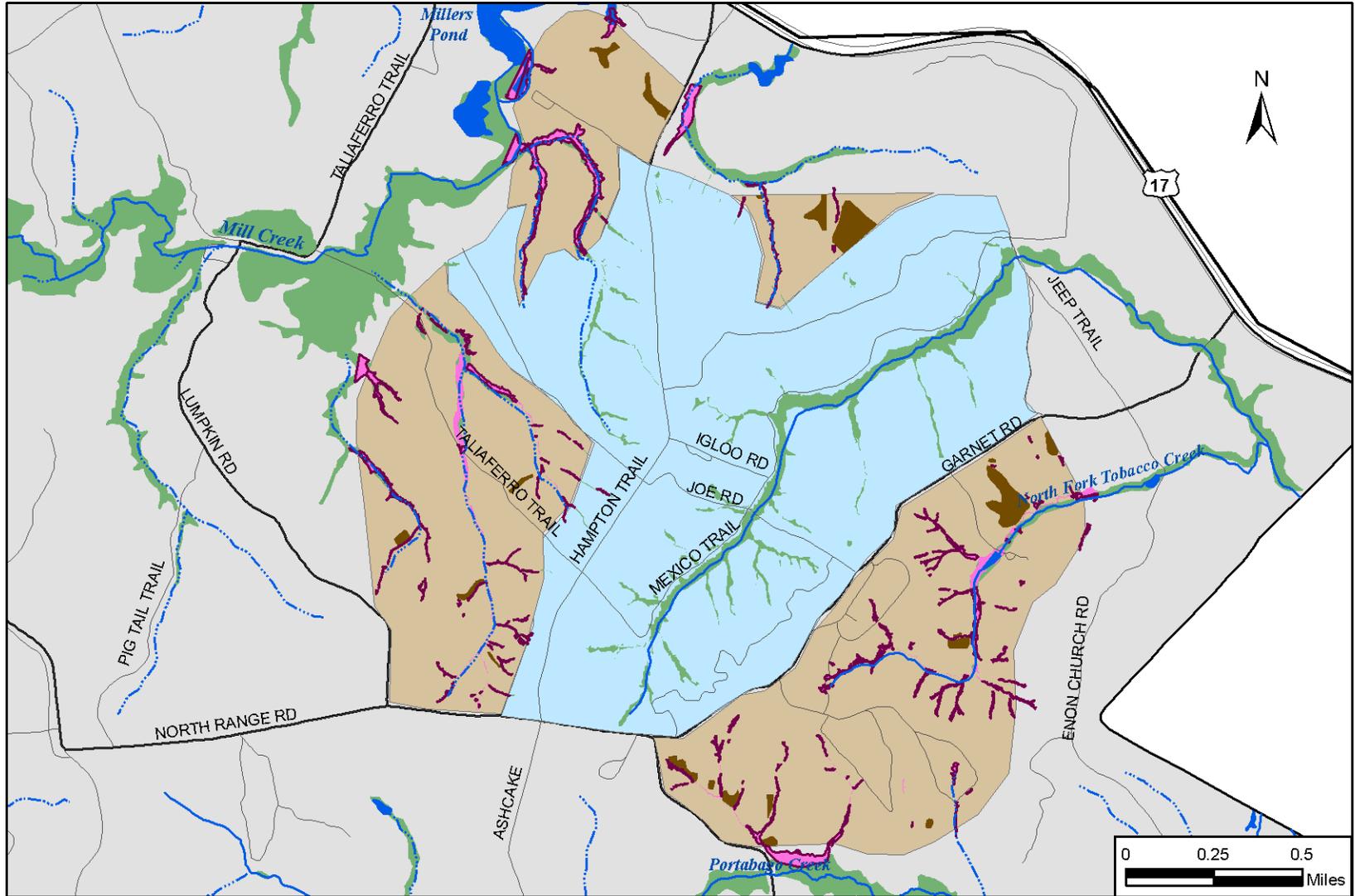
## **3.6 WATER RESOURCES**

### **3.6.1 Affected Environment**

#### **3.6.1.1 Surface Water**

The northern portion of Fort A.P. Hill is drained by tributaries of the Rappahannock River, and the southern portion is drained by tributaries of the Mattaponi River. Both rivers ultimately drain to the Chesapeake Bay. The proposed enlarged EOD field training area is in the northern and eastern portion of Fort A.P. Hill within the Rappahannock River drainages. Figure 3-10 shows the surface water features of the proposed EOD field training area at Fort A.P. Hill.

The eastern portion of the proposed EOD field training area is in the Portabago Creek watershed. Most of this portion is drained by two perennial tributaries of Portabago Creek (FAPH GIS 2006). The first of the tributaries, North Fork Tobacco Creek, lies about 0.25 mile east of Garnet Road and flows generally northeastward, roughly paralleling Garnet Road, through the eastern part of the proposed enlarged EOD area. The second tributary flows northeastward, following closely along Mexico Trail. This tributary is unnamed in several sources (FAPH GIS 2008; VDEQ 2008a), but it is labeled Boutell's Creek in a 2006 Archaeological Assessment report (Versar 2006). These two creeks merge outside the eastern EOD site boundary, east of the intersection of Garnet Road and Enon Church Road within the Fort A.P. Hill installation boundary. The merged tributary continues for about another 0.25 mile eastward to its confluence with Portabago Creek outside Fort A.P. Hill (USACE Mobile District 2007, VDEQ 2008a). From there, Portabago Creek flows eastward and northward for about 3 miles to its confluence with the Rappahannock River. The southeastern portion of the proposed EOD field training area drains south directly to Portabago Creek.



**LEGEND**

- |                       |                          |                               |
|-----------------------|--------------------------|-------------------------------|
| Installation Property | Surface Water            | Intermittent Stream           |
| 1,034-acre EOD Site   | Wetland (NWI)            | Perennial Stream              |
| EOD Expansion Areas   | Wetland (Field Verified) | Swamp Pink Habitat            |
|                       |                          | Small Whorled Pogonia Habitat |

# Surface Water and Biological Resources

Figure 3-10

Source: Fort A.P.Hill GIS, 2006, 2008.

The northern and western portion of the proposed enlarged EOD field training area is in the Mill Creek watershed. Mill Creek flows generally northward outside the western boundary of the proposed EOD area (Figure 3-10), flows through Millers Pond (WSSI 2008), crosses U.S. Route 17 at the boundary of Fort A.P. Hill, and then continues north about another 0.75 to 1 mile to its confluence with the Rappahannock River (VDEQ 2008a). Surface drainage in this part of the EOD area flows northward and westward through several small unnamed intermittent and perennial streams and wetlands whose drainages reach Mill Creek outside the EOD area (FAPH GIS 2008; WSSI 2008).

**Water Quality.** The Fort A.P. Hill Integrated Natural Resources Management Plan (INRMP) (FAPH 2000) states that the water quality of the streams, ponds, and lakes within the installation is generally within the expected range for coastal plain water bodies. Water quality data for the lower Rappahannock River indicate that the watershed encompassing Caroline County meets the goals of the Clean Water Act (USACE Mobile District 2007). Streams that could be affected most directly by the proposed enlarged EOD area are Mill Creek and Portabago Creek and their associated tributaries. Neither Mill Creek nor Portabago Creek is identified on Virginia's 2006 303(d) list of impaired waters as having violated Virginia water quality standards (VDEQ 2008b). The VDEQ surface water quality monitoring stations closest to the EOD area are on Mill Creek, near its mouth and north of U.S. Route 17 outside the installation (VDEQ 2008a).

**Storm Water Management.** Construction storm water impacts are regulated through the installation's storm water general permit for construction activities under the VSMP. Fort A.P. Hill is primarily used as a training area, and therefore storm water management activities are usually site-specific. Storm water management activities typically include implementing BMPs and erosion and sediment control structures to reduce runoff and sedimentation. Storm water pollution prevention plans for construction areas and other land disturbance activities on Fort A.P. Hill have been developed to maximize the potential benefits of pollution prevention and sediment and erosion control measures. These plans provide the framework for reducing soil erosion and minimizing pollutants in storm water during construction, and they include the development and implementation of storm water controls and other BMPs (USACE Mobile District 2007).

### **3.6.1.2 Hydrogeology/Groundwater**

Fort A.P. Hill is in Virginia's Coastal Plain, about 40 miles west of the Chesapeake Bay between the Rappahannock and Mattaponi Rivers. The regional hydrogeologic framework of the Virginia Coastal Plain is described by eight major confined aquifers, eight major confining units, and an uppermost water table aquifer, all of varying permeability and water quality. Groundwater movement through the unconfined and confined aquifers is generally lateral; some movement occurs vertically. Groundwater is discharged laterally into a variety of water bodies, including the Chesapeake Bay and the Atlantic Ocean. Recharge of the groundwater system occurs in outcrop zones where precipitation and surface water can infiltrate into aquifers. The groundwater system below Fort A.P. Hill is the sole source of potable water for the installation. The average seasonal depth to groundwater on the installation is 24 to 26 feet.

### **3.6.1.3 Floodplains and Wetlands**

In the vicinity of the proposed enlarged EOD field training area but outside its footprint, 100-year floodplains designated by the Federal Emergency Management Agency (FEMA) occur along Mill Creek/Millers Pond and Portabago Creek (Figure 3-10). Within the proposed enlarged EOD area,

FEMA-designated floodplains occur only in small areas along Mill Creek at the western side of the area.

Wetlands occur in the proposed enlarged EOD area, as depicted in Figure 3-10. National Wetlands Inventory mapping indicates areas of palustrine emergent, palustrine forested, and palustrine scrub-shrub wetlands in swales and along streams within the proposed enlarged EOD area and associated with nearby Mill Creek, Portabago Creek, and their intermittent and perennial tributaries. Field studies were performed in 2006 (Engineering and Environment 2006) and March and April 2008 (WSSI 2008) to determine the extent of jurisdictional wetlands within the proposed enlarged EOD area. Findings of these field studies, which are indicated on Figure 3-10, conclude that most of the wetlands within the proposed enlarged EOD area are palustrine forested wetlands, with some additional palustrine scrub-shrub and palustrine emergent wetlands in the southwestern and southeastern portions of the proposed EOD area. In addition, a small open-water wetland area created by a beaver dam is adjacent to the unnamed tributary that runs parallel to Mexico Trail. As shown on Figure 3-10, the training site safety arc radii for several field training sites encompass small areas of wetland.

#### **3.6.1.4 Chesapeake Bay Initiatives and Coastal Zone Management**

The federal Coastal Zone Management Act (CZMA) (Title 16 of the *United States Code* [U.S.C.], sections 1451 *et seq.*) was enacted to preserve, protect, develop, and where possible restore or enhance the resources of the coastal zone of the United States. Provisions under the CZMA assist states in developing coastal management programs to manage and balance competing uses of the coastal zone. As it applies to Fort A.P. Hill, the CZMA contains a federal consistency requirement under which federal actions must be consistent to the maximum extent practicable with the enforceable policies of Virginia's federally approved Coastal Zone Management Program (CZMP). This program focuses on problems associated with polluted runoff, habitat protection, riparian buffers, resource protection areas (RPAs), wetlands, fisheries, sustainable development, waterfront redevelopment and encroachment, septic systems, erosion and sediment control, and air pollution control.<sup>7</sup> Under requirements of Virginia's Chesapeake Bay Preservation Act (CBPA), Caroline County has established RPAs that include 100-foot buffer zones and contiguous wetlands along perennial streams and other waterways (Caroline County 2008a, 2008b, 2008c). A coastal zone consistency determination for the proposed EOD field training area is provided in this EA in Appendix C.

To protect the water resources within Fort A.P. Hill, timber harvest within the riparian forest buffer zone is carefully controlled. No more than 75 percent of the timber may be harvested within the 100-foot Chesapeake Bay RPA buffer, as specified in regulations adopted by VDCR under Virginia's CBPA. In addition, Fort A.P. Hill has implemented a 50-foot no-harvest buffer around streams. Timber in sensitive or unique habitats is usually not harvested (USACE Mobile District 2007). The Fort A.P. Hill INRMP includes additional information on the installation's program for maintaining riparian areas and RPAs (FAPH 2000).

### **3.6.2 Environmental Consequences**

#### **3.6.2.1 Proposed Action**

Short- and long-term minor adverse effects on water resources would be expected. Construction of facilities and infrastructure as a result of the proposed action could increase runoff due to a

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<sup>7</sup> RPAs are environmentally sensitive corridors alongside streams, rivers, and other waterways that act as natural buffers to protect water quality by filtering pollutants out of storm water runoff, reducing the volume and velocity of storm water runoff, and inhibiting erosion.

minor increase in impervious surface area; soil disturbance, erosion, and compaction during construction and during subsequent training operations; and increases in sediment and pollutant loads. Impervious surface area would increase under the proposed action by about 0.76 acre, representing the sum of the areas covered by the first four of the five facilities listed in Table 2-1. Student barracks would be constructed outside the EOD training area footprint, near Wilcox Camp. Gravel parking lots and roads, totaling 11.4 acres dispersed throughout the enlarged EOD training area, would result in compacted areas of reduced permeability but would not be completely impervious. Proposed facilities would be sited to avoid sensitive environmental areas, including RPAs, to the maximum extent practicable. Federal and state requirements for avoidance, minimization, and mitigation would be met for any development affecting wetlands and surface waters. Specific information is provided below.

### **Surface Water Quality and Storm Water Management**

Short-term minor and long-term negligible adverse effects on surface waters and storm water would be expected. The proposed action would involve constructing buildings, gravel parking areas, and gravel roadways, and clearing and grubbing wooded areas (Knight 2008). Fort A.P. Hill would minimize adverse impacts by using silt fencing, straw bales, and other Virginia-recommended construction BMPs that would be incorporated into sediment and erosion control and storm water runoff plans. All construction work would comply with the requirements of the installation's VSMP permit and state and local erosion and sediment control regulations (VDCR 1992; Caroline County 2008b).

In the long term, storm water runoff from cleared and compacted surfaces could contain nutrients, metals, dissolved solids, hydrocarbons, and other contaminants that could enter surface waters. Given the limited amount of impervious surface and cleared areas associated with the proposed action and that Virginia-approved runoff controls would be used, it is expected that the quantities of additional surface water runoff and pollutants generated would be negligible.

### **Hydrogeology/Groundwater**

Long-term negligible adverse effects would be expected. The proposed action could result in minor increases in loads of pollutants (primarily from small amounts of chemical residues that remain in the soil after explosives training exercises and incidental spills of hazardous materials during the course of routine vehicle maintenance and the like). Some of the pollutants could reach groundwater. Because of the limited area on the proposed enlarged EOD field training area that would be disturbed during facility construction and used for ongoing EOD training, impacts on groundwater resources would be expected to be negligible.

### **Floodplains and Wetlands**

Long-term minor adverse effects on riparian areas would be expected from implementation of the proposed action. A small area of field-surveyed wetland in the Mill Creek drainage overlaps a training site, several training site blast arcs overlap small portions of wetland area in the drainage areas of North Fork Tobacco Creek, Portabago Creek, the unnamed tributary (or Boutell's Creek) along Mexico Trail, and Mill Creek (though operational activities would take place outside sensitive riparian areas on all training sites), and preliminary designs indicate that four training site access roads could impact small areas of wetlands. The total wetland area impacted would be less than 0.2 acre. Indirect effects on riparian areas (as runoff from detonation points, facilities, and roads) would be minimal or negligible. No construction or disturbance would occur within the 100-year floodplain. Fort A.P. Hill would complete a Joint Permit Application for wetland impacts, as required by the U.S. Army Corps of Engineers and VDEQ; and would comply fully

with EO 11988 (*Floodplain Management*) by ensuring that its Environmental Division would review all project and facility plans for compliance with the EO, Army and installation environmental policies, and applicable laws and regulations.

### **Chesapeake Bay and Coastal Zone Management**

No adverse effects on the Chesapeake Bay or the Virginia CZMP would be expected. Construction and other activities associated with the proposed action would occur in a manner consistent with the enforceable policies of the Virginia CZMP, to the maximum extent practicable. The CZMA requires identification of potential effects of federal actions on a state's coastal zone program. The consistency of the proposed action with Virginia's CZMP has been assessed, and the consistency determination is provided in this EA in Appendix C.

### **Best Management Practices**

BMPs to control storm water runoff and erosion and to protect surface waters, groundwater, and the Chesapeake Bay would be implemented by Fort A.P. Hill in full accordance with applicable laws and regulations and installation policies for resource protection. Impacts on wetlands would be avoided by placing access roads to avoid wetlands, or mitigated through the use of appropriate BMPs such as installing hard-surface stream crossings. All storm water construction activities would be done in accordance with the CBPA.

### **Cumulative Effects**

No cumulative effects on water resources or the Chesapeake Bay would be expected. Other future projects on Fort A.P. Hill could result in erosion and sedimentation in streams, and separate environmental documents would analyze the effects of those actions. Any sediment or other pollutants from streams on Fort A.P. Hill and in the area would enter the Chesapeake Bay from the Rappahannock River. Mixing in the river and bay would render any potential for a cumulative water quality effect negligible and immeasurable.

#### **3.6.2.2 No Action Alternative**

***Incorporation.*** This EA incorporates by reference the water resources discussion related to the 1,034-acre EOD training area contained in the Fort Lee BRAC EIS. Specific information is provided below.

Long-term minor adverse effects on surface water and groundwater quality would be expected from implementation of the No Action Alternative. Construction of facilities for and use of the 1,034-acre EOD training area could increase runoff by adding small amounts of impervious surface area and developed areas, such as roads, from which increased runoff would be expected; and it could increase soil erosion and sediment and pollutant loads in storm water runoff. Minor quantities of sediment and pollutants from vehicles and explosives would continue to be added to storm water runoff during operation of the EOD field training area and potentially after its operation would cease. Proposed facilities would be sited to avoid sensitive environmental areas, such as riparian areas and wetlands, to the maximum extent practicable.

## 3.7 BIOLOGICAL RESOURCES

### 3.7.1 Affected Environment

#### 3.7.1.1 Vegetation

Fort A.P. Hill's natural vegetation lies within a belt of natural forest cover composed of mixed southern pine and hardwoods on the uplands and nearly pure hardwoods on the creek bottoms. Typical species include loblolly pine (*Pinus taeda*), Virginia pine (*P. virginiana*), oaks (*Quercus* spp.), and hickories (*Carya* spp.). Natural ecological succession on abandoned farmland has resulted in the occurrence of pure stands of pine. On better soils there is a relatively heavy underbrush of honeysuckle (*Lonicera* sp.), greenbrier (*Smilax* sp.), blackberry (*Rubus allegheniensis*), sumac (*Rhus* sp.), huckleberry (*Gaylussacia* sp.), holly (*Ilex* sp.), and mountain laurel (*Kalmia latifolia*) underneath pioneer tree species. Underbrush and the forest cover in many instances are heavy enough to present a problem in troop training.

The proposed enlarged EOD field training area is within Fort A.P. Hill's Training Areas 25A, 26 (A and B), 27 (A and B), and 28 (A and B), which are predominately pine forest with some interspersed hardwood stands. Mill Creek, to the northeast and downslope of the site, supports wetlands that have some tidal influence because of their proximity to the Rappahannock River. Open water is very limited in the wetlands and consists primarily of the stream channel. Northeast of the proposed EOD field training area is a Virginia-recommended conservation site on Fort A.P. Hill, the Mill Creek Slopes site. The site was recommended as a conservation site because of the presence of a bald eagle (*Haliaeetus leucocephalus*) nest discovered in 1990. The area was judged to have a low potential to support eagle roosting and foraging, however, because bald eagles prefer mature or standing dead timber along open water or flooded areas for these activities. The conservation site encompasses all areas within 0.5 mile of the bald eagle nest site and portions of two training area units (Training Areas 25 and 26).

#### 3.7.1.2 Wildlife

The cooperative agreement between Fort A.P. Hill and the U.S. Fish and Wildlife Service lists 130 avian species, 39 species of mammals, and 30 recorded species of fish present on the installation. Limited data are available on the number of reptile and amphibian species, but 48 species are thought to occur in this area.

Common mammal species include white-tail deer (*Odocoileus virginiana*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), muskrat (*Ondatra zibethica*), woodchuck (*Marmota monax*), raccoon (*Procyon lotor*), eastern mole (*Scalopus aquaticus*), eastern gray squirrel (*Sciurus carolinensis*), cottontail rabbit (*Sylvilagus floridanus*), gray fox (*Urocyon cinereoargenteus*), and red fox (*Vulpes fulva*).

Bird species common to the area inhabit the forests and clearings of Fort A.P. Hill. Representative species include red-tailed hawk (*Buteo jamaicensis*), great-horned owl (*Bubo virginianus*), American goldfinch (*Carduelis tristis*), downy woodpecker (*Picoides pubescens*), Eastern wood-pewee (*Contopus virens*), American crow (*Corvus brachyrhynchos*), red-eyed vireo (*Vireo olivaceus*), yellow warbler (*Dendroica petechia*), gray catbird (*Dumetella carolinensis*), ovenbird (*Seiurus aurocapilla*), wood thrush (*Hylocichla mustelina*), wild turkey (*Meleagris gallopavo*), mourning dove (*Zenaida macroura*), song sparrow (*Melospiza melodia*), northern mockingbird (*Mimus polyglottos*), Carolina chickadee (*Poecile carolinensis*), white-breasted nuthatch (*Sitta carolinensis*), Carolina wren (*Thryothorus ludovicianus*), and eastern kingbird (*Tyrannus tyrannus*). All of these species would be expected to be present primarily in upland areas.

Common species encountered in wetlands and open water areas include wood duck (*Aix sponsa*), mallard (*Anas platyrhynchos*), great blue heron (*Ardea herodias*), red-winged blackbird (*Agelaius phoeniceus*), green heron (*Butorides virescens*), and belted kingfisher (*Ceryle alcyon*).

Reptile and amphibian species expected to occur at Fort A.P. Hill include the northern copperhead (*Agkistrodon contortrix mokasen*), northern black racer (*Coluber constrictor constrictor*), eastern kingsnake (*Lampropeltis getulus*), eastern garter snake (*Thamnophis sirtalis*), eastern box turtle (*Terrapene carolina*), snapping turtle (*Chelydra serpentina*), spotted salamander (*Ambystoma maculatum*), red-spotted newt (*Notophthalmus viridescens*), American toad (*Bufo arnericanus*), spring peeper (*Pseudacris crucifer*), and bullfrog (*Rana catesbeiana*).

Surveys at Fort A.P. Hill have identified 37 species of fishes that inhabit the installation's streams, lakes, and ponds. Species found in streams include redbfin pickerel (*Esox americanus*), mud sunfish (*Acantharchus pomotis*), creek chub (*Semotilus atromaculatus*), tessellated darter (*Etheostoma olmstedii*), and American eel (*Anguilla rostrata*).

Wildlife in the southwestern region of the proposed enlarged EOD area are subjected to zone II small-arms noise, zone II averaged large-caliber weapons and demolitions noise, and 130 dB and higher peak noise levels from large-caliber weapons and demolitions noise (see Figures 3-2, 3-3, and 3-4). Wildlife throughout the proposed EOD area are subject to peak noise from large-caliber weapons and demolitions in excess of 115 dB (see Figure 3-4).

### 3.7.1.3 Sensitive Species

Several rare plant species that receive legal protection at the federal or state level have been documented to occur on Fort A.P. Hill. They include swamp pink (*Helonias bullata*), small whorled pogonia (*Isotria medeoloides*), and American ginseng (*Panax quinquefolius*). Both swamp pink and small whorled pogonia are listed federally as threatened and in Virginia as endangered. American ginseng has no federal status but is state-listed as threatened, in part due to harvesting pressures. In addition, the New Jersey rush (*Juncus caesariensis*), a state rare plant that has no legal status, has also been documented to occur at Fort A.P. Hill. New Jersey rush has no legal status at the state or federal level, but the VDCR Division of Natural Heritage monitors it as a state species of special concern because of its rarity within the Commonwealth. The Division of Natural Heritage documented 16 plants, 5 invertebrates, and 1 amphibian species on the installation that are considered rare.

Swamp pink occurs in semi-permanently to permanently saturated, forested wetland habitats. Suitable habitat for the swamp pink on the proposed enlarged EOD field training area is within palustrine forested wetlands, which occur generally along riparian corridors (WSSI 2008). Small whorled pogonia is a diminutive orchid species usually found within relatively mature, mesic, upland hardwood-dominated forests on nearly level terrain, particularly within colluvial soils of stream terraces. Like small whorled pogonia, American ginseng is usually found in mesic, hardwood-dominated forests within steep, sheltered ravines. New Jersey rush grows in both forested and open, wet, springy bogs; swamps; and borders of wet woods. In certain instances, New Jersey rush has been found in close association with swamp pink.

Among the four sensitive plant species mentioned, only American ginseng has been documented from the Mill Creek Slopes conservation area (Fleming and Van Alstene 1994). A survey of the original, 1,034-acre EOD range for all four species was conducted in 2006 (Engineering and Environment 2006). None of the species were encountered. Surveys of the EOD range expansion areas were conducted for swamp pink and small whorled pogonia from April through June 2008

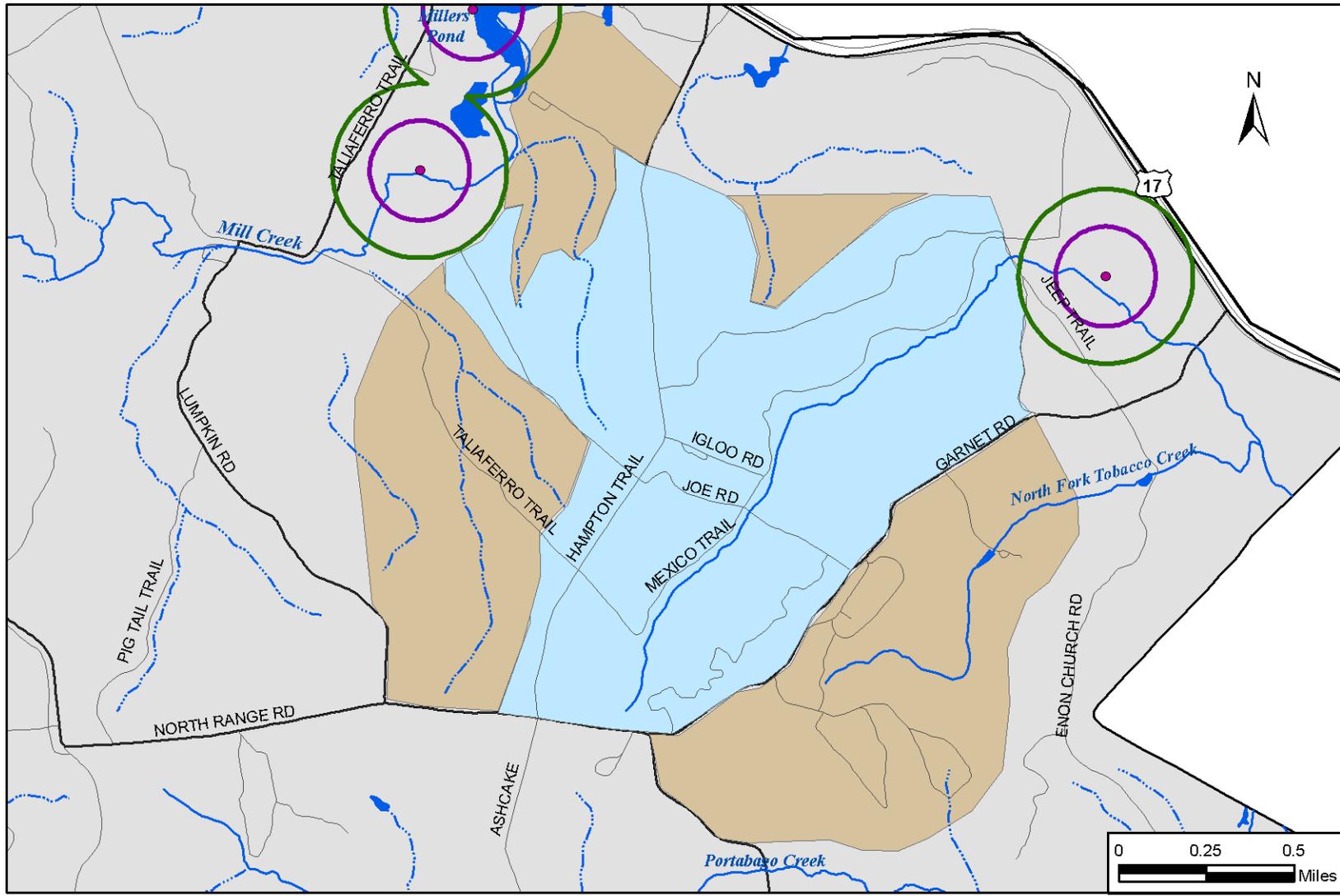
(WSSI 2008). No specimens of the swamp pink were found, though habitat suitable for the species was found along wetland areas (Figure 3-10). Habitat suitable for the small whorled pogonia was also found, and specimens of the small whorled pogonia were found in three locations in one of the proposed EOD expansion areas. All of the small whorled pogonia specimens found during the survey are outside any of the planned training sites.

Regarding mammal species, no federal or state-listed threatened or endangered species or species of concern are known to occur on Fort A.P. Hill. Two state mammal species of special concern, the river otter (*Lontra* [= *Lutra*] *canadensis*) and the star-nosed mole (*Condylura cristata*), have been collected on the installation. River otter is considered uncommon only in the montane and upper Piedmont regions of Virginia and considered relatively abundant in the Coastal Plain. It continues to be legally trapped at Fort A.P. Hill.

VDCR's Natural Heritage Program undertook a comprehensive biological diversity inventory on Fort A.P. Hill in 1993 and identified two bird species on the installation (Fleming and Van Alstene 1994), the federally listed threatened bald eagle and state-listed threatened Bachman's sparrow (*Aimophila aestivalis*). Three active bald eagle nest sites are in the vicinity of the proposed enlarged EOD field training area—two near Mill Creek and one between Route 17 and the proposed EOD area at its eastern boundary (Figure 3-11). Fort A.P. Hill protects the nests with primary and secondary protection zones that extend 250 and 440 yards, respectively, from the nests. Activities prohibited in primary protection zones include land clearing, clear cutting, and building, road, and trail construction (FAPH 1994). Within secondary protection zones, major habitat alterations (commercial, industrial, and residential development) are prohibited. During the breeding season (July 16 to November 14) people are not allowed in primary protection zones and major activities are prohibited in secondary protection zones. The secondary protection zone of one nest near Mill Creek extends about 80 yards into the proposed enlarged EOD area near the proposed JERRV training area, and the secondary protection zone of the nest near Route 17 slightly overlaps the proposed enlarged EOD area at one location. Eagles at the nests are exposed to peak noise levels between 115 dB and 130 dB (see Figure 3-4).

No reptile or amphibian federal or state-listed threatened or endangered species or federal species of concern are known to occur at Fort A.P. Hill. The carpenter frog (*Rana virgatipes*), a state species of special concern, is known only from the Mattaponi drainage and thus would be restricted to southern areas of the installation. The species is closely associated with sphagnum bogs in coastal plains from New Jersey through Florida. Fort A.P. Hill is within Virginia's Coastal Plain, but the relatively high relief of the Rappahannock River drainage excludes the species' preferred habitats.

According to mollusk distribution maps, two mollusk species with special status (i.e., federal or state threatened, endangered, or of concern) have been recorded in counties near Fort A.P. Hill—the Atlantic pigtoe (*Fusconaia masoni*) and the green floater (*Lasmigona subviridis*). The green floater is listed as a state species of special concern and is historically known from Fort A.P. Hill. A review of available literature, however, indicated that there have been no recent records of these species occurring in Caroline County. The two species are not likely to occur on Fort A.P. Hill (Smock, personal communication, 2006).



**LEGEND**

Installation Property	Intermittent Stream	Bald Eagle Nest Site
1,034-acre EOD Site	Perennial Stream	Protection Zone (229m)
EOD Expansion Areas	Surface Water	Protection Zone (400m)

**Bald Eagle  
Protection Zones**  
Figure 3-11

Source: Fort A.P.Hill GIS, 2006, 2008.

### **3.7.2 Environmental Consequences**

#### **3.7.2.1 Proposed Action**

Long-term minor adverse effects on biological resources would be expected from implementation of the proposed action. It is anticipated that of the 2,059 acres in the proposed EOD field training area, about 9 acres of land would be cleared for access roads and 260 acres would be cleared for training sites (a total of about 13 percent of the proposed enlarged EOD area). The total cleared area would be dispersed among more than 40 individual training sites, and the amount of clearing done for each training site would be small. The clearings would be expected to increase edge species of vegetation at the training sites and could create favorable conditions for invasive or exotic species to establish themselves. The sites would be monitored for invasive and exotic species of concern, however, and overall the effect on the installation's vegetation would be minor.

Throughout in the proposed enlarged EOD area and its surrounding area, much of the wildlife would be newly exposed to zone III and zone II average noise levels (CDNL) from large-caliber weapons and demolitions (see Figure 3-6) and peak large-caliber weapons and demolition noise levels in excess of 130 dB and 140 dB (see Figure 3-7). Research on noise impacts on wildlife indicates that there is great variability from species to species in response to different noise sources (USAF and USDOJ 1988, Radle 2007). Studies have focused on aircraft overflight noise, snowmobile and other recreational vehicle noise in remote areas, and sonic boom noise. Some species seem to be largely unaffected by noise while others exhibit a variety of behavioral and physiological responses. Behavioral responses to noise range from mild, such as a head turn, to a panic response. Physiological responses can include increased heart rates to severe stress (implied from significantly increased adrenal gland weight). The range of effect on wildlife species is attributed to variations in frequency response of the ears of different species, season (as it relates to a particular species' life history, including whether it is nesting, raising young, etc.), and whether the noise studied is a normal part of the animal's environment.

Wildlife management efforts at Fort A.P. Hill are focused on increasing or maintaining game populations (including deer, small game, furbearers, and waterfowl) to provide quality hunting and fishing (FAPH 2000). No management objectives or recommendations at Fort A.P. Hill are specifically focused on managing wildlife-noise effects. Some management measures practiced at Fort A.P. Hill for forest interior wildlife species include minimizing forest alterations during the breeding season, manage forest fragmentation in a manner designed to address the requirements of species sensitive to habitat fragmentation, retaining or encouraging snags 10 inches (diameter at breast height) or greater and cluster snags where possible, avoiding new rights of way and roads through uncut forest where possible, and placing new permanent buildings or other structures in areas already cleared, or at the edges of woodlands where feasible. These and other wildlife, forest, and protected species management measures and objectives contained in the Fort A.P. Hill INRMP, protected species management plans, and special area management plans would be adhered to during development and operation of the EOD field training area.

No adverse effects on sensitive animal or plant species would be expected from implementation of the proposed action. No training activities would occur within eagle nest protection zones. Eagles at all three of the nearby nests would be exposed to peak noise levels in excess of 140 dB (see Figure 3-7). Weapons-testing noise, however, has been found to not substantially affect the behavior of roosting or nesting bald eagles and to not influence eagle reproduction at the population level (Brown et al. 1999). No prohibited activity is proposed to occur within the primary and secondary nest protection zones of the nearby eagle nests.

All small whorled pogonias located during the 2008 surveys would be protected by 500-foot-radius (18-acre) “no disturbance” protection buffers established around all plant locations to ensure that the plants and their associated habitats would not be adversely affected by the proposed action. A larger buffer could be established to ensure adequate protection of the small whorled pogonias and their associated habitats, depending upon local site conditions. Land clearing, construction, and forestry activities will not occur within the protection buffers. These new occurrences of small whorled pogonia will be protected and monitored in accordance with Fort A.P. Hill’s Small Whorled Pogonia Endangered Species Management Plan and guidance from the Virginia Division of Natural Heritage. Soldiers trained on the EOD area would be briefed to avoid these sensitive areas.

### **Best Management Practices**

Fort A.P. Hill would establish protection zones around colonies and individual specimens of small whorled pogonia, mark the areas with signs, and educate Student Soldiers to avoid areas where the plants are known to be located. Other BMPs to minimize, avoid, or compensate for adverse effects on biological resources due to implementing of the proposed action would not be required. Fort A.P. Hill would, however, continue to implement ongoing natural resource protection programs in its INRMP, as well as Army and federal policies for environmental protection.

### **Cumulative Effects**

No cumulative effects on biological resources would be expected. Other future projects on Fort A.P. Hill could affect similar habitats and species, but adherence to the installation’s policies for resource protection and federal and state laws and regulations for sensitive species protection, wetland protection, and sediment and erosion control would be expected to limit the individual and cumulative effects of all projects.

#### **3.7.2.2 No Action Alternative**

***Incorporation.*** This EA incorporates by reference the biological resources discussion related to the 1,034-acre EOD training area contained in the Fort Lee BRAC EIS. Specific information is provided below.

Long-term minor adverse effects on vegetation and wildlife would be expected from implementation of the No Action Alternative. Development of the 1,034-acre EOD area would require site clearing and construction of facilities on previously undisturbed and disturbed land. Some vegetation would be cleared to develop ranges and cleared areas would be maintained with minimal vegetation either mechanically or by continual use of the training sites, or both. Wildlife in the immediate vicinity would be temporarily displaced. Only a small amount—about 180 acres of the total 1,034-acre EOD area—would be expected to be cleared and developed as ranges. Sensitive habitats would be avoided. Wildlife in the area would be newly exposed to high noise levels from the demolitions training and different species would be expected to respond differently to the noise, ranging from taking brief notice of the noise to behavioral and physiological changes that could reduce foraging, predator avoidance, and reproductive success. Over time, many species would be expected to become accustomed to the new noise levels..

No impacts on wetlands at the proposed 1,034-acre EOD area would be expected. Fort A.P. Hill has a policy to protect all wetlands and streams by maintaining 100-foot buffers around such areas.

## **3.8 CULTURAL RESOURCES**

### **3.8.1 Affected Environment**

#### **3.8.1.1 Prehistoric and Historic Background of Fort A.P. Hill**

Discussions of the prehistoric and historic periods of Fort A.P. Hill are contained in the installation Integrated Cultural Resources Management Plan (ICRMP) (Williams 2008) and are incorporated into this EA by reference.

#### **3.8.1.2 Cultural Resources Compliance at Fort A.P. Hill**

Cultural resource compliance activities at Fort A.P. Hill to consider effects on historic properties and to consult with potentially interested Native American tribes are conducted in compliance with applicable federal legislation and state guidelines. Fort A.P. Hill has an ICRMP that directs cultural resource management actions and decisions for the installation (Williams 2008). The ICRMP contains a summary of the cultural resources identified on the installation, preservation and maintenance strategies for archaeological and architectural resources, cultural resource management strategies and planning, and standard operating procedures to ensure the protection of resources and consideration of effects on resources resulting from military use of the installation. A Programmatic Agreement (PA) addressing BRAC activities and the protection of historic properties is in final review by Fort A.P. Hill, the Virginia State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation, and other interested parties.

#### **3.8.1.3 Cultural Resources at Fort A.P. Hill**

Fort A.P. Hill has undergone extensive studies to identify historic properties, including archaeological sites and architectural properties. All buildings and structures dating to 1959 and older have been recorded and evaluated for eligibility for listing on the National Register of Historic Places (NRHP). In total, 97 buildings and structures have been inventoried, mostly relating to the World War II construction phase of the installation. Three of the recorded architectural resources are considered eligible or potentially eligible for listing on the NRHP.

Fort A.P. Hill has completed inventories of about 25 percent of the installation to identify prehistoric and historic archaeological resources (FAPH GIS 2006). These include mostly Phase I surveys to identify sites, some Phase II testing of sites to determine areal extent and eligibility for NRHP listing, and Phase III data recovery excavations to mitigate potential effects.

Fort A.P. Hill conducted archaeological inventories of the original 1,034-acre EOD area in 2006 in preparation for the BRAC realignment. The proposed original EOD area underwent three separate inventories, resulting in full Phase I survey coverage (Roberts 2006, Versar 2006). The installation completed additional Phase I archaeological surveys of the four areas proposed to be added to the original EOD area from March through May 2008 (Berger 2008).

There are 21 known historic cemeteries on Fort A.P. Hill (CRI 1999). When the land for Fort A.P. Hill was acquired by the government in the mid-20<sup>th</sup> century, all known human remains were reinterred off the installation. At that time, only remains associated with marked graves, headstones, footstones, and fences were removed. It is probable that some of the cemeteries still contain graves with human remains. These areas are marked as *sensitive areas* on the installation geographic information system database.

## **Cultural Resources in the Areas of Potential Effect**

None of the three architectural properties that are eligible or potentially eligible for listing on the NRHP are within the proposed enlarged EOD field training area.

Twenty-two archaeological sites and isolated artifacts were identified during the 2006 surveys of the original 1,034 acres proposed for the EOD area, and an additional 11 archaeological sites and isolated artifacts were identified during the 2008 surveys of the four proposed EOD expansion areas (Table 3-9). Recommendations for NRHP eligibility have not yet been made for these sites. Consultation with the Virginia SHPO under Section 106 of the NHPA is ongoing for these sites. Compliance with Section 106 would be completed before any construction or ground-disturbing activities took place in the area.

There are five cemeteries within the proposed enlarged EOD boundaries. They are marked as *sensitive areas* on the installation's geographic information system database because of the possibility that some human remains might still be present.

### **3.8.1.4 Native American Resources at Fort A.P. Hill**

There are no known resources on Fort A.P. Hill that are considered of traditional importance to any tribe.

### **3.8.1.5 Pending Investigations and Compliance**

Fort A.P. Hill conducts its cultural resource management in accordance with applicable federal legislation and with guidance from the ICRMP. A PA developed in 2006 to address BRAC activities to occur at the installation is in final review. Further work will be done as necessary to complete site evaluations at the proposed enlarged EOD field training area, and results would be provided to the Virginia SHPO for consultation under Section 106 of the NHPA. Any adverse effects on historic and archeological resources would be avoided, minimized, or mitigated, as determined in consultation with the SHPO and in accordance with the installation's ICRMP and the PA.

## **3.8.2 Environmental Consequences**

### **3.8.2.1 Proposed Action**

No adverse effects on cultural resources at Fort A.P. Hill would be expected as a result of implementing the proposed action. Although unanticipated adverse effects on historic properties from the EOD construction and operational activities are a possibility, compliance with applicable federal legislation, the installation's ICRMP, and the installation's PA would ameliorate any unanticipated effects to less than significant.

### **Best Management Practices**

No specific BMPs to protect cultural resources would be required during implementation of the proposed action. All policies and procedures for cultural resources protection would be adhered to in accordance with the installation's ICRMP and the PA. If avoidance and protection of historic properties were not feasible for any specific activity, measures would be implemented in accordance with Section 106 of the NHPA, the installation's ICRMP, and the PA to mitigate adverse effects on the sites.

**Table 3-9  
Archaeological Resources within the Proposed EOD Field Training Area**

Archaeological resources encountered within the 1,034-acre EOD area <sup>a</sup>	
Temporary Site Number	Description
44CE0493	Trash scatter; 18th/19th Century
44CE0494	Undetermined; unknown historic
44CE0495	House site; 19th/20th Century
44CE0496	House site; 19th/20th Century
44CE0497	Undetermined; unknown historic/unknown prehistoric
44CE0498	Trash scatter; 18th/19th Century
44CE0503	Military facility; 20th Century
44CE0504	Single dwelling; 19th/20th Century
44CE0505	Earthworks; 19th Century
44CE0506	Earthworks; 20th Century
44CE0507	Farmstead; 19th Century
44CE0508	Single dwelling; 20th Century
44CE0509	Earthworks; 20th Century
44CE0510	School; 20th Century
44CE0511	Earthworks; 20th Century
44CE0512	Earthworks, rifle pits; 20th Century
44CE0513	Quonset hut/bunker; 20th Century
44CE0514	Earthworks, berm; 20th Century
44CE0515	Earthworks, berm; 20th Century
44CE0516	Single dwelling; 19th/20th Century
44CE0517	Quonset hut; 20th Century
44CE0518	Trash scatter; 19th/20th Century
Archaeological resources encountered within the four EOD expansion areas	
44CE0292	Artifact scatter; Woodland Period; 19th/20th Century
44CE0293	Artifact scatter; Woodland Period
44CE0551	Farmstead; 18th/20th Century
44CE0555	Cemetery; 19th Century
44CE0556	Artifact scatter; 19th/20th Century
44CE0557	Farmstead; 18th/20th Century
44CE0558	Farmstead; 19th/20th Century
44CE0559	Farmstead; 19th/20th Century
44CE0560	Farmstead; 19th/20th Century
44CE0561	Artifact scatter; unknown prehistoric
44CE0562	Farmstead; 19th/20th Century

<sup>a</sup> This information dates to December 2006.

### Cumulative Effects

No cumulative effects on cultural resources would be expected. Adverse effects on NRHP-eligible cultural resources could result if such resources are physically disturbed during the development of BRAC facilities or training exercises. Federal legislation, the Fort A.P. Hill ICRMP, and the PA would be followed in all cases, including construction for BRAC, the AWG range, and other projects on Fort A.P. Hill, to compensate for any impacts. Thus, any adverse cumulative impacts that would occur would be considered minor.

### 3.8.2.2 No Action Alternative

**Incorporation.** This EA incorporates by reference the cultural resources discussion related to the 1,034-acre EOD training area contained in the Fort Lee BRAC EIS. Specific information is provided below.

Implementation of the No Action Alternative would likely have no significant impacts on historic properties at Fort A.P. Hill. Although unanticipated adverse effects on historic properties from development of a 1,034-acre EOD area are a possibility, compliance with applicable federal legislation, procedures in the installation's ICRMP, and the BRAC PA would ameliorate any unanticipated effects to less than significant.

## 3.9 SOCIOECONOMICS

### 3.9.1 Affected Environment

The region of influence (ROI) for the Fort A.P. Hill socioeconomic environment is defined as Caroline, Essex, King George, Spotsylvania, and Stafford counties and the City of Fredericksburg, Virginia. The ROI covers an area of 1,653 square miles in northeastern Virginia. Fort A.P. Hill is within the boundaries of Caroline County along the I-95 corridor between two major metropolitan areas: Washington, DC, and Richmond, Virginia. The towns of Bowling Green (just south of the installation) and Port Royal (just north of the installation) in Caroline County are the closest towns to the installation, and they provide community support to the installation. Fredericksburg is about 20 miles north of Fort A.P. Hill's main gate. These communities and the counties surrounding Fort A.P. Hill have a lengthy history of support for the installation (FAPH 2007b).

The baseline year for socioeconomic data is 2007. Where 2007 data are not available, the most recent data available are presented.

#### 3.9.1.1 Economic Development

##### Employment and Industry

The ROI has a labor force of about 162,000 people (BLS 2008). The largest employment sector is the government and government enterprises sector, which accounts for 17 percent of total ROI employment. Other prominent employment sectors are retail trade, which accounts for 14 percent of total employment; construction (9 percent); health care and social assistance (8 percent); accommodation and food services (8 percent); and professional and technical services (7 percent) (BEA 2008). Farming accounts for 1 percent of ROI employment.

Fort A.P. Hill supports a working population of 390 civilian employees and nearly 700 military personnel. Seasonal, temporary employees number 100 or more during peak training periods (FAPH 2005).

The 2005 annual unemployment rate for the ROI was 2.7 percent—lower than the national unemployment rate of 5.1 percent. The ROI unemployment rate was up from the 2000 annual rate of 1.8 percent.

##### Income

The ROI's per capita personal income (PCPI) was about \$32,800. ROI PCPI is 95 percent of the national PCPI of \$34,400 and 87 percent of the state income of \$37,500 (BEA 2007). Within the ROI, Caroline and Essex counties had lower incomes than the other counties composing the ROI,

which most likely reflects the rural nature of the two counties compared to the more rapidly growing, urbanizing counties of King George, Spotsylvania, and Stafford (FAPH 2006).

### **Population**

The ROI population was about 320,000, an increase of 28 percent over the 2000 population of 251,000 (U.S. Census Bureau 2008). This rate of growth was much higher than that of the state of Virginia's and the United States, which had population increases of 8 percent and 6 percent, respectively. Caroline County's population increased by more than 20 percent, and King George, Spotsylvania, and Stafford counties all grew by more than 30 percent. Three counties in the ROI were among the fastest-growing counties in the nation. Between 2000 and 2005, Spotsylvania County ranked 26, Stafford County ranked 36, and King George County ranked number 72 in the list of 100 fastest growing counties (U.S. Census Bureau 2006). Urban sprawl from the Richmond and Washington, DC metropolitan areas contributes to the high population growth.

### **3.9.1.2 Sociological Environment**

#### **Housing**

**On-Post Housing.** Fort A.P. Hill has 25 on-post family housing units. The homes have two, three, or four bedrooms. The housing units are primarily occupied by key and essential permanent party civilian personnel. The homes are off A.P. Hill Drive, near the installation's Main Gate (FAPH Housing Office 2006).

Fort A.P. Hill also has barracks and bachelor officers' quarters (BOQs) for unaccompanied Soldiers. Camp Wilcox has 23 barracks and 8 BOQs with a total of 4,422 beds. Camp Longstreet has five barracks with a total of 520 beds. The occupancy rate of these housing units is seasonal. During the peak season, March through mid-November, occupancy is about 75 percent. During the winter season, occupancy drops to 30 to 40 percent or less (FAPH Directorate of Logistics, personal communication, 2006).

**Off-Post Housing.** The ROI has experienced strong housing market growth since 2000. The ROI had about 120,000 housing units as of 2006, an increase of 28 percent over the 2000 housing stock of about 94,000 units. The ROI housing market can be characterized as primarily single-family homes occupied by the home owner, with the exception of Fredericksburg, where 50 percent of the housing units are in multiunit structures with a homeownership rate of 36 percent. The ROI median home ownership rate was 79 percent, which is high compared to the state and national averages of 68 percent and 66 percent, respectively. The ROI median value of owner-occupied housing units was \$125,850, about the same as the state value of \$125,400 but about \$6,200 higher than the national median home value of \$119,600 (U.S. Census Bureau 2008).

The median ROI homeowner vacancy rate was at 2.0 percent in 1990 and 2000, slightly above the state homeowner vacancy rate of 1.5 percent and the national rate of 1.7 percent. The median ROI rental vacancy rate decreased between 1990 and 2000 from 7.0 percent to 6.0 percent. The ROI rental vacancy rate is slightly above the state rate of 5.2 percent but lower than the national rate of 6.8 percent. The ROI had about 6,550 vacant housing units in 2000. Of those vacant units, about 1,100 units were for sale, about 1,100 were for rent, and the remaining units were vacant for seasonal, recreational, or occasional use; for migrant workers; or other reasons (U.S. Census Bureau 2000).

## **Law Enforcement, Fire Protection, Medical Services**

Fort A.P. Hill's Directorate of Emergency Services conducts law enforcement, physical security, fire prevention and protection, and force protection operations. The Provost Marshall's Office oversees law enforcement and physical security, including vehicle and weapons registration, traffic accident and criminal investigations, crime prevention, general and absent without leave investigations, and training. The Fort A.P. Hill fire department provides fire prevention, fire protection, special fire operations, hazardous material response, aircraft rescue, and fire prevention education and training. On the basis of DoD Fire and Emergency Services minimum staffing requirements and the square footage of the installation's structures, Fort A.P. Hill has the requirement for two engine companies. The first engine company is at Anderson Camp and the second engine company is in the Heth area (Directorate of Emergency Services, personal communication, 2008). Fort A.P. Hill has one medical crew, stationed at Wilcox Camp, to provide 24/7 emergency medical response.

City, county, and state police departments provide law enforcement in the ROI. The Fort A.P. Hill fire department has a mutual aid agreement with Caroline County (FAPH 2007b).

Fort A.P. Hill's Lois E. Wells Clinic is part of Fort Belvoir's DeWitt Army Medical Center. The Lois E. Wells Clinic offers primary medical care and ambulance service for active duty, retirees, and family members (FAPH 2007b). The closest hospital to Fort A.P. Hill is the Mary Washington Hospital in Fredericksburg, about 40 minutes northwest of the installation. The majority of Fort A.P. Hill emergency cases are transported to this hospital. However, if more intensive care is required, patients are taken to the Virginia Commonwealth University Medical Center in Richmond, which has a level one trauma center (Directorate of Emergency Services, personal communication, 2006). Virginia Commonwealth University Medical Center is about an hour south of the installation.

## **Schools**

There are no primary or secondary schools on Fort A.P. Hill. Children who live on-post can attend the public schools in the town of Bowling Green, part of the Caroline County School District, or a private school. Children of Fort A.P. Hill military and civilian personnel living off-post attend the public school district for the area in which they reside or a private school. The following public school districts serve the ROI: Caroline County Public Schools, Essex County Public Schools, Fredericksburg City Public Schools, King George County Public Schools, Spotsylvania County Public Schools, and Stafford County Public Schools. Together these school districts have 79 schools with a total enrollment of about 61,700 students. The median student-to-teacher ratio was 13:1, lower than the U.S. average of 16:1 (NCES 2006a,b). There are also 22 private schools in the ROI, with a total enrollment of about 4,900 students and a median student-to-teacher ratio of 10:1 (NCES 2006c). Ninety-three percent of the ROI students attend public school and 7 percent attend private schools.

## **Shops, Services, and Recreation**

Fort A.P. Hill's Directorate of Human Resources provides military and civilian personnel support. The Directorate of Morale, Welfare, and Recreation offers programs, activities, facilities, and services to enhance Soldiers' quality of life. Troop support services include a barber shop, recreation fields, chapel, gymnasium, and recreation center. Recreational opportunities on-post that are available to military personnel and also to the public (i.e., to licensed permit holders and registered guests) include hunting, fishing, and camping (in designated areas). Training areas are strictly off limits except for hunting and fishing, which is permitted only by special sign-in

procedures. Fort A.P. Hill's catering service can provide breakfast, lunch, and dinner to troops at the installation's campsites and food service for special events (FAPH 2007b).

Caroline County has an extensive parks and recreation program, with softball fields, tennis courts, a golf course, and swimming pools, and there are many community activities held throughout the year (FAPH 2007b). Lake Anna State Park in Spotsylvania County, Aquia Landing in Stafford County, and the Rappahannock, Potomac, and Mattaponi rivers provide scenic beauty and an opportunity for water sports. Fredericksburg has a historic downtown area with shops and restaurants, a shopping mall, and shopping plazas with local and national chain retail, grocery, and big-box discount stores.

### **3.9.1.3 Environmental Justice**

Environmental justice addresses race, ethnicity, and the poverty status of populations within the ROI. On February 11, 1994, President Clinton issued EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. The order is designed to focus the attention of federal agencies on the human health and environmental conditions in minority and low-income communities. Environmental justice analyses are performed to identify potential disproportionately high and adverse impacts from proposed actions and to identify alternatives that might mitigate these impacts. Minority populations are identified as Black or African American and not of Hispanic origin; American Indian and Alaska Native; Asian; Native Hawaiian and other Pacific Islander; Hispanic; persons of some other race; and persons of two or more races. Minority populations should be identified where either the minority population of the affected area exceeds 50 percent or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ 1997). Twenty-three percent of the ROI population was of a minority race or ethnicity. The population of Virginia was 27 percent minority, and the United States was 20 percent minority (U.S. Census Bureau 2008).

Poverty thresholds as established by the Census Bureau are used to identify low-income populations (CEQ 1997). Poverty status is reported as the number of persons or families with income below a defined threshold level. 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. Seven percent of the ROI residents were classified by the U.S. Census Bureau as living in poverty, lower than Virginia's 10 percent poverty rate and the United States rate of 13 percent (U.S. Census Bureau 2008).

### **3.9.1.4 Protection of Children**

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (April 21, 1997), seeks to protect children from disproportionately incurring environmental health risks or safety risks. The EO recognizes a growing body of scientific knowledge that demonstrates that children might suffer disproportionately from environmental health risks and safety risks. These risks arise because children's bodily systems are not fully developed; children eat, drink, and breathe more in proportion to their body weight; their size and weight might diminish protection from standard safety features; and their behavior patterns might make them more susceptible to accidents. Because of these factors, President Clinton directed each federal agency to make it a high priority to identify and assess environmental health risks and safety risks that could disproportionately affect children. President Clinton also directed 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.

The training lands and ranges of Fort A.P. Hill are restricted to authorized personnel only, and access is limited, excluding the entry of unauthorized adults and children (FAPH 2006).

### **3.9.2 Environmental Consequences**

#### **3.9.2.1 Proposed Action**

##### **Economic Development**

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 caused by on-post construction and operation of the range represent the direct effects of the action. Using the input data and calculated multipliers, the model estimates ROI changes in sales volume, income, employment, and population, accounting for the direct and indirect effects of the action.

For purposes of this analysis, a change is considered significant if it falls outside the historical range of ROI economic variation. To determine that range, 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 significant. Appendix D discusses this methodology in more detail and presents the model inputs and outputs developed for this analysis.

**EIFS Model Results.** Short- and long-term minor beneficial effects would be expected. The proposed action includes the establishment of a training range and construction of facilities to support OMEMS field training requirements (EOD training sites, range operations headquarters building, robotics range support building, covered training areas, training towers, supporting facilities, and a student barracks) and operation of the 2,059 acre training range. Thirty-three military permanent party personnel and one civilian will be directly involved in the execution of OMEMS training as instructors. These personnel will be assigned to Fort Lee, with duty at Fort A.P. Hill. The expenditures to construct the range facilities and the new employment associated with the operation of the training range would increase sales volume, employment, and income in the ROI, as determined by the EIFS model (Table 3-10 and Appendix D). The EIFS model run calculated the operations and construction costs together. These changes in sales volume, employment, income, and population would fall within historical fluctuations (i.e., within the RTV range) and be considered minor.

Economic benefits also could result from timber sales. If a commercial timber sale is generated from the land that would be cleared, a portion of the proceeds might contribute to the funding of county schools and roads through the Army Timber Management Fund; 40 percent of annual timber sale profits are awarded to county schools.

##### **Sociological Environment**

**Housing.** No effects on housing would be expected. Soldiers in the Basic Non-commissioned Officer, GATOR, and Tactical Post Blast training courses, which would last for 14 to 38 days, would be housed in Fort A.P. Hill's on-post barracks. A new barracks for these Soldiers would be constructed in Fort A.P. Hill's Camp Wilcox. Soldiers attending the 1- to 2-day training courses would travel from Fort Lee to Fort A.P. Hill and return the same day. There is sufficient family housing on-post for military staff that would choose to reside on-post, and there is sufficient

housing in the off-post market for permanent party military and civilian personnel assigned as instructors.

**Table 3-10**  
**Proposed Action Alternative EIFS Model Output**

Indicator	Projected change	Percentage change	RTV range
Direct sales volume	\$30,532,610		
Induced sales volume	\$48,852,170		
Total sales volume	\$79,384,780	1.04%	-9.02% to 12.61%
Direct income	\$5,772,916		
Induced income	\$7,584,651		
Total income	\$13,357,570	0.24%	-7.47% to 11.46%
Direct employment	155		
Induced employment	193		
Total employment	348	0.34%	-6.18% to 4.21%
Local population	82		
Local off-post population	74	0.04%	-2.46% to 3.40%

**Law Enforcement, Fire Protection, Medical Services.** Long-term minor adverse effects would be expected. The installation has only one medical crew. Travel time from Fort A.P. Hill's medical center to Training Areas 26 and 27 can take up to 20 minutes, with an additional 40 minutes or more if the patient needs to be transported to a hospital. An additional medical crew would be needed. Ideally, a new medical crew would be collocated with the fire engine company in the Heth area (Directorate of Emergency Services, personal communication, 2006). Siting a medical crew at the Heth area would reduce travel time to the training sites. Long-term minor adverse effects on medical care and response time would be expected if a second medical crew were not acquired.

No adverse effects on police or fire services would be expected. The proposed action could result in an increase in security checks and gate operations (to allow the buses from Fort Lee to enter and exit the installation), but this increase would not require an increase in law enforcement staff. The proposed action would not change the fire department requirements. The two engine companies would respond to emergencies in the proposed training area (Directorate of Emergency Services, personal communication, 2006).

**Schools.** No effects would be expected. The proposed action would not affect local schools.

**Family Support, Services, and Recreation.** No adverse effects would be expected. Fort A.P. Hill's working population is about 1,100. The proposed action would create an estimated 34 jobs at the installation, or a 3 percent increase in the workforce. The additional personnel would create a negligible increase in demand for on-post services.

### Environmental Justice

No effects would be expected. The proposed training and construction activities at Fort A.P. Hill are not actions that have the potential to substantially affect human health or the environment by

excluding persons, denying persons benefits, or subjecting persons to discrimination because of their race, color, national origin, or income level.

### **Protection of Children**

No effects would be expected. The proposed training and construction activities would be sited in Fort A.P. Hill's training lands and ranges. The training lands and ranges of Fort A.P. Hill are restricted to authorized personnel only, and access is limited, excluding the entry of unauthorized adults and children.

### **Best Management Practices**

No BMPs would be necessary to reduce the adverse impacts of the proposed action on socioeconomics.

### **Cumulative Effects**

Long-term minor beneficial cumulative economic effects would be expected. The operation of FAPH continues to economically benefit the ROI by providing jobs, income, and business sales through the purchase of goods and services. The proposed construction and operation of the training range at FAPH would provide minor short- and long-term beneficial economic effects to the region in the form of additional employment, income, and sales. Other ongoing or proposed future development projects in the ROI include Virginia Department of Transportation road and bridge construction projects; residential development; the opening of two new millworks, two concrete companies, and a new complex for M.C. Dean, a systems integration and engineering firm in Caroline County; a new concrete manufacturing plant in King George County; and the BRAC action at Quantico Marine Corps Base in Stafford County.

In addition to the proposed construction and operation of the training range at FAPH, these other projects would generate employment, income, and business sales in the ROI, resulting in long-term cumulative beneficial economic effects.

#### **3.9.2.2 No Action Alternative**

***Incorporation.*** This EA incorporates by reference the socioeconomics discussion related to the 1,034-acre EOD training area contained in the Fort Lee BRAC EIS. Specific information is provided below.

### **Economic Development**

Long-term minor beneficial effects on economic development would be expected from implementation of the No Action Alternative. The expenditures to establish the range and construct the range facilities, as well as the new employment associated with the operation of the training area, would increase ROI sales volume, employment, and income. These changes would fall within historical fluctuations (i.e., within the RTV range) and be considered minor.

### **Sociological Environment**

Long-term minor adverse effects on medical services would be expected from implementation of the No Action Alternative. Travel time from Fort A.P. Hill's medical center to the Pender Camp area and to Training Areas 26 and 27 can take up to 20 minutes, with an additional 40 minutes or more if the patient needs to be transported to a hospital. An additional medical crew would be

needed. Adverse effects on medical care and response time would be expected if a second medical crew is not acquired.

No effects on housing, law enforcement, fire protection, schools, family support, services, or recreation would be expected from implementation of the No Action Alternative.

### **Environmental Justice**

No effects on environmental justice would be expected from implementation of the No Action Alternative. The construction and operation of the training range on Fort A.P. Hill is not an action that has the potential to substantially affect human health or the environment by excluding persons, denying persons benefits, or subjecting persons to discrimination because of their race, color, national origin, or income level.

### **Protection of Children**

No effects on the protection of children would be expected from implementation of the No Action Alternative. The No Action Alternative construction and training activities would be sited in Fort A.P. Hill's training lands and ranges. The training lands and ranges are restricted to authorized personnel only and access is limited, excluding the entry of unauthorized adults and children.

## **3.10 TRANSPORTATION**

### **3.10.1 Affected Environment**

Highway access to Fort A.P. Hill is available regionally via I-95; Routes 1, 17, and 301; and Route 2 (see Figure 2-1). Route 301 provides access to the main entrance of the installation; it is a four-lane, north-south route that bisects Fort A.P. Hill. The primary transportation network within Fort A.P. Hill consists of roads and streets that act as main distribution arteries and provide access to all functional areas. Secondary and tertiary light-duty roadways provide access between and within various functional areas. Wide, clear trails for the use of heavy tactical vehicles are adjacent to some roads.

The closest city to Fort A.P. Hill served by rail transportation, via Amtrak and Virginia Railway Express, is Fredericksburg, Virginia. No public transit access or bus service is available at Fort A.P. Hill. The Fredericksburg Regional Transit provides service at Bowling Green, Virginia (FRED 2006).

Fort A.P. Hill has one Army Air Field, one drop zone, one assault airstrip, and many authorized landing or pick-up zones to support airborne and aviation training for both fixed-wing and rotary aircraft. Fort A.P. Hill does not support private access to the installation by air. In 1994 an estimated 2,600 aircraft movements were reported at Fort A.P. Hill (USACHPPM 1999).

### **3.10.2 Environmental Consequences**

#### **3.10.2.1 Proposed Action**

Short- and long-term minor adverse effects on vehicle-based transportation resources at Fort A.P. Hill would be expected from implementation of the proposed action. These effects would result from using on-road construction vehicles during the periods of construction, bussing Army personnel to and from Fort A.P. Hill for training activities, and long-term operational activities on the proposed enlarged EOD field training area. No effects on railway and air transportation systems would be expected, and effects on the public transportation system would be negligible.

### **Construction Traffic**

Traffic at Fort A.P. Hill would increase from construction vehicles. The effects would be temporary, ending when the construction phase of the proposed action was completed. The local on-post and off-post road infrastructure is sufficient to support any increase in construction vehicle traffic. Road closures and detours on roads and trails in the proposed enlarged EOD area to accommodate utility system work would be expected, creating short-term traffic delays.

### **Operational Traffic**

Minor long-term increases in both on-post and off-post traffic would be expected from operational activities under the proposed action. Several busses of new trainees would access the installation each week through the main gate. Subsequently, small groups would be routed to individual training sites on-post, within the proposed EOD field training area. Minor improvements to existing roadways to make them serviceable would be expected. Although no major new on-post or off-post roadways would be expected, about 35 new tertiary roadways would be established for access to the individual training sites within the proposed EOD range. These roadway segments would range from about 1 mile to 2.5 miles long, with a total combined length of about 8 miles.

### **Best Management Practice**

Any effects due to construction traffic would be minimized by directing all construction vehicles to access the installation via the most appropriate gate and limiting construction vehicle movement during peak traffic hours. All construction vehicles would be equipped with backing alarms, two-way radios, and "Slow Moving Vehicle" signs when appropriate. Access to the proposed EOD area would be coordinated through Range Control to ensure personal safety and a lack of conflict with ongoing training operations.

### **Cumulative Effects**

No adverse cumulative effects on transportation resources would be expected. Construction of the proposed EOD facilities, establishment of the AWG ranges, and establishment of the NSWECE would occur simultaneously, and other future projects could also occur concurrently. Traffic attributable to these actions would also occur concurrently. Other construction and development projects would produce some measurable amounts of traffic. The effects on transportation resources associated with the proposed action would be minor and would not be expected to cause adverse cumulative effects.

#### **3.10.2.2 No Action Alternative**

***Incorporation.*** This EA incorporates by reference the transportation discussion related to the 1,034-acre EOD training area contained in the Fort Lee BRAC EIS. Specific information is provided below.

Short- and long-term minor adverse effects on vehicle-based transportation resources at Fort A.P. Hill would be expected. These effects would be directly related to using on-road construction vehicles during the periods of construction, and bussing of Army personnel to and from Fort A.P. Hill for training activities. The effects on railway, air, or public transportation at Fort A.P. Hill would be negligible.

## **3.11 UTILITIES**

### **3.11.1 Affected Environment**

Utilities available at the proposed enlarged EOD field training area are electricity and telephone.

#### **3.11.1.1 Potable Water Supply**

The groundwater system below Fort A.P. Hill is the sole source of potable water for the installation. The potable water infrastructure nearest to the proposed EOD field training area is a well with a 100,000-gallon tank at Cooke Camp (Knight 2008) (Figure 3-12). The distance from Cooke Camp to the proposed Range Operations Center is about 2.8 miles along roads. The potable water system on Fort A.P. Hill is owned, operated, and maintained by American Water O&M, Inc.

#### **3.11.1.2 Sewer and Wastewater**

The proposed EOD field training area has no wastewater infrastructure.

#### **3.11.1.3 Energy Sources**

##### **Electricity**

The electric distribution system at Fort A.P. Hill is privately owned and operated by Rappahannock Electric Cooperative, which performs all capital improvements and maintenance. The system consists of overhead lines and secondary service conductors and poles. The existing electrical distribution system to support the proposed EOD field training area sites consists of overhead electrical lines running along North Range Road and Hampton Trail. Hampton Trail separates Training Areas 26 and 27, and North Range Road runs along the southern boundaries of Training Areas 26 and 27 and the western boundary of Training Area 28B. The distance from the electrical line along North Range Road to the proposed Range Operations Center, where the primary power supply for the EOD area would be installed, is about 300 feet (Knight 2008).

##### **Natural Gas**

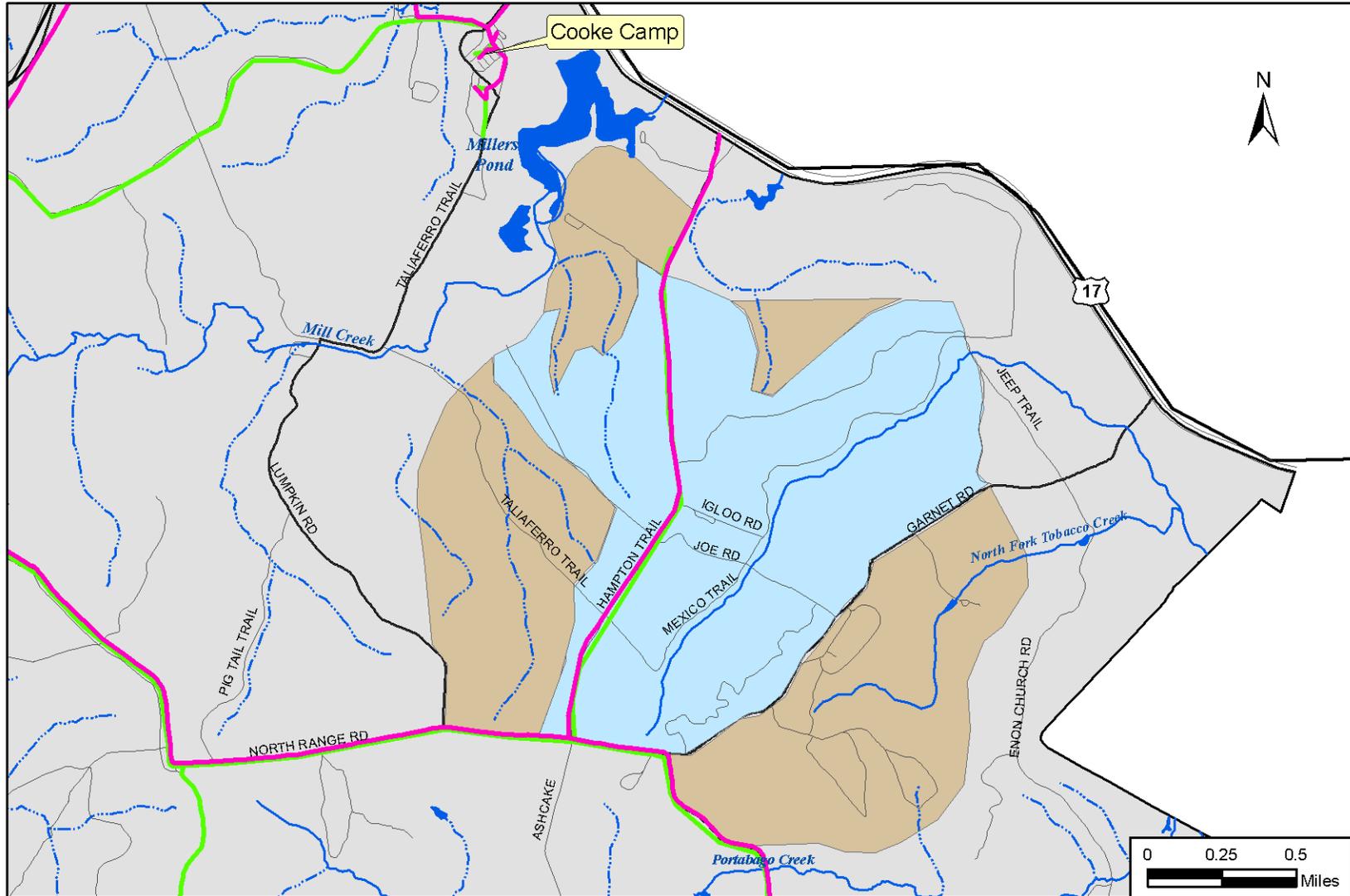
There is no natural gas in the vicinity of the proposed EOD field training area (Knight 2008).

#### **3.11.1.4 Storm Water Collection System**

Storm water at the proposed EOD area at Fort A.P. Hill infiltrates the soil or travels over ground in natural drainageways. There is no existing constructed storm water infrastructure.

#### **3.11.1.5 Solid Waste**

Solid waste collected at Fort A.P. Hill is transported to the King George Landfill in Virginia once or twice a day depending on the amount of troop training. Some special (nonhazardous) wastes, primarily wooden ammunition boxes and mattresses, are hauled to the Chambers Landfill, an industrial landfill in Charles City, Virginia (Fort A.P. Hill Army Garrison 2005). Construction and demolition (C&D) debris is considered the property of individual contractors and is mostly disposed of in local landfills.



**LEGEND**

- |                       |                     |                           |
|-----------------------|---------------------|---------------------------|
| Installation Property | Intermittent Stream | Electrical Cable Line     |
| 1,034-acre EOD Site   | Perennial Stream    | Communications Cable Line |
| EOD Expansion Areas   | Surface Water       |                           |

# Utilities

Figure 3-12

Source: Fort A.P.Hill GIS, 2006, 2008.

### **3.11.1.6 Communication Systems**

Communication services at Fort A.P. Hill are owned and operated by the installation. There are two outdoor phones on the proposed EOD area (Knight 2008). The existing telephone infrastructure runs along North Range Road and Hampton Trail, about 0.6 mile from the proposed EOD field training area.

### **3.11.2 Environmental Consequences**

#### **3.11.2.1 Proposed Action**

Long-term minor adverse effects on landfill capacity would be expected from the disposal of minor amounts of solid waste from construction. Negligible effects on potable water reserves in the region, the sanitary sewer system, the electrical system, communication systems, and the storm water system would be expected.

#### **Potable Water Supply**

Negligible effects on potable water reserves in the region would be expected. The quantity of potable water that the students and staff would use would not substantially affect groundwater reserves in the region. Potable water would be required for the Range Operations Center. A well and deep-well pump, as well as a water supply treatment building, would be required to provide potable water for the Range Operations Center. A sprinkler system might be required in the Range Operations Center; to create the water pressure necessary for a sprinkler system, a water tower would be needed or water would have to be pumped from Cooke Camp (Knight 2008). If a buried water line were run from Cooke Camp to the Range Operations Center, about 2.8 miles of 4- to 6-inch pipe would have to be installed, primarily along roads. The completed system would be turned over to American Water O&M, Inc., to which Fort A.P. Hill has privatized its water and wastewater systems. All new construction, demolition, and connections associated with the water and wastewater systems would be coordinated with that company.

#### **Sewer and Wastewater**

No effects on sanitary sewer systems would be expected. The system installed under the proposed action would be sized to have sufficient capacity to serve those using the area. A septic tank and drain field would be required at the Range Operations Center to serve the showers and restrooms provided for staff and students. The sewage system would be sized and designed in accordance with the regulations of the Virginia Department of Health. If, based on percolation tests, the soil would not support a typical septic drain field, a mound system or a drip disposal system would be installed.

#### **Energy Sources**

##### ***Electrical power***

No effects on the electrical system of Fort A.P. Hill would be expected. Activities at the proposed EOD field training area would consume very little electrical power, and the system installed to serve the area would be sized to be of sufficient capacity to meet the demand. Electrical power would be supplied to the Range Operations Center and select training sites. The underground electrical distribution system to support the Range Operations Center and other sites would be served from the base overhead electrical utility, provided by Rappahannock Electrical Cooperative and running along North Range Road. The electrical power primary would be run from North Range Road to the Range Operations Center, a distance of about 300 feet (Knight 2008). Exterior lighting would be installed along new roads and in parking lots, as well as along

walkways and at canopies and facility entrances and exits. All exterior lighting would use color-corrected, high-pressure sodium lamps. Parking lot and street lighting would be photocell-controlled.

### **Natural gas**

No effect on natural gas at Fort A.P. Hill would result from the proposed action. No natural gas system is proposed to be installed to serve the EOD area.

### **Storm Water Collection System**

No effect on the storm water collection system would be expected. Storm water would continue to infiltrate the ground and flow through natural drainageways.

### **Solid waste**

Long-term minor adverse effects on landfill capacity would be expected from the disposal of minor amounts of solid waste from construction. Solid waste would be generated from building construction (at the Remote Operations Center, Remote Operating Site, and barracks) and demolition (at two training sites). Table 3-11 provides an estimate of the C&D debris that would be generated at Fort A.P. Hill under the proposed action. About 50 percent of the C&D debris would be recycled, in accordance with the LEED rating system (Knight 2008; USGBC 2008).

**Table 3-11  
Estimates of Construction and Demolition Debris Generated at Fort A.P. Hill  
as a Result of Implementing the Proposed Action**

<b>Construction type</b>	<b>Total area (ft<sup>2</sup>)</b>	<b>C&amp;D factor (lb/ft<sup>2</sup>)</b>	<b>Estimated waste (lb)</b>	<b>Estimated waste (tons)</b>
Construction	63,730	4.4	280,412	140.2
Renovation	n/a	n/a	n/a	n/a
Demolition	1,200	115	138,000	69
Gross Total			418,412	209.2
Amount Recycled (50%)			209,206	104.6
Net Total C&D Debris Generated			209,206	104.6

### **Communication Systems**

No effects on communication systems would be expected. A separate system to serve the proposed EOD field training area would be installed, and no adverse effects on the existing communication system would result. A separate telephone system with at least 50 lines would be installed to serve the EOD field training area (Knight 2008). Data communications would be required at the Range Operations Center and select training sites. All telephone and network cables would be served from Training Area 27 and would be provided by the installation. Telephone lines would be installed underground by crossing North Range Road using pavement cuts and trenching. Radio communication would be required between the Range Operations Center and all instructors. All vehicles would be equipped with global positioning system navigation.

## Best Management Practices

BMPs required as part of DoD and Fort A.P. Hill policy and the Commonwealth of Virginia, examples of which are provided below, would adequately limit the adverse impact of the proposed action on utilities.

- **Potable Water.** Install water-efficient control devices, such as low-flow showerheads, faucets, and toilets, in all new facilities.
- **Energy.** Install energy-efficient interior and exterior lighting fixtures and controls in all new and renovated facilities. Construct all new facilities in compliance with the Energy Policy Act of 2005, which has goals for increased use of renewable energy sources and the procurement of energy-efficient equipment and building systems in all applicable contracts. Achieve the SILVER level of LEED for all vertical building construction projects.
- **Solid Waste.** Recycle 50 percent of the C&D debris as stipulated in an Army memorandum (ACSIM 2006). Incorporate recycling requirements into all contracts awarded to outside contractors.

## Cumulative Effects

Minor adverse cumulative effects on regional utility systems would be expected from construction under the proposed action, the AWG training range complex, the NSWECE, and other potential future projects. Utility system upgrades would be required at all new ranges, and some C&D debris would be generated by each project. Minor additional demands on regional utility systems and minor reductions in regional landfill capacity would result.

### 3.11.2.2 No Action Alternative

**Incorporation.** This EA incorporates by reference the utilities discussion related to the 1,034-acre EOD training area contained in the Fort Lee BRAC EIS. Specific information is provided below.

Short- and long-term minor beneficial and adverse effects on utilities in the proposed 1,034-acre EOD training area would be expected from implementation of the No Action Alternative. Renovations and upgrades would be required for utility systems (water, wastewater, storm water, communications, and electricity) at the proposed 1,034-acre EOD training area, which could result in minor service interruptions. Utility system demands expected under the No Action Alternative would be nearly identical to those expected under the Preferred Alternative.

Solid waste generated by student Soldiers and instructors during classes held at the proposed 1,034-acre EOD training area would be minimal and would be removed by either Fort A.P. Hill Directorate of Public Works personnel or solid waste contractors. Solid waste generated by explosions of salvaged vehicles for training purposes would be collected and disposed of by a private contractor. Target vehicles (salvaged cars, trucks, and vans) would go through an inspection process with the Fort A.P. Hill Directorate of Logistics to ensure that the vehicles would contain no fluids before their use on the range complex. After use for EOD training, the vehicles would be inspected by EOD range personnel to ensure that no explosives residue remained in the vehicles.

## 3.12 HAZARDOUS AND TOXIC MATERIALS

### 3.12.1 Affected Environment

Specific environmental statutes and regulations govern hazardous material and hazardous waste management activities at the proposed EOD field training area at Fort A.P. Hill. For the purpose of this analysis, the terms *hazardous waste*, *hazardous materials*, and *toxic substances* include those substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act, Resource Conservation and Recovery Act, and Toxic Substances Control Act. In general, they include substances that, because of their quantity, concentration, or physical, chemical, or toxic characteristics, might present substantial danger to public health or welfare or to the environment when released into the environment.

#### 3.12.1.2 Hazardous Waste Disposal and Management

Fort A.P. Hill is a RCRA Large Quantity Generator of hazardous wastes and a former Transportation, Storage, and Disposal facility. The installation's EPA Comprehensive Environmental Response, Compensation, and Liability Information System—or CERCLIS—identification number is VA2210020416. Hazardous wastes are managed by the Fort A.P. Hill Directorate of Public Works in accordance with the *Installation Hazardous Waste Management/Waste Minimization Plan*. Hazardous materials are managed through the Hazardous Materials Management Program, which includes all installation activities, tenants, and contractors working at Fort A.P. Hill. Through the use of a Hazardous Substance Management System database, all hazardous materials procured, stored, or used on the installation are tracked from cradle to grave. The program also allows for the return of unused or partially used hazardous materials for reissue to other activities.

The RCRA Military Munitions Rule defines waste as it applies to three specific categories of military munitions—unused munitions, munitions being used for their intended purpose, and used or fired munitions. The rule conditionally exempts (1) from RCRA manifest requirements and container marking requirements, waste non-chemical military munitions that are shipped from one military-owned or operated treatment, storage, or disposal facility to another in accordance with DoD military munitions shipping controls; (2) from RCRA Subtitle C storage regulations, waste non-chemical military munitions subject to the jurisdiction of the DoD Explosives Safety Board storage standards.

Military munitions are not a solid waste for regulatory purposes when a munition is being used for its intended purpose, which includes a munition being used for the training of military personnel; when a munition is being used for research, development, testing, and evaluation; when a munition is destroyed during range clearance operations at active and inactive ranges; and when a munition that has not been used or discharged, including components thereof, is repaired, reused, recycled, reclaimed, disassembled, reconfigured, or otherwise subjected to materials recovery activities.

This rule also specifies that used or fired munitions are solid waste when they are removed from their landing spot and then managed off-range (i.e., when transported off-range and stored, reclaimed, treated, or disposed of) or disposed of (i.e., buried or land-filled) on-range. In both cases, when the used or fired munition is a solid waste, it is potentially subject to regulation as a hazardous waste (USEPA 1997).

### **3.12.1.3 Site Contamination and Cleanup**

The Fort A.P. Hill Installation Action Plan is used to track compliance cleanup sites and military munitions response sites. There are five compliance cleanup sites and four military munitions response sites at Fort A.P. Hill that are being investigated under CERCLA, RCRA, or other applicable regulations..

### **3.12.1.4 Asbestos**

Existing structures on the proposed EOD area that were constructed using asbestos-containing material (ACM) would require asbestos abatement by trained and qualified personnel before being disturbed or demolished.

### **3.12.1.5 Polychlorinated Biphenyls**

There are no known polychlorinated biphenyl-contaminated transformers or other source of polychlorinated biphenyl contamination on Fort A.P. Hill.

### **3.12.1.6 Lead-Based Paint**

Existing structures on the proposed EOD area at Fort A.P. Hill would require lead-based paint (LBP) testing to determine whether LBP is present.

### **3.12.1.7 Pesticides**

Pesticides used on Fort A.P. Hill include pre-emergents for weed control and insecticides for insect control. Pesticide application is performed by licensed contractors. There is no known chlordane use at the proposed EOD field training area.

### **3.12.1.8 Ordnance**

Historically, the area proposed for the EOD area has been used for field training exercises, inert mine and countermine training, and live demolitions. The area has firing points for field artillery and is used for dismounted maneuvers.

## **3.12.2 Environmental Consequences**

### **3.12.2.1 Proposed Action**

Long-term minor adverse effects could result from an increase in the use of hazardous materials. The volume of these wastes generated and the amount of storage required would increase. Hazardous materials would be managed in accordance with the installation's *Hazardous Materials Management Program*.

Long-term minor adverse effects could result from an increase in the small amounts of chemical residues that remain in the soil after an explosives training exercise. Monitoring and reporting of soil and groundwater conditions are not required while the training area is being used for its intended purpose. Other explosives residue, such as spent shock tubes, igniters, and packaging material, would be recovered in accordance with DoD policy.

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

No environmental or health effects resulting from the testing, removal, handling, and disposal of hazardous materials would be expected during demolition or renovation activities. Before initiating renovation activities, the potential for environmental effects of special hazards like ACM and LBP would be evaluated and addressed as specified in the appropriate regulatory requirements. Demolition that involves LBP or ACM would be evaluated by certified asbestos and lead contractors for compliance with construction standards at 29 CFR 1926.62 and 29 CFR 1926.1101; EPA, and local, state, federal, and Army regulations. In addition, airborne concentrations of asbestos and lead would be controlled by complying with these standards and applying BMPs during demolition. Renovation debris containing ACM and LBP would be disposed of at licensed disposal facilities in accordance with applicable laws.

No effects would be expected from hazardous waste disposal. All hazardous wastes would be managed in accordance with the installation's *Hazardous Waste Management Plan* and RCRA requirements. Target vehicles (salvaged cars, trucks and vans) would go through an inspection process to ensure that no fluids or batteries were in the vehicles before being used for explosives training. After a target vehicle was no usable for training purposes, range personnel would inspect the vehicle to ensure that no residue remained in the vehicle before permitting its permanent disposal.

No adverse effects from the historical uses of area would be expected. Site workers will be trained in ordnance awareness and permits for intrusive activities would likely be required. If ordnance is identified during construction, only qualified Army personnel will respond.

No effects would be expected from an increase in storage capacity requirements for petroleum, oil, and lubricants. Any construction of new storage facilities to handle storage requirements from the proposed action would be done in accordance with applicable laws regarding construction materials, leak protection, monitoring, and spill containment.

No effects from pesticides would be expected. Pesticides would be used in accordance with their intended use and the Fort A.P. Hill *Pesticides Management Plan*.

### **Best Management Practices**

BMPs required as part of DoD and Fort A.P. Hill policy and the Commonwealth of Virginia, examples of which are provided below, would adequately limit the adverse impact of the proposed action on hazardous and toxic materials.

- **Contamination.** Any soil suspected of contamination, or wastes that are generated, would be tested and disposed of in accordance with applicable federal and state laws and regulations.
- **Pollution Prevention.** The Army would implement pollution prevention and waste minimization programs, including reduction of waste materials at the source, reuse of materials, and recycling of solid wastes. Hazardous waste generation would be minimized, and all hazardous wastes would be handled appropriately.
- **Remediation.** The Army would honor all CERCLA obligations at active and closed Installation Restoration Program sites at the installation. The installation's remedial project manager would be contacted before any land, soil, or groundwater disturbance at or near ERP sites to ensure that all remedies in place would remain intact and that long-term monitoring wells would not be disturbed.

- **Petroleum Contamination.** If petroleum contamination was discovered during project excavation, the incident would be reported to the applicable state agencies. Any contaminated soils and groundwater would be disposed of in accordance with applicable state guidelines. Petroleum spills would be reported to the state as required.

### **Cumulative Effects**

No cumulative effects on hazardous or toxic materials would be expected. All use, storage, and disposal of hazardous materials for all concurrent and future projects would be required to be conducted in accordance with the Fort A.P. Hill *Hazardous Waste Management Plan*.

#### **3.12.2.2 No Action Alternative**

**Incorporation.** This EA incorporates by reference the hazardous and toxic substances discussion related to the 1,034-acre EOD training area contained in the Fort Lee BRAC EIS. Specific information is provided below.

Long-term minor adverse effects could result from an increase in the use of hazardous materials and an increase in storage capacity requirements for petroleum, oil, and lubricants. New storage facilities would be constructed and maintained in accordance with applicable laws regarding construction materials, leak protection, monitoring, and spill containment. No adverse effects would be expected from hazardous waste disposal, unexploded ordnance (or munitions and explosives of concern), or pesticides.

### **3.13 CUMULATIVE EFFECTS SUMMARY**

Minor adverse cumulative effects on surrounding land use, the noise environment, and regional utility systems would be expected. A long-term minor beneficial cumulative effect on economic development would be expected. None of the adverse cumulative effects would be significant. No cumulative effects on aesthetic and visual resources, air quality, geology or soils, water resources, biological resources, cultural resources, transportation resources, or hazardous or toxic materials would be expected.

## **SECTION 4.0 CONCLUSIONS**

This EA was prepared to evaluate the potential effects on the natural and human environment from activities associated with the proposed action to construct a field training area that includes EOD training sites, observation bunkers, training towers, a range operations headquarters building, a robotics range support building, range storage buildings, covered training areas (bleachers), a water supply treatment building, and an 80-person barracks for students' use. These facilities at Fort A.P. Hill would support OMEMS field training requirements. A No Action Alternative is also evaluated.

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

Evaluation of the proposed action indicates that the physical and socioeconomic environments at Fort A.P. Hill would not be significantly affected. The predicted consequences of implementing the proposed action on resources are briefly described below. Table 4-1 provides a summary and comparison of the consequences of the proposed action and the No Action Alternative.

### **4.1 PROPOSED ACTION SUMMARY OF CONSEQUENCES**

#### **4.1.1 Land Use**

Long-term minor adverse effects on surrounding land use northeast and east of the installation would be expected. Activities at the proposed EOD field training area could create a conflict with residential land uses in the settlement and its surroundings because of noise. No changes to land use classifications on or off Fort A.P. Hill would result. No effects on regional land use planning or zoning at Fort A.P. Hill would be expected.

#### **4.1.2 Aesthetic and Visual Resources**

No adverse effects on the aesthetic and visual environment would be expected. The proposed EOD field training area would continue to be used and maintained for military training.

#### **4.1.3 Air Quality**

Short- and long-term minor adverse effects on air quality would be expected, primarily from non-road vehicle exhaust and fugitive dust emissions during construction and operational emissions from generators, boilers, and demolition activities. The proposed action would not cause or contribute to a violation of any federal, state, or local air regulation, nor would it contribute to a violation of Fort A.P. Hill's air operating permit.

#### **4.1.4 Noise**

Short- and long-term minor adverse effects on the noise environment would be expected. The effects would be primarily due to heavy equipment noise during construction and the operation of the proposed EOD range. Noise zone II (moderate levels of noise) would extend beyond both the northern and eastern boundaries about 0.6 mile, in addition to extending about 0.2 mile beyond the southern boundary. The proposed action, however, would create only a minor increase in land within the military noise zone normally not recommended for residential use. Therefore, impacts

**Table 4-1  
Summary of Potential Environmental and Socioeconomic Consequences**

Resource	Environmental and socioeconomic effects of alternatives	
	Proposed Action	No Action
<b>Land use</b>	Long-term minor adverse	Long-term minor adverse
<b>Aesthetic and visual resources</b>	No effects	No effects
<b>Air quality</b>	Short- and long-term minor adverse	Short- and long-term minor adverse
<b>Noise</b>	Short- and long-term minor adverse	Short- and long-term minor adverse
<b>Geology and soils</b>	Short- and long-term minor adverse	Short- and long-term minor adverse
<b>Water resources</b>		
• Surface water	Short-term minor and long-term negligible adverse	Long-term minor adverse
• Hydrogeology/Groundwater	Long-term negligible adverse	Long-term minor adverse
• Floodplains and Wetlands	Long-term minor adverse	No effects
• Coastal zone management	No effects	No effects
<b>Biological resources</b>	Long-term minor adverse	Long-term minor adverse
<b>Cultural resources</b>	No effects	No effects
<b>Socioeconomics</b>		
• Economic Development	Short- and long-term minor beneficial	Long-term minor beneficial
• Housing	No effects	No effects
• Public services	Long-term minor adverse	Long-term minor adverse
• Schools, family services	No effects	No effects
• Environmental justice	No effects	No effects
• Protection of children	No effects	No effects
<b>Transportation</b>	Short- and long-term minor adverse	Short- and long-term minor adverse
<b>Utilities</b>	Long-term minor and negligible adverse	Short- and long-term minor beneficial and adverse
<b>Hazardous and toxic substances</b>	Short-term negligible and long-term minor adverse	Long-term minor adverse

on the noise environment would be minor. Depending on weather conditions and the training sites used for nighttime (11 p.m. to 7 a.m.) detonations, areas adjacent to the installation boundary could be exposed to training noise that would vary from clearly audible (>115 dBP) to, more rarely, loud (>130 dBP).

#### **4.1.5 Geology and Soils**

Short- and long-term minor adverse effects on soils would occur during construction and operation of the proposed EOD field training area. In the short-term, vegetation removal during construction activities would temporarily expose soils and potentially increase soil erosion. In the long-term, explosives training would result in soil disturbance at detonation sites.

#### **4.1.6 Water Resources**

Short-term minor and long-term negligible and minor adverse effects on water resources would be expected. Construction and operational activities could increase runoff; increase soil disturbance, erosion, and compaction; and increase sediment and pollutant loads. Proposed facilities would be sited to avoid sensitive environmental areas, including RPAs, to the maximum

extent practicable. Wetlands and surface waters would be protected from development impacts or, where unavoidable, Fort A.P. Hill would minimize impacts to the resources by using Virginia-approved BMPs, and, if necessary, adhering to all conditions of permits issued by the U.S. Corps of Engineers and VDEQ. No adverse effects on the Chesapeake Bay or the Virginia CZMP would be expected.

#### **4.1.7 Biological Resources**

Long-term minor adverse effects on biological resources would be expected. It is anticipated that of the 2,059 acres in the proposed EOD field training area, about 278 acres of land would be cleared. The total cleared area would be dispersed among more than 40 individual training sites, and the amount of clearing done for each training site would be small. Wildlife would be newly exposed to Zone III and Zone II noise levels from demolition and training activities. No population-level effects on any animal species would be expected. Wildlife species would be protected through adherence to the Fort A.P. Hill INRMP, protected species management plans, and special area management plans during development and operation of the EOD field training area. No adverse effects on sensitive animal or plant species would be expected from implementation of the proposed action. No training activities would occur in eagle nest protection zones. Protection buffers would be established around all locations of small whorled pogonias. Student Soldiers trained on the EOD area the Soldiers would be briefed to avoid these sensitive areas.

#### **4.1.8 Cultural Resources**

No adverse effects on cultural resources at Fort A.P. Hill would be expected. Compliance with applicable federal legislation, the installation's ICRMP, and the installation's PA would ameliorate any unanticipated effects on cultural resources to less than significant.

#### **4.1.9 Socioeconomics**

Short- and long-term minor beneficial effects on economic development would be expected from expenditures to construct and operate the range facilities and the associated increases in sales volume, employment, and income in the ROI. Economic benefits also could result from timber sales. No effects on housing would be expected. Long-term minor adverse effects on medical services would be expected due to an increased response time to the EOD area, if a second medical crew were not acquired to augment the installation's existing one medical crew. No adverse effects on police or fire services, schools, other services and recreation facilities, environmental justice, or protection of children would be expected.

#### **4.1.10 Transportation**

Short- and long-term minor adverse effects on vehicle-based transportation resources at Fort A.P. Hill would be expected from using on-road construction vehicles during the periods of construction, bussing Army personnel to and from Fort A.P. Hill for training activities, and long-term operational activities on the proposed enlarged EOD field training area. No effects on railway and air transportation systems would be expected, and effects on the public transportation system would be negligible.

#### **4.1.11 Utilities**

Long-term minor adverse effects on landfill capacity would be expected from the disposal of minor amounts of solid waste from construction. There would be negligible effects on potable water reserves in the region. There would be no effects on the sanitary sewer system, the

electrical system, the natural gas system, the storm water collection system, or communication systems.

#### **4.1.12 Hazardous and Toxic Substances**

Short-term negligible and long-term minor adverse effects could occur. Long-term minor adverse effects could result from an increase in the use of hazardous materials. The volume of these wastes generated and the amount of storage required would increase. Long-term minor adverse effects could result from an increase in the small amounts of chemical residues that remain in the soil after an explosives training exercise. Other explosives residue, such as spent shock tubes, igniters, and packaging material, would be recovered in accordance with DoD policy. Short-term negligible adverse effects could result from incidental spills associated with the use of hazardous materials during facility construction. No environmental or health effects resulting from the testing, removal, handling, and disposal of hazardous materials would be expected during demolition or renovation activities. No effects would be expected from hazardous waste disposal; an increase in storage capacity requirements for petroleum, oil, and lubricants; the historical uses of the proposed EOD Training Area; or from pesticides.

#### **4.1.13 Cumulative Effects**

Minor adverse cumulative effects on surrounding land use, the noise environment, and regional utility systems would be expected. None of the adverse cumulative effects would be significant. Minor beneficial cumulative effects on economic development would be expected. No cumulative effects on aesthetic and visual resources, air quality, geology or soils, water resources, biological resources, cultural resources, transportation resources, or hazardous or toxic materials would be expected.

#### **4.1.14 Mitigation**

Mitigation actions are used to reduce, avoid, or compensate for significant adverse effects. The EA did not identify the need for any mitigation measures associated with implementation of the proposed action.

### **4.2 NO ACTION ALTERNATIVE SUMMARY OF CONSEQUENCES**

***Incorporation.*** This EA incorporates by reference the discussion of effects related to the 1,034-acre EOD training area contained in the Fort Lee BRAC EIS. Specific details are provided below.

#### **4.2.1 Land Use**

A long-term minor adverse effect on surrounding land use would be expected. Noise from explosions could create an incompatibility with nearby residential areas. No impacts on installation land uses would be expected.

#### **4.2.2 Aesthetic and Visual Resources**

No adverse effects on the visual environment would be expected.

#### **4.2.3 Air Quality**

Short- and long-term minor adverse effects on air quality would be expected from vehicle and fugitive dust emissions during facility construction and from operational emissions attributable to generators, boilers, and other internal combustion sources. No violations of federal, state, or local air regulations or Fort A.P. Hill's air operating permit would be expected.

#### **4.2.4 Noise**

Short- and long-term minor adverse effects on the noise environment at Fort A.P. Hill would be expected. The effects would be due to heavy equipment noise during construction and the operation of a 1,034-acre EOD area.

#### **4.2.5 Geology and Soils**

Short- and long-term minor adverse effects on soils would be expected. No effects on geology, topography, or prime farmland soils would occur. All disturbed areas would be stabilized and revegetated before construction activities were completed. Erosion control measures would be implemented in accordance with an erosion and sediment control plan developed for the project to control soil loss during construction and operation of the training range.

#### **4.2.6 Water Resources**

Long-term minor adverse effects on surface water and groundwater quality would be expected. Construction and operation of facilities could increase runoff and increase soil erosion and sediment and pollutant loads in storm water runoff. Proposed facilities would be sited to avoid sensitive environmental areas, such as riparian areas and wetlands, to the maximum extent practicable.

#### **4.2.7 Biological Resources**

Long-term minor adverse effects on vegetation and wildlife would be expected. Site clearing and construction of facilities would require some vegetation removal, long-term conversion of small areas from forest to open areas and roads, and short- or long-term displacement of local wildlife. Sensitive habitats would be avoided. Wildlife in the area would be newly exposed to high noise levels from demolition and training but would be expected to become accustomed to the new noise levels over time. No impacts on wetlands would be expected. Fort A.P. Hill has a policy to protect all wetlands and streams by maintaining 100-foot buffers around such areas.

#### **4.2.8 Cultural Resources**

No significant impacts on historic properties at Fort A.P. Hill would be expected. Compliance with applicable federal legislation, procedures in the installation's ICRMP, and the BRAC PA would ameliorate any unanticipated effects to less than significant.

#### **4.2.9 Socioeconomics**

Long-term minor beneficial effects on economic development would be expected. A long-term minor adverse effect on medical services would be expected from long travel times from the installation's medical center to the proposed EOD area. An additional medical crew could be needed. No effects on housing, law enforcement, fire protection, schools, family support, services, recreation, environmental justice, or the protection of children would be expected.

#### **4.2.10 Transportation**

Short- and long-term minor adverse effects on vehicle-based transportation resources at Fort A.P. Hill would be expected from using on-road construction vehicles during the periods of construction and bussing of Army personnel to and from Fort A.P. Hill for training activities. The effects on railway, air, or public transportation at Fort A.P. Hill would be negligible.

#### **4.2.11 Utilities**

Short- and long-term minor beneficial and adverse effects on utilities would be expected. Renovations and upgrades would be required for utility systems (water, wastewater, storm water, communications, and electricity), which could result in minor service interruptions. Utility system demands expected under the No Action Alternative would be nearly identical to those expected under the Preferred Alternative. Solid waste generated by student Soldiers and instructors during classes held at the proposed EOD training areas would be minimal and would be properly disposed.

#### **4.2.12 Hazardous and Toxic Substances**

Long-term minor adverse effects could result from an increase in the use of hazardous materials and an increase in storage capacity requirements for petroleum, oil, and lubricants. No adverse effects would be expected from hazardous waste disposal, UXO or MEC or pesticides.

#### **4.2.13 Cumulative Effects**

Minor adverse cumulative effects on surrounding land use, the noise environment, and regional utility systems would be expected. Minor beneficial cumulative effects on economic development would be expected. None of the adverse cumulative effects would be significant. No cumulative effects on aesthetic and visual resources, air quality, geology or soils, water resources, biological resources, cultural resources, transportation resources, or hazardous or toxic materials would be expected.

#### **4.2.14 Mitigation**

Mitigation actions are used to reduce, avoid, or compensate for significant adverse effects. The EA did not identify the need for any mitigation measures associated with implementation of the No Action Alternative.

### **4.3 CONCLUSIONS**

On the basis of the analyses performed in this EA, implementing the proposed action would have no significant direct, indirect, or cumulative effects on the quality of the natural or human environment. Preparation of an Environmental Impact Statement is not required. Issuance of a FNSI is appropriate.

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**SECTION 6.0**  
**PERSONS CONSULTED**

Mr. Scott T. Kittle, Deputy DPTMS and Chief of Training. Email communication to Sam Pett, June 2008.

Polis, John. Deputy Director, Fort A.P. Hill Directorate of Emergency Services. May 2008.

Sergi, Sergio. Environmental Specialist, Environmental Compliance and Pollution Prevention Communication. May 2008.

Smock, Leonard, Biology Department, Virginia Commonwealth University, VA. June 2006.

Thornton, Edward. Fort A.P. Hill Directorate of Logistics. August 2006.

Vaughan, David. Director, Fort A.P. Hill Directorate of Emergency Services. August 2006.

Wax, Linda. Fort A.P. Hill Housing Manager, Fort A.P. Hill Directorate of Public Works, Housing Division. August 2006.

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## **SECTION 7.0**

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**SECTION 8.0**  
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RADCO/George Washington Regional Commission  
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COL Sandra Thacker  
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Mr. Percy Ashcraft  
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419 King Street  
Port Royal, VA 22535

Bowling Green Library  
17202 Richmond Turnpike  
Bowling Green, VA 22427

***APPENDIX A***  
Agency Consultation Letters

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Consultation letters were sent to all addressees listed below. Because the content of each of the letters was the same, all letters that were sent are not duplicated here. A copy of one letter is included in this appendix. Also, an enclosure that included information from Sections 1.0 and 2.0 of the EA was included with each letter sent. The enclosure is not included in this appendix. All responses to the letters that were received are included in this appendix in their original form.

Mr. Tylan Dean  
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Virginia Field Office  
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Ms. Della Mills  
Vice Mayor  
Port Royal Town Council  
621 Main Street  
Port Royal, VA 22535

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**DEPARTMENT OF THE ARMY**  
U. S. ARMY GARRISON, FORT A.P. HILL  
DIRECTORATE OF PUBLIC WORKS  
19952 NORTH RANGE ROAD  
FORT A.P. HILL, VIRGINIA 22427-3123

REPLY TO  
ATTENTION OF

April 28, 2008

Directorate of Public Works

RADCO/George Washington Regional Commission  
Bowman Industrial Complex  
3304 Bourbon Street, Third Floor  
Fredericksburg, Virginia 22404

Dear RADCO:

The Army is undertaking the preparation of an Environmental Assessment (EA) for a proposed expansion of the explosives ordnance disposal (EOD) field training area that was evaluated in the *Final Environmental Impact Statement: Implementation of Base Realignment and Closure (BRAC) Recommendations and Other Army Actions at Fort Lee, Virginia, and Fort A.P. Hill, Virginia*, published in February 2007 and for which a Record of Decision was signed May 11, 2007. The purpose of this letter is to solicit your input regarding the potential impacts of the proposed expansion of the EOD area. A final EA is anticipated to be available for review by agencies and the public in August 2008.

The Army finds it necessary to prepare an EA for an expansion of the EOD area that was evaluated in the Fort Lee/Fort A.P. Hill EIS because of a modification of the mission to be completed at the EOD range and after inspection of the site proposed in the EIS revealed a shortfall of suitable training area within the 1,034 acres evaluated in the EIS. After publication of the ROD, planning by the Army revealed the need for an EOD field training area of approximately 2,059 acres, which is 1,025 acres more than was evaluated in the EIS. In addition, the Army recognized a need to train students in the Global Antiterrorism Operational Readiness (GATOR) course at night. To evaluate this expanded need, Fort A.P. Hill, in accordance with the National Environmental Policy Act, Federal resource protection laws, and Army regulation, is preparing an EA that evaluates the potential environmental and socioeconomic effects of constructing and operating the larger EOD field training area for student personnel being realigned to Fort Lee, Virginia. The enclosure provides more detailed information on the proposed action being evaluated in the EA.

**“EXCELLENCE THROUGH SERVICE”**

It is requested that your input be provided within 30 days of receipt of this letter. If you have any questions or require further information, please call Ms. Terry Banks at 804-633-8223.

Sincerely,

Terry L. Banks  
Chief Environmental Division

Enclosures



# Peumansend Creek Regional Jail

11093 S.W. LEWIS MEMORIAL DRIVE ■ P.O. BOX 1460 ■ BOWLING GREEN, VA 22427  
PH: 804-633-0043 FAX: 804-633-3170 E-MAIL: [pcrj@pcrj.org](mailto:pcrj@pcrj.org) WEB: [www.pcrj.org](http://www.pcrj.org)

City of Alexandria • City of Richmond • Arlington County • Caroline County • Loudoun County • Prince William County

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May 23, 2008

Department of the Army  
DPW Environmental Division  
19952 North Range Road  
Fort A.P. Hill, VA 22427-3123

Dear Ms. Banks:

I am in receipt of your letter dated April 28, 2008, regarding the proposed expansion of the explosives ordnance disposal field training area and solicitation of potential impacts regarding said expansion.

Not having the expertise in the area of explosives and the impact of detonation of the ordnances, I can only respond on a practical level in regards to the concerns of operating a correctional facility with the proposed activities in close proximity to the jail. My concerns are outlined below:

- Currently when the wind blows in the direction of the jail and smoke is emanating from the base, our smoke detection devices activate. The "smoky" air on the inside is exchanged with the "fresh" air of the outside. When smoke is originating from the outside, the smoky air is then pumped into the buildings.  
  
It has been increasingly difficult to convince the 336 inmates there is no fire when they can hear the alarms and smell smoke. I am concerned we will experience an increase in these activities from the proposed expansion and a greater potential of actual fire, which has jumped route 301 in the past.
- As with many other communities, we currently have a large population of deer and vegetation damage by these animals. With the expansion activities, I am concerned a greater number of animal life, mainly deer, will take refuge on the jail property creating more damage.
- Most importantly I am concerned about the sound of explosives during night fire. The inmate population is confined to specific places at night and cannot move to other areas to accommodate the sounds. I have security concerns when 336 inmates are awakened in the night by explosions.

Thank you for allowing an opportunity to express my concerns.

Sincerely,

Sandra Thacker, Superintendent  
Peumansend Creek Regional Jail

cc: All Authority Members

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**National Commission on Correctional Health Care Accreditation**  
**American Correctional Association, Jail Industries Accreditation**  
**"America's First Accredited Jail Industry"**  
**American Correctional Association, Adult Local Detention Facilities**

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***APPENDIX B***  
Record of Non-Applicability

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RECORD OF NON-APPLICABILITY  
In Accordance with the Clean Air Act - General Conformity Rule For

**The Proposed Constructing and Operating  
an Explosives Ordnance Disposal Field Training Area  
at Fort A.P. Hill, Virginia**

24 July 2008

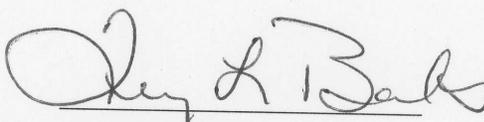
In accordance with the 2005 Base Realignment and Closure, the Army proposes to construct a field training area that includes EOD training sites, observation bunkers, training towers, a range operations headquarters building, a robotics range support building, range storage buildings, covered training areas (bleachers), and a water supply treatment building at Fort A.P. Hill Virginia. The Army also proposes to construct an 80-person barracks for students' use.

General Conformity under the Clean Air Act, Section 176 has been evaluated according to the requirements of 40 CFR 93, Subpart B. The requirements of this rule are not applicable to the Proposed Action because:

All activities associated with the Proposed Action are located in an area designated by EPA to be in attainment for all criteria pollutants.

Supported documentation and emission estimates:

- Are Attached
- Appear in the NEPA Documentation
- Other (Not Necessary)



TERRY BANKS  
Chief of Environmental and Natural Resources Division  
Fort A.P. Hill

**APPENDIX C**  
Coastal Zone Consistency Determination

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**Coastal Zone Management Act (CZMA) Consistency Determination**  
**For Fort A.P. Hill Proposed Construction and Operation of an Explosives**  
**Ordnance Disposal Field Training Area**

This document provides the Commonwealth of Virginia with the Fort A.P. Hill (FAPH) Consistency Determination under CZMA section 307(c) (1) and 15 CFR Part 930, sub-part C, for implementation of the proposed action described below. The information in this Consistency Determination is provided pursuant to 15 CFR section 930.39.

*[The following paragraphs of text summarize the proposed federal activity. A full description of the proposed activity may be found in the Environmental Assessment (EA) of Constructing and Operating an Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia, which is incorporated by reference into this Consistency Determination].*

This federal Consistency Determination identifies consistency with state and federal CZMA regulations in evaluating the construction and operation of an explosives ordnance disposal (EOD) field training area evaluated in. On May 11, 2007, the Army issued its Record of Decision (ROD) for the *Final Environmental Impact Statement: Implementation of Base Realignment and Closure (BRAC) Recommendations and Other Army Actions at Fort Lee, Virginia, and Fort A.P. Hill, Virginia*. Among the facilities projects evaluated in the environmental impact statement (EIS) was establishing a 1,034-acre EOD area at Fort A.P. Hill. Subsequent to publication of the ROD, ongoing planning by the Army revealed the need for an EOD field training area of approximately 2,059 acres.

The proposed action is to add approximately 1,025 acres to the EOD field training area evaluated in the Fort Lee and Fort A.P. Hill BRAC EIS, resulting in the construction and operation of a contiguous EOD field training area of approximately 2,059 acres. The purpose of the proposed action is to provide adequate facilities for Army training functions being realigned to Fort Lee by BRAC 2005.

### **Consistency Determination**

The Virginia Coastal Zone Management Program (CZMP) contains the applicable enforceable policies presented in the left column of the table in the following pages. The Army has determined that the implementation of the proposed action would have no effects on the land or water uses or natural resources of Virginia as described in the right column of the table.

Based upon the information, data, and analysis, as contained in the EA, the Army finds that the proposed action is consistent to the maximum extent practicable with the enforceable policies of the Virginia CZMP. Pursuant to 15 CFR section 930.41, the Virginia CZMP has 60 days from the receipt of this document in which to concur with or object to this Consistency Determination, or to request an extension under 15 CFR section 930.41(b). Virginia's concurrence will be presumed if its response is not received by the Army on or before the 60<sup>th</sup> day from receipt of this determination. The Commonwealth of Virginia's response should be sent to Ms. Terry Banks, Chief, Environmental Division, 19952 North Range Road, Fort A.P. Hill, Virginia, 22427.

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**Coastal Zone Management Act, Fort A.P. Hill Consistency Determination**
**Applicable Enforceable Policy**
**Effects of the Federally Proposed Action**
**Fisheries Management**

The program stresses the conservation and enhancement of finfish and shellfish resources and the promotion of commercial and recreational fisheries to maximize food production and recreational opportunities. This program is administered by the Marine Resources Commission (VMRC) (Virginia Code '28.2-200 to '28.2-713) and the Department of Game and Inland Fisheries (VDGIF) (Virginia Code '29.1-100 to '29.1-570).

The State Tributyltin (TBT) Regulatory Program has been added to the Fisheries Management program. The General Assembly amended the Virginia Pesticide Use and Application Act as it related to the possession, sale, or use of marine antifoulant paints containing TBT. The use of TBT in boat paint constitutes a serious threat to important marine animal species. The TBT program monitors boating activities and boat painting activities to ensure compliance with TBT regulations promulgated pursuant to the amendment. The VMRC, VDGIF, and Virginia Department of Agriculture and Consumer Services (VDACS) share enforcement responsibilities (Virginia Code '3.1-249.59 to '3.1-249.62).

**NO EFFECT**

The proposed action would not involve building, dumping, or otherwise trespassing on or over, encroaching on, taking or using any material from the beds of the bays, ocean, rivers, streams, or creeks within Virginia. The proposed action would not have a reasonably foreseeable effect on fish spawning, nursery, or feeding grounds, and therefore none on fisheries management per the Virginia Marine Resources Commission and the Department of Game and Inland Fisheries.

No paints containing Tributyltin will be used under this proposed action.

**Subaqueous Lands Management**

The management program for subaqueous lands establishes conditions for granting or denying permits to use state-owned bottomlands based on considerations of potential effects on marine and fisheries resources, wetlands, adjacent or nearby properties, anticipated public and private benefits, and water quality standards established by the Department of Environmental Quality (VDEQ), Water Division. The program is administered by the Marine Resources Commission (Virginia Code '28.2-1200 to '28.2-1213).

**NO EFFECT**

No subaqueous land use is proposed under this action. This project involves no encroachments in, on, or over state-owned submerged lands.

**Non-point Source Pollution Control**

Virginia's Erosion and Sediment Control (ESC) Law requires soil-disturbing projects to be designed to reduce soil erosion and to decrease inputs of chemical nutrients and sediments to the Chesapeake Bay, its tributaries, and other rivers and waters of the Commonwealth. This program is administered by the Department of Conservation and Recreation (VDCR) (Virginia Code '10.1-560 et seq.). Also, construction activity of less than 1 acre but part of a common plan of development disturbing 1 or more acres and having the potential to discharge stormwater requires coverage under the Virginia Stormwater Management Program (VSMP) *General Permit for Discharges of Stormwater for Construction Activities*.

**NO EFFECT**

The proposed action would require ground disturbance for facility construction. Fort A.P. Hill is developing an Integrated Storm Water Pollution Prevention Plan (SWPPP). Site-specific ESC plans that provide information relevant to each activity will be developed per the Virginia ESC law and regulations for EOD training areas. These plans will become temporary additions to the SWPPP for the duration of the activity. The SWPPP is being developed IAW the VSMP general construction permit, and a VSMP permit will be obtained for this project. Design and construction of a septic system or drain field would be coordinated with the Virginia Department of Health.

<b>Coastal Zone Management Act, Fort A.P. Hill Consistency Determination</b>	
<b>Applicable Enforceable Policy</b>	<b>Effects of the Federally Proposed Action</b>
<p><b>Wetlands Management</b></p> <p>The purpose of the wetlands management program is to preserve tidal wetlands, prevent their despoilation, and accommodate economic development in a manner consistent with wetlands preservation.</p> <p>(i) The tidal wetlands program is administered by the Marine Resources Commission (Virginia Code §28.2-1301 through '28.2-1320).</p> <p>(ii) The Virginia Water Protection Permit program administered by the Department of Environmental Quality includes protection of wetlands --both tidal and non-tidal. This program is authorized by Virginia Code § 62.1-44.15.5 and the Water Quality Certification requirements of Section 401 of the Clean Water Act of 1972.</p>	<p><b>NO EFFECT</b></p> <p>The proposed action would not affect any tidal wetlands at Fort A.P. Hill. It is unlikely that the proposed action would require a Virginia Water Protection (VWP) Permit as it does not propose to conduct any of the following activities in a wetland:</p> <ol style="list-style-type: none"> <li>1. New activities to cause draining that significantly alters or degrades existing wetland acreage or functions.</li> <li>2. Filling or dumping.</li> <li>3. Permanent flooding or impounding.</li> <li>4. New activities that cause significant alteration or degradation of existing wetland acreage or functions.</li> </ol> <p>During the course of the proposed action, however, if it were to become evident that an impact would occur, then the installation would apply for a VWP permit prior to commencing the activity. Additionally, the installation would prepare and adhere to an Erosion and Sediment Control Plan to prevent sedimentation from entering surface waters (see non-point source pollution control section below).</p>
<p><b>Dunes Management</b></p> <p>Dune protection is carried out pursuant to The Coastal Primary Sand Dune Protection Act and is intended to prevent destruction or alteration of primary dunes. This program is administered by the Marine Resources Commission (Virginia Code '28.2-1400 through '28.2-1420).</p>	<p><b>NO EFFECT</b></p> <p>No permanent alteration of or construction upon any coastal primary sand dune will take place under the proposed action.</p>
<p><b>Point Source Pollution Control</b></p> <p>The point source program is administered by the State Water Control Board pursuant to Virginia Code '62.1-44.15. Point source pollution control is accomplished through the implementation of the National Pollutant Discharge Elimination System (NPDES) permit program established pursuant to Section 402 of the federal Clean Water Act and administered in Virginia as the Virginia Pollutant Discharge Elimination System (VPDES) permit program.</p>	<p><b>NO EFFECT</b></p> <p>American Water O&amp;M, Inc., is now the permittee for the two wastewater treatment plant at Fort A.P. Hill. Fort A.P. Hill has a petroleum, oil, and lubricants (POL) industrial general permit. Permittees would work with VDEQ to revise the permits as necessary as the proposed action was implemented, and Fort A.P. Hill would adhere to all permit of its conditions.</p>
<p><b>Coastal Lands Management</b></p> <p>A state-local cooperative program administered by the Department of Conservation and Recreation's Division of Chesapeake Bay Local Assistance and 84 localities in Tidewater, Virginia, established pursuant to the Chesapeake Bay Preservation Act; Virginia Code §§ 10.1-2100 through 10.1-2114 and Chesapeake Bay Preservation Area Designation and Management Regulations; Virginia Administrative code 9 VAC10-20-10 et seq.</p>	<p><b>NO EFFECT</b></p> <p>Buffer areas of not less than 100 feet adjacent to and landward of the components listed in 9 VAC 10-20-80 Resource Protection Areas would be adhered to. Best management practices will be developed and implemented in accordance with the VSMP SWPPP. Applicable provisions of the Chesapeake Bay Preservation Act will be adhered to during all construction and operational activities..</p>

<b>Coastal Zone Management Act, Fort A.P. Hill Consistency Determination</b>	
<b>Applicable Enforceable Policy</b>	<b>Effects of the Federally Proposed Action</b>
<p><b>Shoreline Sanitation</b></p> <p>The purpose of this program is to regulate the installation of septic tanks, set standards concerning soil types suitable for septic tanks, and specify minimum distances that tanks must be placed away from streams, rivers, and other waters of the Commonwealth. This program is administered by the Department of Health (Virginia Code '32.1-164 through '32.1-165).</p>	<p><b>NO EFFECT</b></p> <p>Sanitation facilities at the EOD area would not be close to streams, rivers, or other waters of the Commonwealth, and no adverse effects on Commonwealth waters would result from use of the facilities.</p>
<p><b>Air Pollution Control</b></p> <p>The program implements the federal Clean Air Act to provide a legally enforceable State Implementation Plan for the attainment and maintenance of the National Ambient Air Quality Standards. This program is administered by the State Air Pollution Control Board (Virginia Code '10-1.1300).</p>	<p><b>NO EFFECT</b></p> <p>The estimated emissions from implementation of the proposed action would not exceed the <i>de minimis</i> threshold values. A conformity determination is not required and a Record of Non-applicability is in Appendix B of the EA.</p>

***APPENDIX D***

Economic Impact Forecast System  
Model Results

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## **Economic Impact Forecast System (EIFS) Model Analysis – Proposed Action Alternative**

### ***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, construction and operation of a training range at FAPH 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.

### ***The Economic Impact Forecast System***

The U.S. Army, with the assistance of 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 RCI. The entire system is designed for the scrutiny of a populace affected by the actions being studied. The algorithms in EIFS are simple and easy to understand, but still have firm, defensible bases in regional economic theory.

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

### ***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 EIFS model the data elements which describe the Army action: definition of the ROI; the change in local procurement, contracting, and purchases; number of affected (moving) civilian

personnel and their salaries; number of affected (moving) military employees and their salaries; the percent of affected military living on-post.

The proposed action includes the establishment of a training range and construction of facilities to support OMEMS field training requirements (EOD training sites, range operations headquarters building, robotics range support building, covered training areas, training towers, supporting facilities, and a student barracks) and operation of a 2,059 acre training range. Thirty-three military permanent party personnel and one civilian would be directly involved in the execution of OMEMS training as instructors and cadre. These personnel would be assigned to Fort Lee, with duty at FAPH.

The estimated cost to construct the range facilities is \$30 million. The construction period is estimated at 1 year. Thirty million was input into the EIFS model as the change in expenditures. The 34 OMEMS training instructors were entered as the change in employment. The ROI's per capita personal income of \$32,800 was input as the income for these personnel. It is assumed that the civilian position would be filled by a person already living in the region.

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

### ***The Significance of Socioeconomic Impacts***

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:

		<u>Increase</u>	<u>Decrease</u>
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 4.2.9.2.

## EIFS REPORT

### PROJECT NAME

**Fort A.P. Hill– Proposed Action Alternative**

### STUDY AREA

51033 Caroline County, VA  
 51057 Essex County, VA  
 51099 King George County, VA  
 51177 Spotsylvania County, VA  
 51179 Stafford County, VA  
 51630 Fredericksburg City, VA

### FORECAST INPUT

Change In Local Expenditures	\$30,000,000
Change In Civilian Employment	1
Average Income of Affected Civilian	\$32,800
Percent Expected to Relocate	0
Change In Military Employment	33
Average Income of Affected Military	\$32,800
Percent of Military Living On-post	10

### FORECAST OUTPUT

Employment Multiplier	2.6	
Income Multiplier	2.6	
Sales Volume – Direct	\$30,532,610	
Sales Volume – Induced	\$48,852,170	
Sales Volume – Total	\$79,384,780	1.04%
Income – Direct	\$5,772,916	
Income - Induced	\$7,584,651	
Income – Total (place of work)	\$13,357,570	0.24%
Employment – Direct	155	
Employment – Induced	193	
Employment – Total	348	0.34%
Local Population	82	
Local Off-base Population	74	0.04%

### RTV SUMMARY

	Sales Volume	Income	Employment	Population
Positive RTV	12.61%	11.46%	4.21%	3.40%
Negative RTV	-9.02%	-7.47%	-6.18%	-2.46%

**RTV DETAILED  
SALES VOLUME**

<b>Year</b>	<b>Value</b>	<b>Adj_Value</b>	<b>Change</b>	<b>Deviation</b>	<b>% Deviation</b>
1969	176,114	769,618	0	0	0
1970	183,489	757,810	-11,809	-91,078	-12.02
1971	212,074	839,813	82,003	2,734	0.33
1972	235,964	903,742	63,929	-15,340	-1.7
1973	264,558	955,054	51,312	-27,957	-2.93
1974	294,792	958,074	3,020	-76,249	-7.96
1975	319,465	952,006	-6,068	-85,337	-8.96
1976	365,043	1,029,421	77,416	-1,853	-0.18
1977	408,228	1,077,722	48,301	-30,968	-2.87
1978	454,405	1,117,836	40,114	-39,155	-3.5
1979	508,016	1,122,715	4,879	-74,390	-6.63
1980	558,178	1,082,865	-39,850	-119,119	-11
1981	659,034	1,159,900	77,034	-2,235	-0.19
1982	706,771	1,173,240	13,340	-65,929	-5.62
1983	801,694	1,290,727	117,488	38,219	2.96
1984	936,549	1,442,285	151,558	72,289	5.01
1985	1,036,467	1,544,336	102,050	22,781	1.48
1986	1,163,989	1,699,424	155,088	75,819	4.46
1987	1,313,191	2,035,446	336,022	256,753	12.61
1988	1,446,070	1,966,655	-68,791	-148,060	-7.53
1989	1,591,680	2,053,267	86,612	7,343	0.36
1990	1,665,147	2,048,131	-5,136	-84,405	-4.12
1991	1,698,505	2,004,236	-43,895	-123,164	-6.15
1992	1,789,483	2,040,011	35,775	-43,494	-2.13
1993	1,934,343	2,147,121	107,110	27,841	1.3
1994	2,113,964	2,283,081	135,960	56,691	2.48
1995	2,257,804	2,370,694	87,613	8,344	0.35
1996	2,420,927	2,469,345	98,651	19,382	0.78
1997	2,677,896	2,677,896	208,551	129,282	4.83
1998	2,883,151	2,825,488	147,592	68,323	2.42
1999	3,230,262	3,101,051	275,563	196,294	6.33
2000	3,555,078	3,306,223	205,171	125,902	3.81

**INCOME**

<b>Year</b>	<b>Value</b>	<b>Adj_Value</b>	<b>Change</b>	<b>Deviation</b>	<b>% Deviation</b>
1969	272,082	1,188,998	0	0	0
1970	295,451	1,220,213	31,214	-136,004	-11.15
1971	354,289	1,402,984	182,772	15,554	1.11
1972	412,015	1,578,017	175,033	7,815	0.5
1973	475,902	1,718,006	139,989	-27,229	-1.58
1974	545,664	1,773,408	55,402	-111,816	-6.31
1975	610,338	1,818,807	45,399	-121,819	-6.7
1976	695,533	1,961,403	142,596	-24,622	-1.26
1977	782,490	2,065,774	104,371	-62,847	-3.04
1978	908,636	2,235,245	169,471	2,253	0.1
1979	1,019,327	2,252,713	17,468	-149,750	-6.65
1980	1,181,326	2,291,773	39,060	-128,158	-5.59
1981	1,362,448	2,397,908	106,136	-61,082	-2.55
1982	1,487,122	2,468,622	70,714	-96,504	-3.91
1983	1,655,220	2,664,904	196,282	29,064	1.09
1984	1,895,337	2,918,819	253,915	86,697	2.97
1985	2,084,045	3,105,227	186,408	19,190	0.62
1986	2,312,157	3,375,749	270,522	103,304	3.06
1987	2,581,719	4,001,664	625,915	458,697	11.46
1988	2,858,137	3,887,066	-114,598	-281,816	-7.25
1989	3,161,556	4,078,407	191,341	24,123	0.59
1990	3,363,361	4,136,934	58,527	-108,691	-2.63
1991	3,479,332	4,105,612	-31,323	-198,541	-4.84
1992	3,720,071	4,240,881	135,269	-31,949	-0.75
1993	4,002,862	4,443,177	202,296	35,078	0.79
1994	4,342,690	4,690,105	246,929	79,711	1.7
1995	4,625,649	4,856,931	166,826	-392	-0.01
1996	4,997,876	5,097,833	240,902	73,684	1.45
1997	5,478,586	5,478,586	380,753	213,535	3.9
1998	5,802,017	5,685,977	207,391	40,173	0.71
1999	6,314,821	6,062,228	376,251	209,033	3.45
2000	7,032,229	6,539,973	477,745	310,527	4.75

**EMPLOYMENT**

<b>Year</b>	<b>Value</b>	<b>Change</b>	<b>Deviation</b>	<b>%Deviation</b>
1969	31,157	0	0	0
1970	31,058	-99	-2,863	-9.22
1971	33,486	2,428	-336	-1
1972	35,544	2,058	-706	-1.99
1973	37,640	2,096	-668	-1.77
1974	39,164	1,524	-1,240	-3.17
1975	39,610	446	-2,318	-5.85
1976	41,601	1,991	-773	-1.86
1977	43,671	2,070	-694	-1.59
1978	45,209	1,538	-1,226	-2.71
1979	46,327	1,118	-1,646	-3.55
1980	46,981	654	-2,110	-4.49
1981	49,645	2,664	-100	-0.2
1982	49,966	321	-2,443	-4.89
1983	52,658	2,692	-72	-0.14
1984	55,968	3,310	546	0.98
1985	59,700	3,732	968	1.62
1986	63,554	3,854	1,090	1.72
1987	69,236	5,682	2,918	4.21
1988	70,981	1,745	-1,019	-1.44
1989	75,511	4,530	1,766	2.34
1990	78,608	3,097	333	0.42
1991	78,619	11	-2,753	-3.5
1992	80,968	2,349	-415	-0.51
1993	84,447	3,479	715	0.85
1994	90,186	5,739	2,975	3.3
1995	94,107	3,921	1,157	1.23
1996	97,918	3,811	1,047	1.07
1997	102,768	4,850	2,086	2.03
1998	107,876	5,108	2,344	2.17
1999	114,330	6,454	3,690	3.23
2000	119,604	5,274	2,510	2.1

**POPULATION**

<b>Year</b>	<b>Value</b>	<b>Change</b>	<b>Deviation</b>	<b>%Deviation</b>
1969	83,924	0	0	0
1970	85,040	1,116	-4,182	-4.92
1971	88,326	3,286	-2,012	-2.28
1972	91,438	3,112	-2,186	-2.39
1973	95,214	3,776	-1,522	-1.6
1974	100,654	5,440	142	0.14
1975	105,275	4,621	-677	-0.64
1976	109,665	4,390	-908	-0.83
1977	116,097	6,432	1,134	0.98
1978	122,215	6,118	820	0.67
1979	126,221	4,006	-1,292	-1.02
1980	128,183	1,962	-3,336	-2.6
1981	130,530	2,347	-2,951	-2.26
1982	132,895	2,365	-2,933	-2.21
1983	135,418	2,523	-2,775	-2.05
1984	139,020	3,602	-1,696	-1.22
1985	142,675	3,655	-1,643	-1.15
1986	147,537	4,862	-436	-0.3
1987	153,858	6,321	1,023	0.66
1988	162,105	8,247	2,949	1.82
1989	171,004	8,899	3,601	2.11
1990	182,501	11,497	6,199	3.4
1991	189,173	6,672	1,374	0.73
1992	196,328	7,155	1,857	0.95
1993	203,851	7,523	2,225	1.09
1994	212,231	8,380	3,082	1.45
1995	219,267	7,036	1,738	0.79
1996	226,890	7,623	2,325	1.02
1997	232,184	5,294	-4	0
1998	237,387	5,203	-95	-0.04
1999	244,665	7,278	1,980	0.81
2000	253,474	8,809	3,511	1.39

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

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**ACRONYMS AND ABBREVIATIONS**

ADNL	A-weighted day-night average sound level
ACM	asbestos-containing material
a.m.	ante meridiem (before noon)
AQCR	Air-Quality Control Region
AQCR 224	Northeastern Virginia Intrastate Air-Quality Control Region
AWG	Asymmetrical Warfare Group
BMP	best management practice
BOQ	Bachelor Officers' Quarters
BRAC	Base Realignment and Closure
C&D	construction and demolition
CBPA	Chesapeake Bay Preservation Act
CDNL	C-weighted day-night average sound level
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	<i>Code of Federal Regulations</i>
CO	carbon monoxide
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Program
dB	decibel
dBA	A-weighted decibel
dBC	C-weighted decibel
dBP	peak level decibel
DNL	day-night average sound level
DoD	Department of Defense
EA	environmental assessment
EIFS	Economic Impact Forecast System
EIS	environmental impact statement
EO	Executive Order
EOD	Explosive Ordnance Disposal
EPA	U.S. Environmental Protection Agency
FAPH	Fort A.P. Hill
FEMA	Federal Emergency Management Agency
FNSI	Finding of No Significant Impact
GATOR	Global Antiterrorism Operational Readiness
GCR	General Conformity Rule
ICRMP	Integrated Cultural Resource Management Plan
INRMP	Integrated Natural Resource Management Plan
JERRV	Joint EOD Rapid Response Vehicles
lb, lbs	pound, pounds
LBP	lead-based paint
LEED	U.S. Green Building Council's Leadership in Energy and Environmental Design

MICLIC	Mine Clearing Line Charge
mm	millimeter
MOUT	Missions on Urban Terrain
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NEW	net explosive weight
NO <sub>x</sub>	oxides of nitrogen
NRHP	National Register of Historic Places
NSR	New Source Review
NSWECE	Naval Special Warfare Explosive Center of Excellence
O <sub>3</sub>	ozone
OMEMS	Ordnance Munitions and Electronic Maintenance School
PA	programmatic agreement
PCPI	per capita personal income
p.m.	post meridiem (afternoon)
PM <sub>10</sub>	particulate matter less than 10 microns in diameter
PM <sub>2.5</sub>	particulate matter less than 2.5 microns in diameter
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
ROI	region of influence
RPA	resource protection area
RTV	rational threshold value
SF	square foot/square feet
SHPO	State Historic Preservation Officer
SI	Farmland of Statewide Importance
SO <sub>2</sub>	sulfur dioxide
TNT	trinitrotoluene
VDCR	Virginia Department of Conservation and Recreation
VDEQ	Virginia Department of Environmental Quality
VSMP	Virginia Stormwater Management Plan