DRAFT

ENVIRONMENTAL ASSESSMENT

THE NEW COMMISSARY, EXCHANGE, AND FUTURE MIXED USE DEVELOPMENT

U.S. Army Garrison Fort Belvoir, Virginia
August 2010

Reviewed by:

Patrick M. McLaughlin
Chief, Environmental Natural Resource Division

Recommended for Approval:

Bill Sanders
Director, Public Works

Approved by:

John J. Strycula
Colonel, U.S. Army
Commanding

Draft Finding of No Significant Impact
Community Support Center Development
U.S. Army Garrison, Fort Belvoir
Directorate of Public Works,
Fort Belvoir, Virginia

Name of Action: Construction of a New Commissary, Exchange, and Future Mixed Use Development

Description of Proposed Action and Need: As Fort Belvoir continues to support the National Capital Area, enhanced and expanded shopping and dining services on the Installation will be necessary to provide high quality, reliable services and amenities to all eligible patrons including military retirees. The Army and Air Force Exchange Service and the Defense Commissary Agency propose to construct and operate a new 132,000 square foot Commissary and 270,000 square foot Post Exchange at Fort Belvoir, Virginia as part of the Community Support Center area. This area will also include future mixed use development, as part of the Community Support Center area.

The proposed action involves constructing new facilities and associated sidewalks, parking areas, access roads and necessary utilities, and the demolition of the old Commissary and Exchange facilities. The new facilities would be located on the Upper North Post in an area bounded by John J. Kingman, Gunston, Gorgas and Woodlawn Roads designated as the Community Support Center area. The site for the new Exchange would encompass approximately 35 acres, and the future, adjacent Commissary would be located on approximately 21.5 acres. The mixed use development would be located in the southeastern area on approximately 32-35 acres.

The Environmental Assessment (EA) evaluated the proposed action alternative. During early phases of planning, other sites on Fort Belvoir were considered for the new Commissary and Exchange but were dismissed for several reasons including inconvenient access, the timing for availability of the site, and potential environmental impacts. Consideration was given to the renovation of the existing facilities, however, the physical layout and functionality of the facilities after renovation, access logistics and the costs based on the facility condition assessments for the existing buildings resulted in rejection of the alternative to renovate. A No Action (No Build) alternative was also considered but would not meet the needs of customers from the National Capital Area. The proposed action alternative provides two site options for the layout of the new facilities within the Community Support Center Area.

Environmental Consequences: The Environmental Assessment, which is attached hereto and incorporated by reference into this Finding of No Significant Impact, examined the potential effects of the proposed action and no action alternative on areas of land use, air quality, noise, geology and soils, water resources, biological resources, cultural resources, socioeconomic resources, transportation, utilities and hazardous and toxic materials.

Best management practices (BMPs) and adherence to applicable policies/regulations that would be implemented for resource protection are included with discussions of each respective resource area in the EA. No mitigation measures for effects on air quality, topography, or utilities would be required. Air pollutant emissions from the proposed action would not be significant and would be below *de minimis levels* for general conformity. Mitigation measures identified in the environmental assessment for effects included:

Transportation and Traffic: During the design phase, access point and intersection improvements to include turning lanes for delivery and patron entrances, signal sequencing, stop-control or signal control would be incorporated as appropriate to off-set the long- term minor adverse impacts to traffic which may

occur in the vicinity of the Community Support Center. Construction traffic is not anticipated to have a significant impact.

Natural Resources: It is the intent of DeCA and AAFES to construct their projects with no impacts to streams or Resource Protection Areas. The Army would revegetate disturbed areas with native species as appropriate. Low Impact Development and LEED® Silver standards would be incorporated in the site-specific development of stormwater management. Stable outfalls would be provided and stream banks stabilization and/or restoration of the receiving stream channel would occur prior to receipt of water. The project would identify candidate areas for removal of existing impervious surface and use pervious paving materials as feasible to offset the increase of impervious surfaces resulting from development of Fort Belvoir.

Tree Restoration Plan would be developed to include the protection of mature and significant trees and the replacement of trees; approximately 4,725 trees would be replanted within designated locations. Although future mixed use development is planned for previously disturbed/developed areas, additional clearing and tree removal may occur and would be required to comply with the Fort Belvoir Tree Replacement Policy. Other potential mitigation activities could include repairing and restoring habitat condition, or conservation of other lands to mitigate impacts for loss of wildlife habitat; and the removal of invasive/exotic vegetation from riparian areas and adjoining upland areas. Scheduling land clearing activities for site preparations outside of the nesting season for Partners In Flight recognized birds would also benefit species using vegetation communities within limits of disturbance.

Potential habitat for the small whorled pogonia (*Isotria medeoloides*) occurs within the Community Support Center area. Small whorled pogonia has not been found in previous surveys of the area. Future surveying to determine the presence of small-whorled pogonia would be conducted as necessary prior to ground disturbing activity for new facilities and associated infrastructure. If small whorled pogonia is located within the limits of disturbance for proposed action, coordination with Fish and Wildlife Service and Virginia Department of Conservation Resources would be necessary. No other rare, threatened or endangered species or their habitat would be affected by the proposed action for either option.

Cultural Resources: The proposed action is not expected to have an adverse impact on cultural resources under Section 106 of the National Historic Preservation Act. Fencing and a 50-ft buffer surrounding Lacey Cemetery would provide protection from construction activities related to the proposed action. The buffer would also provide a vegetated screen of the development from the cemetery. Monitoring would occur to prevent inadvertent impacts.

Land Use: Offsets would include planting of native or naturalized plants with consideration of LEED® concepts; thermal shading of interior parking areas with large islands of vegetation; and the creation of neighborhood outdoor space.

Hazardous Materials and Solid Waste: Three Petroleum Storage Areas, one active and two inactive, have been identified within the proposed project site. Remediation of the sites would be integrated into the construction phase of the project in concert with the site preparation and earthwork features for minimal impact. Asbestos and lead based paint surveys would be required before demolition of the Commissary and Exchange.

Solid Waste: Solid waste management would include training on eligible materials for recycling municipal solid waste and the incorporation of recycling requirements for construction demolition debris into all contracts for outside construction contractors.

Sustainability: The Commissary and Exchange would be constructed to LEED® Silver standards and would incorporate sustainable strategies to include using innovative energy conserving techniques, including: High performance and sustainable building, Low Impact development strategies, requirements of the Energy Policy Act of 2005, the Energy Independence and Security Act of 2007 and Executive Orders (EO) 13423 and 13514. Strategies would be incorporated into the design, construction, and operation of the facilities. Pervious paving materials would also be incorporated during the design phase.

Utilities: Construction would be designed to meet EO 13423 total operational reduction goals for energy and water conservation. Rain catchment systems would also be incorporated during the design phase for use in irrigation of landscaping.

Noise: Noise levels would be minimized by limiting construction to weekday business hours, and by using mufflers on construction equipment.

Summary of Environmental Impacts: No impacts are expected to floodplains, wetlands, cultural resources, socioeconomics, or land use/sustainability. Minimal impacts to air quality, noise, soils, surface water, water quality, vegetation, migratory bird species including Partner in Flight species, hazardous materials, solid waste, utilities, Chesapeake Bay Resource Protection Areas, are expected as a result of policies, regulations, and mitigation measures described above that would minimize the effects of the proposed action. No significant cumulative impacts or indirect impacts are anticipated. No significant impacts on human health or the environment would result from the proposed action.

Notice of Availability: The public may review the Environmental Assessment at the Directorate of Public Works, Fort Belvoir, Virginia; the John Marshall Public Library; Kingstowne Public Library; Lorton Public Library; Sherwood Regional Library; City of Fairfax Regional Library, Van Noy Library; or on the Installation website at: http://www.belvoir.army.mil.

Interested parties may submit written comments for consideration on or before 30 days after publication of newspaper announcements, to Commander, U.S. Army Garrison, Fort Belvoir, 9430 Jackson Loop, Suite 100, ATTN: Directorate of Public Works, Fort Belvoir, Virginia 22060-5116 or e-mail comments to *environmental-fb-dpw@conus.army.mil*. For more information, contact Mr. Patrick McLaughlin, Chief of Environmental and Natural Resource Division, at 703-806-4007.

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LIST OF ACRONYMS AND ABBREVIATIONS

AAFES	Army and Air Force Exchange Service
AR	Army Regulation
BMP	Best Management Practice
BRAC	Base Realignment and Closure
CDP	Census Designated Places
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
Cfs	Cubic feet per second
dBA	Decibels
DeCA	Defense Commissary Agency
DoD	Department of Defense
ENRD	Environment and Natural Resource Division
EO	Executive Order
EPA	Environmental Protection Agency
kV	Kilovolts
LEED®	Leadership in Energy and Environmental Design
L_{eq}	Equivalent Sound Level
LID	Low Impact Development
Mgd	Million Gallons per Day
MS4	Municipal Separate Storm Sewer System
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NSR	New Source Review
PCB	Polychlorinated Biphenyls
PIF	Partners in Flight
PM	Particulate Matter
ppm	Parts Per Million
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
RPA	Resource Protection Area
SIP	State Implementation Plan
TMDL	Total Maximum Daily Load
$\mu g/m^3$	Micrograms Per Cubic Meter
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VDCR	Virginia Department of Conservation and Recreation
VDEQ	Virginia Department of Environmental Quality
VDOH	Virginia Department of Health

EXECUTIVE SUMMARY

Proposed Action

The Army and Air Force Exchange Service (AAFES) and the Defense Commissary Agency (DeCA) are proposing to construct and operate a new 132,000 square foot DeCA Commissary and 270,000 square foot AAFES Post Exchange at Fort Belvoir, Virginia. The new facilities would be located on the Upper North Post in an area bounded by John J. Kingman, Gunston, Gorgas and Woodlawn Roads designated as the Community Support Center area. The site for the new Exchange would encompass approximately 35 acres and the future, adjacent Commissary would be located on approximately 21.5 acres. Design phase would incorporate patron parking following Fairfax County guidelines of four spaces per 1,000 square feet of retail space, while providing parking for the Exchange's employees and accommodating potential overlap of shift schedules. Final employee parking would not exceed 60 percent of the total number of employees. In addition to the new Commissary and Exchange, future mixed use development would be constructed as in-fill in the former Commissary site and the southeastern portion of the Community Support Center Area.

Construction and demolition is considered for the 2011-2013 time frame and would be conducted in the following phases in order to allow the existing Exchange and Commissary to remain operational: 1) preliminary site preparation; 2) construction of the new Exchange; 3) demolition of the old Exchange; 4) site preparation and construction of the new Commissary; 5) demolition of the old Commissary; and 6) future in-filling of the former Commissary site and additional area with future mixed development which would include commercial/administrative and residential uses. Parking facilities would be constructed concurrent with the facilities and would provide parking for both employees and customers.

The Environmental Assessment evaluates the impacts of building a replacement Commissary and Exchange and future mixed use development at Fort Belvoir. It has been prepared pursuant to the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) regulations in 40 Code of Federal Regulations (CFR) Parts 1500-1508, and Army Regulation (AR) 200-2, "Environmental Effects of Army Actions" at 32 CFR Part 651.

Purpose and Need for the Proposed Action

The purpose of replacing the existing Commissary and Exchange is to provide customers with upgraded facilities offering a wider variety of merchandise, services and amenities that will ultimately provide soldiers, families, military retirees and eligible civilian personnel with a destination for shopping, dining and social activities. Users would reside both on- and off-Post. The role of Fort Belvoir in the National Capital Area is predicted to continue to expand beyond BRAC and the existing facilities cannot meet the future demands. The construction of a new Commissary and Exchange complex would optimize the use of developable acreage and create a sense of community consistent with the Real Property Master Plan. In addition, the new Commissary and Exchange would continue to be the central focus of the Upper North Post Community Support area allowing additional future development to build upon the services and amenities provided by the Commissary and Exchange creating an enhanced Community Support area.

The construction of the new Exchange would consolidate the existing North Post Exchange (141,970 square feet) with the current Home and Garden Center (69,220 square feet) and

Military Clothing Sales Store (10,419 square feet) from the South Post into a single, one story 270,000 square foot facility. As a modern, up-to-date structure, the new expanded Exchange facility would provide a much greater level of service and selection for customers as well as provide for one stop shopping, thereby reducing travel between facilities on North and South Post. The closure and demolition of the facilities housing the current Home and Garden Center and Military Clothing Sales Store would provide for future redevelopment with the South Post Town Center.

Future Mixed Use Development

For both options, the Community Support Center area will support a future residential and mixed use development to be constructed where the existing Commissary and Exchange are currently located and adjacent areas. The residential community would follow the standards of Traditional Neighborhood Design, which is a development pattern that reflects the character of smaller, older communities of the late 19th and early 20th centuries (BNVP 2009). These traditional communities are typically characterized by mixed land uses, grid street patterns, pedestrian circulation, intensively-used open spaces, architectural character, and a sense of community. Traditional Neighborhood Design is also consistent with the original character of Fort Belvoir Main Post and other development occurring on the Installation. Other potential mixed use under consideration includes but is not limited to an Auto Service Center, restaurant and administrative office space.

Alternatives Assessed in the Environmental Assessment

A No Action alternative was used as a baseline of conditions against which one action alternative: Construction of a New Commissary, Exchange, and future mixed use development was considered. The action alternative provides two site plan options for the proposed location of the new Commissary, Exchange and conceptually supports a future residential and mixed use development. Two site plans are considered and are presented in this environmental assessment as Option 1 and Option 2.

Option 1

Construction of the development under Option 1 is consistent with the Real Property Master Plan. Option 1 locates the Exchange partially within the footprint of the existing Exchange building and associated parking lot. The Commissary building would be located within the undeveloped forested area to the north of the site proposed for the new Exchange (Figure 3). Option 1 conceptually designates an area of future community-mixed use containing 80 percent residential and 20 percent administrative/commercial that would be developed in the southeastern portion of the Community Support Center area.

Option 2 (Preferred Alternative)

Option 2 for the Exchange and Commissary new construction is a different configuration proposed for the same parcel (Figure 4). Option 2 is also consistent with designated land use in the Real Property Master Plan. The community-mixed use development concept for the Option 2 Alternative would be approximately 50 percent residential and 50 percent administrative/commercial development located in the same southeastern corner of the Community Support Center area as proposed in Option 1; however, in Option 2 less horizontal land area is developed. The Option 2 layout would reduce the footprint for adjacent residential

development and the number of parking spaces; however, the parking volume would be adequate.

Environmental Consequences

Impacts to resources would be similar for each option; however, the intensity of impacts may vary between options. There would be no significant impacts under either option in the following areas: cultural resources, socioeconomics, utilities, hazardous substances/solid waste, air quality, and noise.

Natural Resources

Vegetation clearing would result in the potential loss of approximately 6,000 trees within the area of construction disturbance for Option 1. For Option 2, the number would be approximately 5,000. Loss of trees greater than four inches in diameter would be mitigated by replacement of trees through a negotiated tree restoration plan.

For both options, there would be corresponding impacts to wildlife that now inhabit, find shelter in, or forage in the undeveloped vegetation communities located within the project area. Direct mortality may occur to smaller, less mobile species such as small rodents, reptiles, amphibians, and invertebrates during site preparation and construction. Site preparations and construction would also displace more mobile organisms. Permanent loss of habitat would require species to find new territories.

Breeding habitat for three species of birds designated as "High Priority" Neotropical species by Partners in Flight is found in the undeveloped woodland on the site. Wood thrush, hooded warbler, and scarlet tanager would be adversely affected by the reduction in available breeding territory because of their requirement for relatively large, unbroken tracts of woodland. While designated breeding habitats for these species are found elsewhere on Fort Belvoir, the woodlands on site are adjacent to the much larger Forest and Wildlife Corridor and currently provide an extension of habitat which will be diminished as a result of the proposed action under either option.

Surveys for two listed species, the North American wood turtle (*Glyptemys insculpta*), Virginia state threatened) and the small-whorled pogonia (*Isotria medeoloides*), federally listed as threatened, occurred on the Community Support Center. The survey for the North American wood turtle found no turtles and no suitable habitat because of stream erosion. Surveys for the small whorled pogonia found areas of potential habitat but no conspicuous plants. However, because the plant can be dormant for up to 10 years, and the July 2008 survey expires in 2010, additional surveys would be conducted by AAFES and DeCA prior to ground disturbing activities for facilities and associated infrastructure.

Land Use

Under both options, land use designations would not change as a result of the proposed project. Both Options 1 and 2 would have a beneficial effect on land use and sustainability as a result of sustainable design principles that will be incorporated into the design plan, including Leadership in Energy and Environmental Design (LEED®) Silver standards. The proposed project would establish a street framework and block pattern that would allow for a variety of scenarios of intensity or diversity of use. In addition, under eitheroption, the future redevelopment of existing developed area in the southeastern portion of the parcel to include new mixed-use and residential

areas would minimize adverse effects resulting from new construction and additional development to complete the goals of the Real Property Master Plan.

The planned layout of development for Option 1 would require more clearing of undeveloped area and would not efficiently re-use the previously developed areas available after the construction of the new Exchange is complete. Under Option 2 the redevelopment of the former Exchange site for the proposed new Commissary would reduce the amount of land cleared for development.

Transportation

Primary roads provide main access into the Post and are heavily traveled. Roadways servicing the Community Support Center include Kingman Road that provides connection between the Community Support Center and the Fairfax County Parkway to other roadways such as I-95 and Gunston Road. Gunston Road provides connection between North Post and South Post and is a major internal arterial for traffic circulation on Main Post. Either option would result in long-term, minor adverse impacts to transportation as a result of increased traffic, the number of trips during morning and peak hours would increase by approximately 71 percent. The proposed project includes intersection and roadway improvements to alter traffic flow and reduce traffic congestion. In addition, the Comprehensive Traffic Engineering Study being completed would provide guidance for any additional mechanisms that could be employed in the final design stage. Employment and activity levels for the new Commissary, Exchange and future mixed use development would increase under both options and transit demand would be expected to increase. The new Commissary and Exchange facilities would be located within the vicinity of the existing buildings and those who currently use public transportation to access the existing Commissary and Exchange would still be able to do so under either site option plan. As a result, any effects to public transportation traffic under either option would be negligible.

Mitigation

The impacts of the site option concepts would be mitigated through a variety of measures that may include:

- As necessary, provide for stream channel restoration mitigation on-site or within the same watershed.

- Identification of candidate areas for removal of existing impervious surface to offset the increase of impervious surface resulting from development of Fort Belvoir. Pervious paving materials will be incorporated in the final design as practicable to reduce stormwater runoff.

- Final design should include 100 percent pervious areas planted with trees in the interior of constructed parking areas to provide shade and pervious areas that would receive rain water and aid in the percolation to groundwater.

- Construct site-specific controls for water quality management of impervious areas consistent with low impact development (LID) practices.

- Conserve water and reduce consumption through LEED® Silver design and construction.

- Possible institution of a rainwater catchment system to provide water for irrigation of landscaping.

- Provide stable outfalls and mitigate impacts for the receiving channel. If the receiving stream channel exhibits failures of banks and bed in the existing conditions, the stream should be restored to a stable condition prior to receiving additional flows from the development.

- Protection of mature and significant trees during construction by limiting grading in wooded areas.

- Replacement of trees within the limits of clearing and grading on the project site resulting in no net tree loss.

- Implement an invasive/exotic vegetation control plan that would focus on controlling invasive species.

- Compensate for habitat loss by repairing and restoring habitat condition. Restoration projects could correct existing stormwater management problems, stabilize eroded and undercut stream channels, remove unnecessary impervious surfaces within riparian areas, re-vegetate disturbed and cleared portions of riparian areas, and remove invasive/exotic vegetation from riparian areas and adjoining upland areas.

- Mitigation for unavoidable loss of wetlands or streams would be required.

- Conduct surveys to ensure impacts to rare, threatened, and endangered species impacts are avoided.

- Consultation with agencies would be maintained throughout the construction phase of the project if rare, threatened or endangered species are identified on-site.

- Cultural resources would be monitored and fenced to prevent inadvertent effects.

- A 50-ft vegetated buffer would remain around cultural resources to protect the resource and to provide a visual buffer of the development from within the cemetery.

- Discovery of previously unknown artifacts, human remains, or other burial objects would be treated in accordance with National Historic Preservation Act (NHPA), 36 CFR 800, and the Native American Graves Protection and Repatriation Act.

- Construction contracts would include requirements for notification, security, and protection of cultural resources on-site.

- Training on eligible materials for recycling municipal solid waste.

- Providing adequate containers for recycling materials; and

- Incorporation of recycling requirements for construction demolition debris into all contracts for outside construction contractors.

- High Performance and Sustainable Building, Low Impact Development, LEED® strategies to conserve and protect natural resources and reduce infrastructure needs.

- Adherence to the Energy Policy Act of 2005, the Energy Independence and Security Act of 2007, Eos 13423 and 13514 in order to improve energy efficiency, reduce water consumption, and improve overall quality of the environment.

- Adhere to Installation Design Guide for landscaping and maintenance guidelines.

- Provide thermal shading of parking lot for interior parking lots.

- Plant native or naturalized plants with LEED® consideration.

- Create an outdoor space for pedestrians that links the proposed neighborhood centers, retail, office, and public spaces to the Commissary and Exchange.

- Provision of outdoor seating and gathering areas

- Preparation of a Traffic Management Plan.

- Development of traffic mitigation measures through road improvement projects as required using guidance from the Comprehensive Traffic Engineering Study during final design of project.

- Training in water conservation measures for staff and contractors during construction of facilities and operation thereafter.

- Construction would be designed to meet Executive Order (EO) 13423 total operation reduction goals for energy and water conservation.

- Other mitigation measures may be implemented as practicable.

1 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

Fort Belvoir is located in Fairfax County, Virginia, approximately 18 miles southwest of Washington, D.C (Figure 1) and is considered the U. S. Army's premier installation in the Northeast Region. As a strategic base for the U.S. Army, Fort Belvoir is host to elements of 10 U.S. Army commands; 19 different agencies and direct reporting units of the Department of the Army; eight elements of the U.S. Army Reserve and the Army National Guard; and 26 Department of Defense agencies. A Marine Corps detachment, a U.S. Air Force activity, and an agency of the Department of the Treasury are also located on Fort Belvoir. The Main Post has a current population of more than 23,000 including approximately 7,000 residents (BNVP 2009).

On September 8, 2005, the Defense Base Realignment and Closure (BRAC) Commission recommended specific realignment actions resulting in the relocation of a number of organizations and activities to Fort Belvoir. The recommendations became law on November 9, 2005. Implementation of BRAC recommendations will continue to occur at Fort Belvoir through 2011 and will increase the working population on Fort Belvoir by approximately 19,000 military and civilian personnel (USACE 2007a).

Beyond the current role that Fort Belvoir has in providing essential regional logistical and administrative support, and the expansion occurring as a result of the approved BRAC recommendations, Fort Belvoir will continue to increase its provision of administrative and logistical services in the National Capital Area and its role in providing regional outdoor recreation and support to all eligible patrons including military retirees. As Fort Belvoir continues to support the National Capital Area, enhanced and expanded shopping and dining services on the Installation will also be necessary to provide high quality, reliable services and amenities to customers. The location of the existing Army and Air Force Exchange Service (AAFES) Exchange and the Defense Commissary Agency (DeCA) Commissary is on an approximately 109-acre tract of land bounded by Gorgas, Gunston, Kingman, and Woodlawn Roads on the Upper North Post (Figure 2). This parcel encompasses the Upper North Post Community Support Area of Fort Belvoir. The services and amenities provided by the DeCA Commissary and AAFES Exchange on-Post provide a significant level of the support to the National Capital Area. The Commissary and Exchange help maintain the morale of families, soldiers, eligible civilians, and military retirees and are considered an important central focus for the Fort Belvoir community. They serve as an anchor for future development of the Community Support Area with the addition of residential, commercial/administrative, and retail mixed use in the southeastern portion of the parcel.

The proposed construction of a new DeCA Commissary, AAFES Exchange, and future mixed use development on Fort Belvoir constitutes a federal action and must be assessed in accordance with the National Environmental Policy Act of 1969 (NEPA). In the National Environmental Policy Act (42.U.S.C. Section 4321), Congress declares the purposes of NEPA:

> "To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a council on environmental quality".

In Section 4332 of NEPA, Congress authorizes and directs all federal agencies and programs that they fund to consider:

> "(i) the environmental impact of the proposed action,
>
> (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
>
> (iii) alternatives to the proposed action,
>
> (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long term productivity, and
>
> (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented."

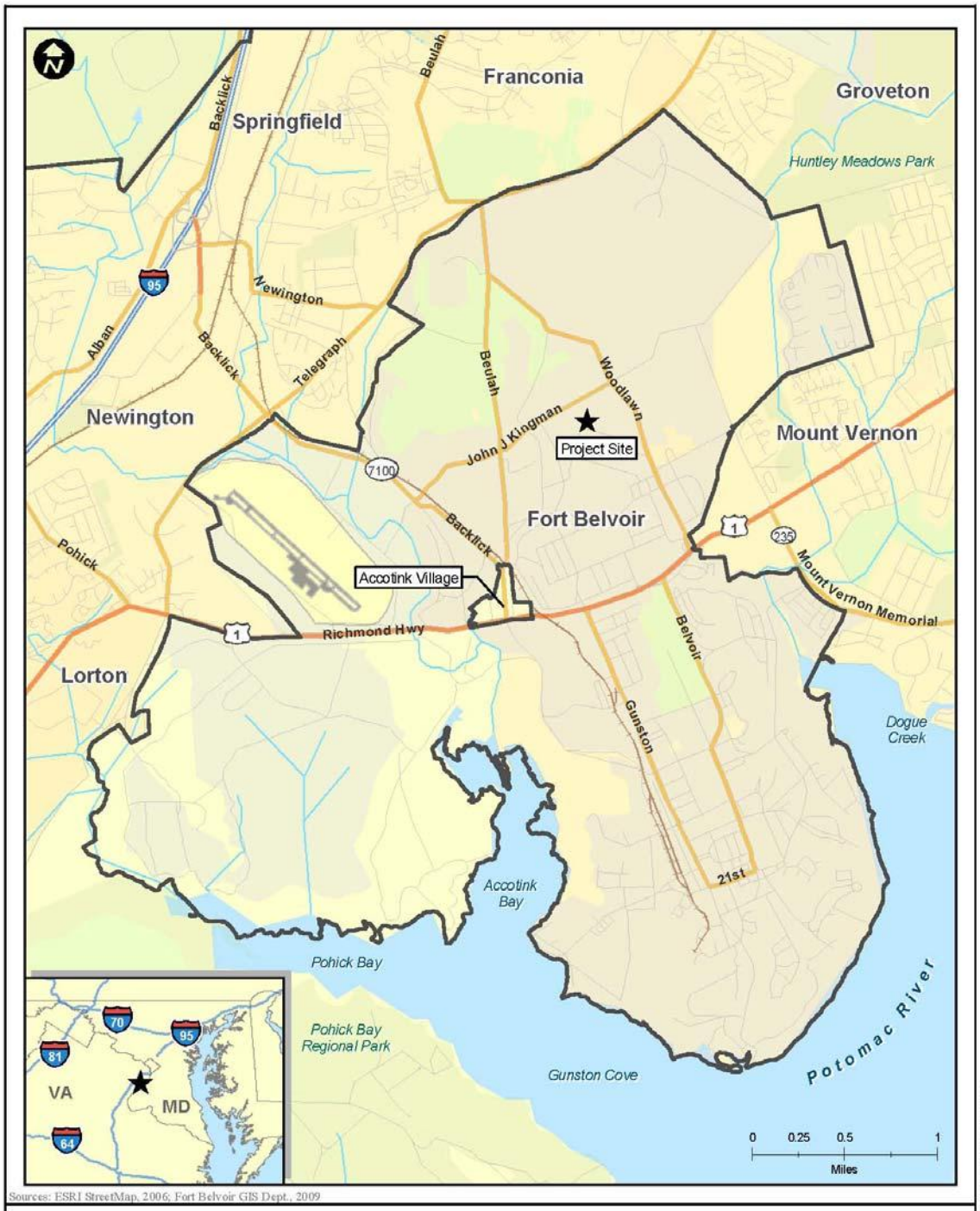


Figure 1. General Vicinity Map

Figure 2. Proposed Project Location within the Existing Community Support Center Area

The Council on Environmental Quality assists all federal agencies in meeting their obligations with regard to NEPA and has issued Regulations for Implementing Procedural Provisions of the National Environmental Policy Act (40 Code of Federal Regulations [CFR] Sections 1500-1508). The requirements for determining the level of NEPA analysis are described in 32 CFR 651.11 and 651.12, Environmental Analysis of Army Actions. To comply with NEPA, the U.S. Army at Fort Belvoir is preparing an environmental assessment to consider the environmental consequences of constructing a new Commissary, Exchange, and future mixed use development.

Federal legislation that is applicable to the environmental assessment process for the proposed project includes the Clean Water Act, Coastal Zone Management Act, Endangered Species Act of 1973, and Clean Air Act of 1970, National Historic Preservation Act, Resource Conservation and Recovery Act of 1976, and Comprehensive Environmental Response, Compensation, and Liability Act of 1980. Regional programs such as the Chesapeake Bay Program and military programs (Military Munitions Response Program) are also applicable as are Presidential Executive Orders (EOs) that cover topics such as floodplain management (EO 11988), environmental justice (EO 12898), protection and safety of children (EO 13045), wetlands (EO 11990), migratory birds (EO 13186), and federal leadership in sustainability (EO 13514).

General air conformity regulations issued by the U.S. Environmental Protection Agency (EPA) (40CFR Part 93, Subpart B) contain procedures and criteria to ensure that proposed federal actions comply with State implementation plans promulgated under the Clean Air Act. These regulations apply to those federal agencies that would cause emissions of criteria air pollutants above certain levels.

In addition to compliance with NEPA and relevant regulations outlined above, the project planning and development process will be coordinated with the National Capital Planning Commission and Fairfax County, Virginia.

1.2 PURPOSE AND NEED

The purpose of replacing the existing Commissary and Exchange is to provide customers with upgraded facilities offering a wider variety of merchandise, services and amenities that will ultimately provide soldiers, families, military retirees and eligible civilian personnel with a destination for shopping, dining and social activities. Users would reside both on- and off-Post. The role of Fort Belvoir in the National Capital Area is predicted to continue to expand beyond BRAC and the existing facilities cannot meet the future demands. The construction of a new Commissary and Exchange complex would optimize the use of developable acreage and create a sense of community consistent with the Real Property Master Plan. In addition, the new Commissary and Exchange would continue to be the central focus of the Upper North Post Community Support area allowing additional future development to build upon the services and amenities provided by the Commissary and Exchange creating an enhanced Community Support area.

Future residential and mixed-use development is proposed to be constructed within the southeast portion of the Community Support area, adjacent to the proposed new Commissary and Exchange.

2 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

Fort Belvoir has proposed the construction of a new 132,000 square foot DeCA Commissary and a new 270,000 square foot AAFES Exchange for the purpose of providing the soldiers, their families, eligible civilians and military retirees within the National Capital Area with a destination for shopping, dining and social activities consistent with the Real Property Master Plan.

The tract of land proposed for the Commissary, Exchange, and future mixed use development is considered developable though there are environmental, cultural, historical and operational constraints within the parcel that must be considered in the development planning. Consistent with U.S. Army policy, design factors for the proposed project include sustainability strategies to avoid resource depletion of energy, water, and raw materials; prevent environmental degradation caused by facilities and infrastructure throughout their life cycle; and create built environments that are livable, comfortable, safe, and productive (http://www.wbdg.org/design/sustainable.php). The current Commissary and Exchange act as an anchor for the present services offered within the Community Support Center area. Services clustered with the existing Commissary and Exchange include a chapel, two small convenience stores, a bank, car wash and gas station. Nearby, across Woodlawn Road, is the Installation elementary school and Lewis Village, a family housing area.

2.2 ALTERNATIVES CONSIDERED

This environmental assessment will evaluate two alternatives: the No Action Alternative and the construction of a New Commissary, Exchange, and future mixed use development Alternative. Two site plan options are presented for consideration for Construction of a New Commissary, Exchange and mixed use facilities.

2.3 ALTERNATIVES CONSIDERED AND REJECTED

During early phases of master planning, other sites on Fort Belvoir were considered for these facilities. Locations on North Post, Fort Belvoir North Area, Southwest Area, and the General Services Administration site were reviewed as potential sites for the New Commissary and Exchange (BVNP 2008).

- North Post: This location, adjacent to U.S. Route 1 was rejected in review due to concern about the timing of the site's availability, potential environmental issues (cultural resources), traffic accessing the site from U.S. Route 1 and conflicts with existing land use at the time of review. Currently, that parcel has been planned for other development.

- Southwest Area: The site on Southwest Area was rejected as having inconvenient access from off-Post as well as significant clean-up and closure actions related to its use as an active range.

- Fort Belvoir North Area (formerly Engineer Proving Ground/EPG): The Fort Belvoir North Area was rejected due to conflicting access controls and questionable timing for site availability.

- General Services Administration: At the time of the review this location was questionable as to the timing of site availability. The U.S. Army does not own the General Services Administration site and has no plans to acquire it.

2.3.1.1 Renovation of Existing Facilities

Because renovation of existing buildings usually minimizes costs, an alternative that considered the renovation of the existing DeCA Commissary and AAFES Exchange was also evaluated. Renovation of the existing facilities would meet DeCA and AAFES nominal, operational, and expansion requirements. However, the physical layout of the completed, renovated space would not function efficiently for personnel operating the facilities and would affect the ability of patrons to logically access services and amenities within the renovated buildings.

During renovation, both facilities would experience a loss in revenues and a loss of customers as access and the experience of shopping and dining are affected. To mitigate for the impacts to tenant organizations and customers, a phased construction plan for renovations would have to be developed. Phasing of construction activities related to renovations would create an inefficient schedule for completion of the renovations. This alternative would not require additional construction related to providing utilities though costs may be incurred for upgrading utility services. The undeveloped areas of the site would remain intact if the existing Commissary and Exchange were renovated.

The existing Commissary and Exchange buildings are near the end of their Operations and Maintenance life expectancy and significant expense would be required to complete renovations for both facilities. Both buildings have received "Q ratings" through the Department of Defense (DoD) building quality rating methodology. A "Q rating" is a ratio of restoration cost estimates (cost to fix) to facility replacement value; restoration costs are based on facility condition assessments conducted by the occupants. The facility condition estimate conducted for the Commissary resulted in a rating of "Q-2," which is defined as having "some condition deficiencies and/or configuration deficiencies that have limited impact on the capability to support the tenant organizations' required missions." The Exchange building received a "Q-4" rating defined as having "major facility condition deficiencies and/or configuration deficiencies that present significant obstacles to the tenant organizations' accomplishment of required missions" (BNVP 2008). In either instance, the Q rating does not reflect the increase in population at Fort Belvoir as a result of BRAC and it would not offer any flexibility to accommodate future population growth. In light of the growing user base, renovations would reduce the ability for provision of services for existing and future patrons.

Further consideration of the alternative of renovating the existing facilities was rejected because 1) the resulting spatial layout would not function efficiently for personnel and patrons of the Commissary and Exchange; 2) patrons would not be provided with a shopping or dining experience that would be a "destination" consistent with the Real Property Management Plan; and 3) cost of providing the renovations would not result in a Community Support Center area that supplied the services, shopping and dining experiences that would be consistent with the DeCA and AAFES missions.

2.4 NO ACTION

Under the No Action Alternative, the Installation would continue to provide community services, shopping and dining opportunities in the existing Commissary and Exchange buildings.

Limitations on space, the availability and diversity of products and amenities, and efficiency in providing services currently affect DeCA and AAFES's ability to provide services to customers, particularly as the customer base within the National Capital Area continues to expand. As a result, customers would continue to find products and services at the existing Commissary and Exchange but options would be limited by the size and condition of the buildings. Opportunities for experiencing a community atmosphere would continue at the current level. Customers within the National Capital Area would find shopping and dining experiences outside of the Installation in surrounding communities. In addition, neither the Commissary nor the Exchange would be able to move forward as the "heart" of a Community Support Center that would provide enhanced, modern amenities and services to the National Capital Area as set out in the Real Property Master Plan. Under the No Action Alternative, future mixed use development proposed in the southeast portion of the Community Support Center would not be built.

2.5 CONSTRUCTION OF A NEW COMMISSARY, EXCHANGE, AND FUTURE MIXED USE DEVELOPMENT

The Construction of a New Commissary, Exchange and future mixed facilities would enhance destination shopping and dining experiences for customers from the National Capital Area. The Commissary and Exchange facilities currently serve as the focal point for the Community Support Center area. Providing new facilities with future complementary additions of housing, retail and administrative space would allow soldiers, their families, eligible civilians and military retirees to enjoy a diversity of products and services in a small town community atmosphere. These facilities would be located within the Upper North Post in the same vicinity, and to some extent overlapping with, the existing Commissary and Exchange which would be removed. The siting of the New Commissary and Exchange in this location would maintain easy accessibility for pedestrians from adjacent residential areas and by vehicle from on- or off-Post; parking would be provided for both facilities even during construction phases (AAFES 2008).

The AAFES Exchange would be constructed on an approximately 35-acre site within the existing Community Support Center tract; a future, adjacent DeCA Commissary would be constructed on an approximately 21.5-acre parcel. Construction would be performed under two separate contracts. Associated parking for each facility would be constructed in concert with the new buildings. Additional future mixed use development (administrative, residential and retail) consistent with the Real Property Master Plan is planned for the southeastern portion of the tract. The proposed construction site includes the existing Commissary, Exchange, parking areas, and storm water management ponds.

The Construction of a New Commissary, Exchange, and future mixed use development would be phased since the proposed development encroaches into the existing Exchange site, and the existing Exchange must remain operational until the new Exchange is functional. As a result, the proposed project would be completed by: 1) preliminary site preparation; 2) construction of the Exchange; 3) demolition of the old Exchange; 4) site preparation and Commissary construction; 5) demolition of the old Commissary; and 6) in-filling of the former Commissary site and along access roads with mixed development. Two site plans are considered for the new facilities and are presented in this environmental assessment as Option 1 and Option 2. This environmental assessment will provide analysis of environmental impacts for the AAFES Exchange, the future DeCA Commissary and programmatic mixed development. A description of the proposed new Commissary, Exchange and future mixed use development is presented below and is common to both options.

Roadways serving the Community Support Center area include Kingman Road which provides access to Fairfax County Parkway and Gunston Road which connects the site to Lower North Post and Main Post. Gunston Road is also the main arterial for traffic circulation on the Main Post. Woodlawn Road provides access to residential and civic areas from the eastern boundary of the Community Support Center and Gorgas Road accesses the Community Support Center area from Gunston Road (Figure 2).

2.5.1 Post Exchange

The construction of the new Exchange would consolidate the existing North Post Exchange (141,970 square feet) with the current Home and Garden Center (69,220 square feet) and Military Clothing Sales Store (10,419 square feet) from the South Post into a single, one story 270,000 square foot facility. As a modern, up-to-date structure, the new expanded Exchange facility would provide a much greater level of service and selection for customers as well as provide for one stop shopping, thereby reducing travel between facilities on North and South Post. The closure and demolition of the facilities housing the current Home and Garden Center and Military Clothing Sales Store would provide for future redevelopment with the South Post Town Center. The Exchange would provide small shops and an open food court for all installation users, including civilian employees, while limiting access to the main Exchange store to authorized users only (military personnel, their families, and retirees/families). Concepts evaluated show a total of 786 parking spaces for employees and patrons. The design phase would incorporate patron parking following Fairfax County guidelines of four spaces per 1,000 square feet of retail space, while providing parking for the Exchange's employees and accommodating potential overlap of shift schedules. Final employee parking would not exceed 60 percent of total employees. Delivery and loading areas have been developed along the rear or eastern portion of the site and would include planning for future delivery service for DeCA's new facility. Construction would be scheduled for the 2011-2013 time frame.

The proposed new AAFES Exchange construction would occur in an undeveloped wooded area; construction would be phased to allow the existing Exchange to remain operational during construction of the new facility.

Demolition of the existing Exchange will take place following completion and opening of the new Exchange to allow for the construction of the new Commissary on the old Exchange site.

2.5.2 Commissary

DeCA proposes to relocate and construct a new Commissary on a site of approximately 21.5 acres adjacent to the new Exchange. The new Commissary would be approximately 132,000 square feet with loading areas. Concepts evaluated show approximately 549 spaces for employee and patron parking. The design phase would incorporate patron parking following Fairfax County guidelines of four spaces per 1,000 square feet of retail space, while providing parking for the Exchange's employees and accommodating potential overlap of shift schedules. Final employee parking would not exceed 60 percent of total employees. Design would also allow for potential re-use of some existing parking area. Construction is scheduled for the 2013 time frame.

2.5.3 Future Mixed Use Development

The Community Support Center area will support a future residential and mixed use development to be constructed where the existing Commissary and Exchange are currently

located and adjacent areas. The residential community would follow the standards of Traditional Neighborhood Design, which is a development pattern that reflects the character of smaller, older communities of the late 19th and early 20th centuries (BNVP 2009). These traditional communities are typically characterized by mixed land uses, grid street patterns, pedestrian circulation, intensively-used open spaces, architectural character, and a sense of community. Traditional Neighborhood Design is also consistent with the original character of Fort Belvoir Main Post and other development occurring on the Installation. Other potential mixed use under consideration includes but is not limited to an Auto Service Center, restaurant and administrative office space.

2.5.4 Option 1

Construction of the development under Option 1 is consistent with the Real Property Master Plan. Option 1 locates the Exchange partially within the footprint of the existing Exchange building and associated parking lot. The Commissary building would be located within the undeveloped forested area to the north of the site proposed for the new Exchange (Figure 3). Option 1 conceptually designates an area of future community-mixed use containing 80 percent residential and 20 percent administrative/commercial that would be developed in the southeastern portion of the Community Support Center area.

This alternative site layout does not meet DeCA functional, operational, and expansion requirements. Construction of the Commissary and Exchange in this option would require excessive tree removal requiring mitigation of 2:1 replacement ratio consistent with the Installation's tree removal policy (Horne 2001). In addition, retaining walls along steep slopes and excessive pavement slopes would be required. Access from Kingman Road to the site would be difficult for both delivery trucks and customers (DeCA 2009).

2.5.5 Option 2 (Preferred Alternative)

Option 2 for the Exchange and Commissary new construction is a different configuration proposed for the same parcel (Figure 4). Option 2 is also consistent with designated land use in the Real Property Master Plan.

Option 2 meets DeCA and AAFES functional, operational, and expansion requirements. The layout associated with Option 2 would reduce site costs by reducing the number of trees to be removed. Option 2 would also reduce the need for pavement slopes and retaining walls. This layout also maximizes the use of existing impervious areas and provides for improved traffic circulation. The community-mixed use development concept for the Option 2 Alternative would be approximately 50 percent residential and 50 percent administrative/commercial development located in the same southeastern corner of the Community Support Center area as proposed in Option 1; however, in Option 2 less horizontal land area is developed. The Option 2 layout would reduce the footprint for adjacent residential development and the number of parking spaces; however, the parking volume would be adequate.

Table 1 presents the existing and proposed acreage of developed and undeveloped land area within the Community Support Center Area by site option.

Table 1. Community Support Area Existing and Proposed Development

	No Action (acres)	Option 1 (acres)	Option 2 (acres)
Existing Developed Area	32.3	32.3	32.3
Proposed Developed Area	0	38.1	32.3
Undeveloped	77.2	39.1	44.9
Total Acreage	**109.5**	**109.5**	**109.5**

Source: Fort Belvoir GIS Department 2009

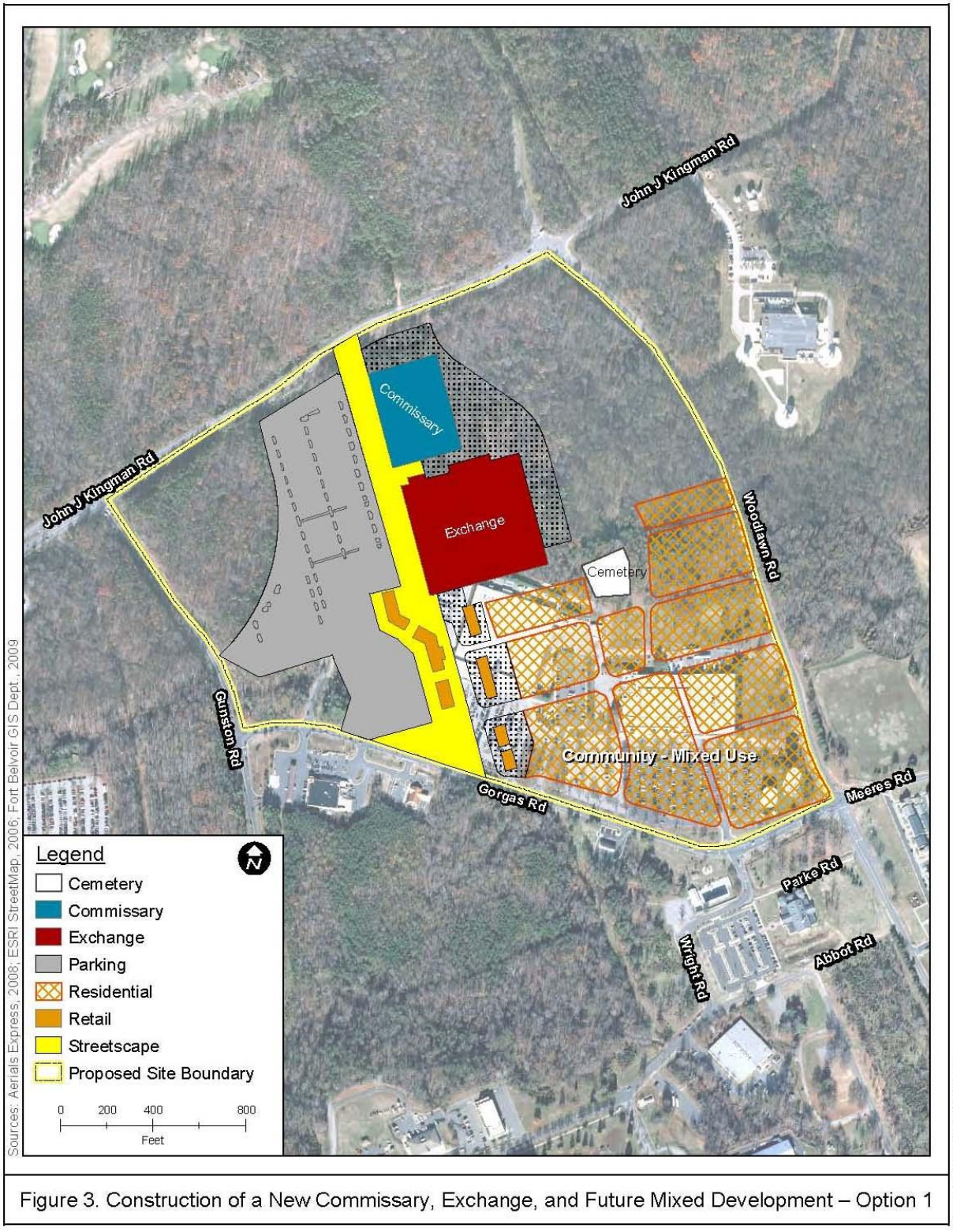


Figure 3. Construction of a New Commissary, Exchange, and Future Mixed Development – Option 1

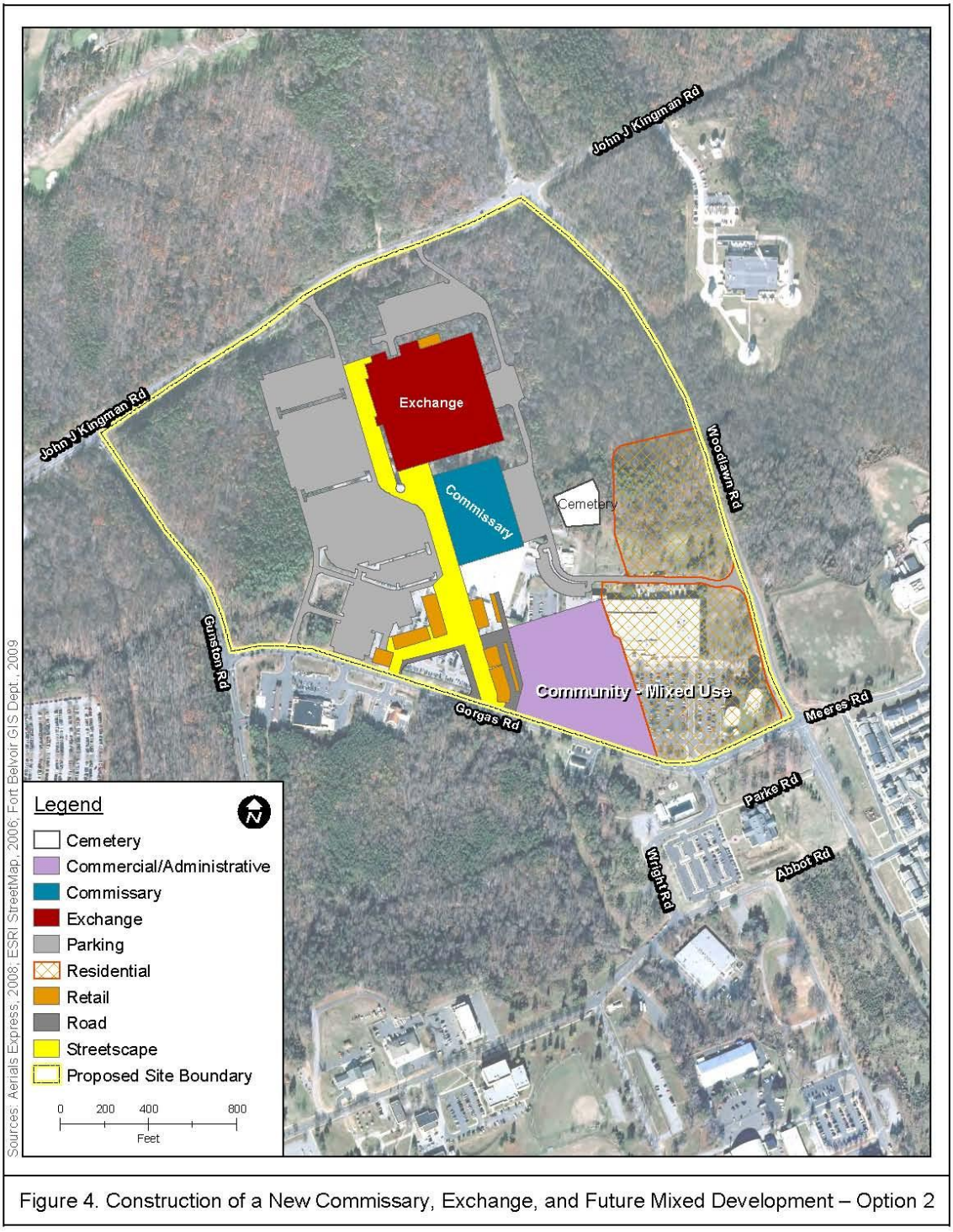


Figure 4. Construction of a New Commissary, Exchange, and Future Mixed Development – Option 2

3 ENVIRONMENTAL EFFECTS

3.1 REGIONAL AND GEOGRAPHIC SETTING

Fort Belvoir is located along the Potomac River in Fairfax County, Virginia. The county functions primarily as a residential center for people working in Washington, D.C. However, Fairfax County has experienced rapid growth as an industrial and commercial center in recent years. Prince William County, approximately eight miles south of Fort Belvoir, is also a suburban residential area undergoing rapid growth, especially along the U.S. Route 1 and I-95 corridors (BNVP 2009).

Although intense development surrounds Fort Belvoir, the installation itself includes approximately 70 percent open space containing diverse habitats, native vegetation, and wildlife species (BNVP 2009).

Fairfax County lies within the Coastal Plain and the Piedmont Physiographic provinces. The fall line separating these provinces trends northeast to southeast, and is roughly parallel to I-95 in the vicinity of Fort Belvoir. Fort Belvoir's Main Post including the North Post lies within the Coastal Plain Physiographic Province. The Coastal Plain Physiographic Province consists of unconsolidated sand, silt, and clay underlain by residual soil and weathered crystalline rocks. Most of the Coastal Plain Physiographic Province deposits in the Fort Belvoir area consist of a sequence of unconsolidated Cretaceous sediments that belong to the Potomac Group which is approximately 600 feet thick beneath most of the Installation (Horne 2001).

3.2 SOILS AND TOPOGRAPHY

3.2.1 Soils

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service identified and mapped Fort Belvoir's soils in 1982 (USDA 2010). The soils series on Fort Belvoir range from well drained to very poorly drained, depending on their topographic position and texture. Textures range from coarse sandy loams to silt loams, but are mostly fine sandy loams to silt loams. There are four soil types within the Commissary and Exchange site. Characteristics of each soil type are shown in Table 2.

3.2.2 Topography

Fort Belvoir consists of two nearly level plateaus that run south-southeast towards the Potomac River, and slope steeply to lowlands that are primarily associated with the floodplains of Accotink and Dogue Creeks (U.S. Army Garrison 2002). Steep slopes, ravines, and stream valleys surround the two plateaus on the east, south, and west sides.

The topography of the Community Support Center area consists of uplands that trend in slope downward from the north and east toward the southwest at slopes from three to 20 percent. Elevations range from 122 feet to 145 feet above mean sea level. Steep slopes (greater than 15 percent) are present within the Community Support Center area (ECS 2008).

Table 2. Soil Types in the Community Support Area.

Series/Phase	Drainage Class	Permeability	Seasonal High Water (inches)
Gunston Silt Loam 0-2% slopes	Somewhat poorly drained	Moderately low to moderately high	8-30
Beltsville Silt Loam 2-7% slopes	Moderately well drained	Moderately low to moderately high	18-30
Sassafras Sandy Loam 2-7% slopes	Well drained	Moderate high	>80
Sassafras-Marumsco Complex 7-15% slope	Well drained	Moderately high	>80

Source: USDA 2010

3.2.3 Impact Analysis

No Action

Under the No Action Alternative, there would be no grading or construction activities and, therefore, no impacts to topography or soils.

Construction of a New Commissary, Exchange and Future Mixed Use Development

Under Option 1, a portion of the new Exchange would be constructed over an area currently developed as the existing Commissary and Exchange; however, demolition during site preparation and construction of the new Exchange and Commissary would still result in soil disturbance and exposure. Option 1 would require significant cutting and filling as well as the addition of retaining walls due to steep slopes.

Option 2 alters the site plan to locate the Exchange north of the Commissary with more compact parking associated with the new facilities. Option 2 would also result in soil disturbance and exposure due to site preparation and construction of facilities. Although steep slopes are still present and would require cutting and filling activities as well as some addition of retaining walls, the layout proposed under Option 2, would minimize alterations to steep slopes during construction.

The future residential and mixed-use development would be located in an area that has been previously developed as the existing Commissary and Exchange and partially within an undeveloped area north of the existing facilities and along Woodlawn Road (Figure 4).

Site preparation activities under Option 1 and Option 2 would result in long-term, moderate adverse impacts from disturbance and exposure of soils within the construction footprints for the new Exchange, Commissary, parking areas and future mixed use development. The topography of the Community Support Center area within the footprints of development projects would be permanently altered by cutting and filling activities in order to achieve the final site grades. Soil disturbance and exposure would occur from demolition of existing infrastructure and other site preparation activities.

Soil disturbance would increase the potential for erosion, but adverse effects would be temporary and minor with the implementation of Best Management Practices (BMPs) during site preparation activities, construction and demolition. Re-vegetation of exposed soil after

completion of construction is one best management practice to minimize potential erosion. Fort Belvoir would comply with Virginia Erosion and Sediment Control Law, Regulations, and Certification Regulations and develop Erosion and Sediment Control Plans, approved by the Virginia Department of Conservation and Recreation (VDCR), for land disturbances exceeding 2,500 square feet.

Permanent loss of soil and soil function would occur over approximately 70 acres in Option 1 and 65 acres in Option 2 as a result of the development footprints for the full development of the Community Support Area including future mixed use. For both options, development of the Community Support Area would result in a long-term, moderate adverse effect because permanent loss of soil function would eliminate the ability of soils under the permanent impervious surface footprints to absorb runoff. Option 2 also includes two additional access roads to/from the Community Support Area from John J. Kingman Road which would result in the permanent loss of approximately 2 acres of soil area under the final paved road surface. Areas disturbed by construction of the access road would be re-vegetated as planned for other construction in Option 2. Approximately 4.5 acres of landscaped "street-scaping" would be created that would comprise partial paving and partial re-vegetation with landscape plants under Option 2. Table 3 presents approximate acreages for the proposed facilities for each option.

Table 3. Community Support Area Development Acreage

	Option 1	**Option 2**
Category	**Acreage**	**Acreage**
Commissary	3.0	3.0
Exchange	6.2	6.2
Paved Areas (Parking, Sidewalks, etc.)	26.3	23.6
Residential	25.6	17.5
Retail	1.3	1.4
Commercial/Administrative	8.0	13.3
Total	**70.4**	**65.0**

Source: Fort Belvoir GIS, 2009

No adverse effects to underlying geological formations or constraints due to the presence of bedrock are expected under either option; bedrock within the Community Support Area site of the proposed new Commissary, Exchange, and mixed use development lies well below the surface.

3.2.4 Best Management Practices

The project components that may affect soils and topography would be offset by standard engineering practices, best management practices (BMPs), and building codes that would address construction and varying topographic conditions. BMPs would be implemented to address construction-related issues, such as design criteria (e.g., depth and location) for placement of footings in preparation for building roads and foundations. In addition, BMPs associated with stormwater management would be implemented to reduce erosion and sediment

impacts in accordance with the Virginia Stormwater Management Program. Construction site operators will be required to develop and submit as part of the Virginia Stormwater Management Program Registration Statement, a Stormwater Pollution Prevention Plan that identifies potential sources of pollutants in stormwater discharges from the construction site; describe control measures that will be used to minimize pollutants in stormwater discharges from the construction site; and comply with the terms and conditions of General Permit VAR10, the "General Permit for Discharges of Stormwater From Construction Activities," effective date July 1, 2009 and any subsequent Virginia Stormwater Management Program authorization to discharge under the Virginia Stormwater Management Program and the Virginia Stormwater Management Act. Additionally, landscape planting and re-vegetation of exposed, disturbed soils when projects are completed would offset a portion of the increase in impervious surface area and would help reduce soil erosion from stormwater runoff.

3.3 WATER RESOURCES

3.3.1 Groundwater Resources

Three main groundwater aquifers—the lower Potomac, middle Potomac, and Bacons Castle Formation—are found at Fort Belvoir. The water table at Fort Belvoir fluctuates based on precipitation, leakage, and evapotranspiration. In 1992, soil boring data were collected from the existing Exchange site and showed water table levels varying from 23 feet to more than 30 feet below surface; additional soil borings in 2002 indicated that groundwater occurs on average at a depth of 20 feet (AAFES 2008).

3.3.1.1 Impact Analysis

No Action

Under the No Action Alternative, there would be no impacts to groundwater resources.

Construction of a New Commissary, Exchange and Future Mixed Use Development

The ability of the existing soils to absorb rainwater, leading to recharge of groundwater aquifers would be reduced as a result of increased impervious surfaces created by the proposed development. Option 1 would convert approximately 38 acres of undeveloped area to impervious surface (impervious surfaces include necessary infrastructure (roads, and sidewalks), Commissary, Exchange, residential development, mixed-use development) (Table 1). The design plan proposed in Option 2 would convert about 32 acres of undeveloped area to impervious surfaces. Implementation of Option 2 would result in the creation of approximately 16 percent less impervious surface than from the implementation of Option 1.

New development in the Community Support Center area would not require any withdrawal of groundwater since the water supply for the site would be provided by the Fairfax Water system through a new water line to the site; the system on the Installation has been privatized and American Water, owner of the system would manage the distribution of water supply to the Community Support Center area facilities.

Options 1 and 2 would result in long-term, minor adverse impacts to groundwater resources as a result of reduced recharge capacity. The development of stormwater management would become a part of the final design as discussed in *Section 3.3.6, Stormwater*. The use of pervious paving surfaces would be considered and used to the extent practicable (AAFES 2010).

3.3.1.2 Mitigation Measures and Best Management Practices

The potential for groundwater contamination and decreased recharge would be minimized by implementing BMPs and Low Impact Design (LID) practices designed to reduce pollutant transport and increase infiltration. Placement of large blocks of landscaping within the external design of proposed developments, especially in and around parking areas that contain passive stormwater filtration abilities through plant and soil processes can help reduce pollutant concentrations in groundwater. Stormwater treatment practices would be implemented where practicable to increase groundwater recharge and provide other water quality benefits. Use of pervious paving materials, especially for parking and sidewalk areas may offset effects from the proposed development of the Community Support area.

3.3.2 Surface Water Resources

Fort Belvoir is located on the Potomac River, the second largest tributary of the Chesapeake Bay. The installation contains six watersheds, all of which ultimately discharge into the Potomac River. The Accotink Creek, Dogue Creek, and Pohick Creek watersheds originate off-Post and are the three largest watersheds draining most of eastern Fairfax County as well as the Installation. Accotink Creek and Dogue Creek watersheds drain areas of the North Post including the Community Support Center area (USACE 2007a). Approximately 72 percent of the Community Support area is within the Accotink Creek watershed which drains to the southwest; approximately 28 percent is located within the Dogue Creek watershed which drains to the southeast. The new Commissary and Exchange facilities would be located on an upland area straddling the two drainages. Future mixed use development would be located within the Dogue Creek drainage system.

Four separate tributary systems were identified during wetland delineation site surveys (Bowman 2008) and are presented on Figures 5 and 6. All tributary systems identified on the Community Support Center site originate from culverts and receive stormwater flow and have some level of degradation of the stream channel (erosion, cut banks, etc.). The System #1 is located near the western corner of the property and the main tributary of the system begins at a culvert under Kingman Road and receives stormwater flow which flows to the south to a box culvert under Gunston Road. A side tributary receives drainage from a separate culvert under Kingman Road and connects into the main tributary upstream of Gunston Road. Based on physical and biological stream characteristics, this stream and its side tributaries were characterized as ephemeral and intermittent (Bowman 2008).

The System #2 is located in the northern portion of the Community Support Center begins at a culvert under Kingman Road and flows to the south and east to a perennial stream. Two side tributaries flow into the main system. One tributary receives drainage from a separate culvert under Kingman Road and connects with the main tributary approximately 450 feet downstream from Kingman Road. The second tributary connects to the main tributary approximately 400 feet upstream from the Woodlawn Road crossing and receives stormwater runoff from the existing Exchange, parking areas, and access roads to the cemetery and ball field. A portion of the main tributary was characterized as a perennial stream based on the presence of flow, aquatic organisms and plants. As a result, the perennial section of this tributary system is protected by the designation of a Resource Protection Area (RPA) buffer as defined by Fairfax County (Section 3.3.4, Coastal Zone Management and Coastal Zone Management Act). The main tributary flows east from to the crossing at Woodlawn Road (Bowman 2008). A small

freshwater forested wetland (0.003 acres) was delineated within this system (Section 3.4.3, Wetlands).

System #3 described by the Bowman Consulting report (2008) is located in the southwestern corner of the Community Support Center area and begins at a culvert under the entrance to the existing Exchange and flows to the west through an existing utility easement to a culvert under Gunston Road. The tributary receives drainage from two existing stormwater management facilities in the existing Exchange parking lot. This stream was characterized as perennial and has an RPA buffer associated with it.

System #4 receives stormwater flow from a culvert under Kingman Road. Drainage through the system appears to sheet flow across the area toward an existing cleared access easement. As a result, it was characterized as a topographic drainage feature rather than a stream channel and considered non-perennial (Bowman 2008)

A subsequent jurisdictional determination conducted by the U.S. Army Corps of Engineers (USACE) in the Community Support area identified a fifth tributary, (System #5) characterized as intermittent (R4) stream and revised the linear designations of ephemeral stream. As a result, the USACE Jurisdictional Determination identified approximately 890 linear feet of perennial stream (R3), 2,647 linear feet of intermittent stream (R4), 425 linear feet of ephemeral stream, and 0.003 acres (145 square feet) of palustrine forested wetland within the Community Support area site (USACE 2009).

The Virginia Department of Environmental Quality (VDEQ) defines surface water quality standards that protect designated uses for surface waters in Virginia. Water quality standards consist of three components: use designations, general and numeric water quality criteria necessary to protect those uses, and an anti-degradation statement. Virginia State Water Control Board Water Quality Standards (9 Virginia Administrative Code 25-260-5 et seq.) apply to Class II and Class III waters. In addition to Virginia water quality standards, the U.S. Army's administrative publication, Army Regulation 200-1, Environmental Protection and Enhancement, requires the Installation to conserve all water sources and protect them from contamination by developing and implementing plans to ensure a level of water quality that supports state-designated uses. The streams found within the Community Support Area are not Class II or III waters.

3.3.2.1 Impact Analysis

No Action

Under the No Action Alternative, there would be no change to current conditions; existing ephemeral, intermittent, and perennial streams would continue to receive stormwater runoff.

Construction of a New Commissary, Exchange and Future Mixed Use Development

Under both Options, construction of the proposed new Commissary, Exchange and mixed use development has the potential to result in impacts to ephemeral and intermittent streams as well as RPA buffers designated around perennial segments of identified tributaries (Systems #2 and #3). Limits of disturbance for construction would be placed for all proposed, projects and could extend the potential for affects to stream systems depending on the amount of area necessary to complete construction for each project. For either option, construction of the entry road and parking area in the southwestern portion of the Community Support Center could affect designated RPA buffer around a perennial stream (System #3). The final design of the Exchange

would determine if any adverse effects to the intermittent stream and RPA buffer in System #2 would occur; however, it is the intent of the tenant organizations (DeCA and AAFES) to design and construct these facilities with zero impacts to regulated streams located within the Community Support Center.

For either option, the loss of a small area of ephemeral stream (System #4) in the northwestern portion of the Community Support Center area could occur from the placement of a parking area along the western edge of the proposed new Commissary and Exchange development and an intermittent stream (System #5) would be affected by the proposed, future residential area along Woodlawn Road (Figures 5 and 6).

In addition to the potential effects outlined above, and specific to Option 1, construction of the proposed sidewalk area surrounding the Commissary and Exchange would result in potential, additional encroachment upon the intermittent stream channel and RPA buffer identified in System #2, and would result in the loss of the sheet flow areas of System #4 (Figure 5). The culvert under Kingman Road and the resulting stormwater drainage sheet flow would require re-engineering to provide for management of stormwater runoff that drains through the area as sheet flow. Stormwater currently received by intermittent and ephemeral streams that may be affected by construction of the proposed projects would also require management based on final design of the Commissary and Exchange as well as design of future development of the site.

Although Option 2 would avoid most of the sheet flow area of System #4, because of the limit of disturbance during construction and the permanent access to parking areas connecting to Kingman Road, the sheet flow area could be affected; re-engineering of the culvert and sheet flow area to provide for management of stormwater runoff would be necessary. Parking in the northwestern corner of the site avoids ephemeral stream in System #1, but limits of disturbance during construction could alter a portion of the existing stream channel and stormwater management could be necessary. The construction of the Exchange in Option 2 could still affect the intermittent stream; however, the amount of stream affected would be less than that in Option 1.

During site preparation, construction and operation of the proposed development, the existing tributary systems within the Community Support Center area could contribute sediment and pollutants to the downstream systems of Mason Run, Accotink Creek, and Dogue Creek, and ultimately to the Potomac River. During construction, heavy equipment and other machinery could accidently release oily wastes causing a temporary, minor increase in petroleum products entering streams. These actions would have the potential to adversely affect not only the adjacent channels, but downstream receiving waters as well.

The intent of the tenant organizations constructing the proposed new Commissary and Exchange is to avoid any impacts to streams and wetlands; final design would determine if there were any impacts to perennial stream sections and associated RPAs. Site preparation and construction of a new Commissary, Exchange and future mixed use development for either option would, to the extent practicable, avoid stream channels and designated RPA buffers with the placement of limits of disturbance on construction areas. A federal Nationwide Permit #39 for Commercial and Institutional Development would be obtained from the USACE Baltimore District and a state authorization would be obtained from the VDEQ. If final project designs unavoidably result in loss or alteration of non-perennial stream channels, the affected stream lengths would be mitigated by stream restoration projects preferably located on-site or within the same watershed.

If no stream restoration sites are available, stream mitigation credits would be purchased. BMPs integral to construction activities on Fort Belvoir would be planned and employed to incorporate all applicable state and local stormwater and erosion control requirements to offset pollutant loadings in streams. Appropriate permits from applicable federal, state, and local agencies; controlling erosion and sediment would be obtained and mechanisms would be applied to efficiently reduce phosphorus entering water bodies. The implementation of erosion and control features for all phases of construction would ensure that no sediment laden runoff will exit the construction site without proper treatment. For each new development project, downstream water quality would be protected by treating the site with BMPs that are at least 40 percent efficient at removing phosphorus. In addition, Fort Belvoir would continue to adhere to the requirements set forth under the Virginia Erosion and Sediment Control Law and Regulations and the Virginia Stormwater Management Program Permit in addition to the requirements set forth under the Fairfax County Public Facilities Manual.

Post-construction BMPs would be incorporated into the site design to ensure proper treatment for localized runoff that may affect downstream areas, instability of natural channels receiving stormwater discharges, excess sediment within stream channels, and excess nutrients from runoff. Off-site impacts from increased urbanization would be mitigated by appropriate stormwater management features developed site specifically for this construction. LID practices and stable outfall assessment and mitigation would yield stability for the receiving channel and would be employed to reduce long-term impacts from the completed development of the Upper North Post Community Support Area.

Building design for the Commissary, Exchange and mixed use development would be developed consistent with the Real Property Master Plan's intent to require each project and capital investment greater than 20 acres within the installation to meet the requirements of Leadership in Energy and Environmental Design (LEED®) Neighborhood Development certification. As a participant in the LEED® Neighborhood Development pilot program, Fort Belvoir implements best practices in sustainable design by encouraging the principles of the LEED® Neighborhood Development pilot program for projects that include multiple buildings (Section 3.7.3).

3.3.2.2 Mitigation Measures

Mitigation measures that would be used in construction activities associated with the construction of the Commissary, Exchange and future mixed use development may include, but would not be limited to:

- As necessary, provide for stream channel restoration mitigation on-site or within the same watershed. Mitigating for loss of wetland and streams would be required using a 2:1 ratio for wetlands and a 1:1 ratio for the stream channel in accordance with the Virginia Water Protection General Permit Regulations for Impacts Less than one-half acre (9VAC25-660-10 et seq.) (VDEQ 2009a)

- Identification of candidate areas for removal of existing impervious surface to offset the increase of impervious surface resulting from development of Fort Belvoir. Pervious paving materials will be incorporated in the final design as practicable to reduce stormwater runoff.

- Final design should include 100 percent pervious areas planted with trees in the interior of constructed parking areas to provide shade and pervious areas that would receive rain water and aid in the percolation to groundwater.

- Construct site-specific controls for water quality management of impervious areas consistent with LID practices.

- Conserve water and reduce consumption through LEED® Silver design and construction

- Provide stable outfalls and mitigate impacts for the receiving channel. If the receiving stream channel exhibits failures of banks and bed in the existing conditions, the stream should be restored to a stable condition prior to receiving additional flows from the development.

3.3.3 Floodplains

EO 11988, *Floodplain Management*, directs all federal agencies to avoid both short- and long-term adverse effects associated with occupancy, modification, and development in the 100-year floodplain, when possible. In the EO, floodplains are defined as "the lowland and relatively flat areas joining inland and coastal waters including flood prone areas of offshore islands, including, at a minimum, that area subject to a one percent greater chance of flooding in any given year" (EO 11988, 24 May 1977). Approximately 1,593 acres (19 percent) of Fort Belvoir are within the 100-year floodplain of a waterway (USACE 2007a). According to the floodplain mapping for the Post, prepared by the Federal Emergency Management Agency, there are no 100-year flood hazard areas on the proposed site.

3.3.3.1 Impact Analysis

No Action

Under the No Action Alternative, there would be no impacts to floodplains.

Construction of a New Commissary, Exchange and Mixed Use Development

There are no impacts to floodplains from the construction of the New Commissary, Exchange, or future mixed use development under either Option 1 or Option 2.

3.3.3.2 Mitigation Measures

No mitigation would be required to floodplains within the Commissary and Exchange project area.

3.3.4 Coastal Zone Management Act and Coastal Zone Management

The Coastal Zone Management Act of 1972 (16 United States Code § 1451, et seq., as amended) was enacted by Congress to encourage states to protect, preserve, develop, and when possible, restore or enhance valuable natural coastal resources. As it pertains to Fort Belvoir, the Coastal Zone Management Act contains a federal consistency requirement, by which federal actions must be consistent to the maximum extent practicable with the enforceable polices of the federally approved Virginia Coastal Resources Management Program. The Coastal Resources Management Program was established to protect and manage Virginia's "coastal zone," also

referred to as "Tidewater Virginia." This program focuses on managing runoff, habitat protection, riparian buffers, RPAs, wetlands, fisheries, sustainable development, waterfront redevelopment and encroachment, septic systems, erosion and sediment control, and air pollution control (VDEQ 2009b). Activities associated with watershed management include improving stormwater management practices, maintaining vegetated buffers along riparian areas, stabilizing shorelines, and educating developers on environmentally sensitive design.

RPAs have been designated along perennial stream sections in the Community Support Center area as depicted on Figures 5 and 6.The final design of the proposed construction footprint would avoid RPAs associated with perennial streams (BNVP 2008). The development, design, and construction of the New Commissary and Exchange could affect the following policies: wetlands, erosion and sediment control, stormwater management, wastewater discharge, and air pollution control.

3.3.4.1 Impact Analysis

No Action

Under the No Action Alternative, there would be no impacts to the coastal zone.

Construction of a New Commissary, Exchange, and Future Mixed Use Development

The construction of the Commissary and Exchange on the Community Support Area would be required to be implemented in a manner consistent with the Commonwealth of Virginia's Coastal Resource Management Program enforceable policies, to the maximum extent practicable (VDEQ 2009c). There would be no impact to the following enforceable policies: Encroachment on Subaqueous Lands; Encroachment on Wetlands; Primary Sand Dune Management Program; Fisheries Management; and Control of Septic and other On-Site Domestic Waste Systems, and Air Quality (Section 3.3.6.). The Coastal Resource Management Plan enforceable policies that could be affected by Option 1 and Option 2 are discussed below:

- *Land Disturbing Activities Needing Erosion and Sediment Control*: Any land disturbance activity greater than 2500 square feet requires the preparation of erosion and sediment control plans and stormwater management design plans for inclusion into the overall design plans of any given project. The design plans for the new Commissary, Exchange, and future mixed use development will have to comply with the erosion and sediment control requirements and stormwater management requirements set forth under the Virginia Erosion and Sediment Control Law and Regulations, and the Virginia Stormwater Management Program Permit in addition to the requirements set forth under the Virginia Public Facilities Manual. The developers for the new Commissary and Exchange project will be required to submit a Virginia Stormwater Management Program Registration Statement to the VDCR for the selected option. Erosion and sediment control plans, including the site plan and narrative and stormwater management design plans would be submitted to the Fort Belvoir Directorate of Public Works for review and approval as required by the Municipal Separate Storm Sewer System (MS4) Permit held by and administered by the Fort Belvoir Directorate of Public Works.

- *Point Source Pollution:* The Proposed Action would discharge wastewater into the Fort Belvoir sewer system, which is connected to the Fairfax County wastewater system, and treated at the Noman J. Cole Jr. Pollution Control Plant.

- *Coastal Lands Management*: It is the intent of the tenant organizations to construct their projects with no impacts to streams or RPAs. Stormwater would be collected and discharged through stormwater systems designed and approved by Fort Belvoir Department of Public Works using BMPs that meet Fairfax County requirements for the Chesapeake Bay Resource Management Area.

3.3.4.2 Mitigation Measures

Mitigation measures would follow those stated under the Surface Water Resource section.

3.3.5 Chesapeake Bay Program

All water bodies on Fort Belvoir drain into the Potomac River, which ultimately drains into the Chesapeake Bay. The Virginia Chesapeake Bay Preservation Act was enacted to protect the Chesapeake Bay from further degradation from nonpoint source pollution and sedimentation in response to the 1987 Chesapeake Bay Agreement. Under the Chesapeake Bay Protection Act, Fairfax County adopted a Chesapeake Bay Preservation Ordinance, a Coastal Zone Management Act policy, which designates RPAs and Resource Management Areas. RPAs are the corridors of environmentally sensitive land that lie alongside or near the shorelines of streams, rivers and other waterways which drain into the Potomac River and eventually into the Chesapeake Bay. In their natural condition, RPAs protect water quality, filter pollutants out of stormwater runoff, reduce the volume of stormwater runoff, prevent erosion and perform other important biological and ecological functions. As defined by Fairfax County, RPAs include any land characterized by one or more of the following features: 1) tidal wetland; 2) tidal shore 3) water body with perennial flow 4) nontidal wetland connected by surface flow and contiguous to a tidal wetland or water body with perennial flow; or 5) a buffer area that includes any land within a major floodplain or any land within 100 feet of a feature listed in 1-4. Resource Management Areas in Fairfax County include all lands outside of an RPA.

Fort Belvoir is located in the Chesapeake Bay Preservation Area. Approximately 24 percent of the installation (1,984 acres) is designated by Fort Belvoir as RPAs for planning purposes (USACE 2007a); within the Community Support Center area, two RPAs associated with segments of perennial streams were delineated during stream and wetland delineation surveys (Bowman 2008).

3.3.5.1 Impact Analysis

No Action

Under the No Action Alternative, there would be no impacts addressed by the Chesapeake Bay Program.

Construction of a New Commissary, Exchange, and Future Mixed Use Development

Potential encroachment into RPA buffer designated for stream system #2 could occur with the development of the Exchange and associated paved areas along the east side of the Exchange as proposed in either option. A proposed access road and sidewalk area in the southwestern corner

of the Community Support Area could encroach on an RPA associated with System #3 under Option 1. Under Option 2, similar potential adverse effects to the same RPAs could occur.

With the exception of possible encroachment to a small amount of RPA buffer along Woodlawn Road, the future mixed use development would not affect RPAs.

Consideration of the presence of RPAs and the associated streams and wetlands during the final design stages of the proposed development for the new Commissary and Exchange complex (including paved infrastructure) would avoid or minimize encroachment into RPAs. It is the intent of the tenant organizations to construct their facilities without affecting streams or wetlands within the Community Support Center site.

3.3.5.2 Mitigation Measures

Fort Belvoir is located within the Chesapeake Bay Preservation Area. Under the MS4 Permit held by Fort Belvoir, the Installation incorporates stormwater management and protection methods into land planning and new development in addition to correcting and retrofitting existing problem areas. Fort Belvoir has already implemented numerous practices to control stormwater runoff, such as construction of permanent stormwater ponds; re-vegetation of exposed slopes; reduction of fertilizer use; location of percolation trenches adjacent to parking lots; and rain garden landscaping (USACE 2007a). It is expected that the construction of the new Commissary, Exchange, and future mixed use areas would be consistent with the policies and practices already in place at Fort Belvoir for protection of water resources.

3.3.6 Stormwater Management

The National Pollution Discharge Elimination System set forth in the Federal Clean Water Act (33 USC § 1251 et seq.), formerly referred to as the Federal Water Pollution Control Act Amendments of 1972, Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483, and Public Law 97-117, or any subsequent revisions thereto, and its attendant regulations set forth in 40 CFR Parts 122, 123, 124 and 125 for construction activities are met under the Virginia Stormwater Management Law, §10.1-603.1 et. seq. of the Code of Virginia, and the Virginia Stormwater Management Program Permit regulations, 4VAC50-60-10 et. seq. Fort Belvoir is identified as an authorized operator under General Permit VAR04, "General Permit for Discharges of Stormwater from Small MS4". The Fort Belvoir Directorate of Public Works administers the MS4 Program for the installation for both existing developed areas and areas proposed for development. With regard to the latter, project proponents are required to prepare erosion and sediment control and stormwater management design plans for inclusion into the overall design plans. As to the former, developed areas on Fort Belvoir, including building structures, parking lots, roadways, sidewalks, and landscaped areas feed into the existing stormwater drainage system or MS4. The Fort Belvoir MS4 consists of approximately 22.4 miles of paved drainage ditches and 59.8 miles of storm drain pipes that ultimately discharge into various natural channels and waterbodies (USACE 2007a). The grading of the Main Post's developed areas results in a drainage pattern that diverts runoff away from building structures and associated facilities into the MS4. The existing Commissary and Exchange grading is consistent with runoff diversion to the MS4. Provision of stormwater management for new construction projects is necessary to comply with the Virginia Stormwater Act, the Virginia Stormwater Management Program Permit regulations and the Fairfax County Public Facilities Manual.

3.3.6.1 Impact Analysis

No Action

Under the No Action Alternative, the stormwater management within the Commissary and Exchange area would stay the same and not be upgraded to follow current Virginia Stormwater Act, the Virginia Stormwater Management Program Permit regulations and the Fairfax County Public Facilities Manual.

Construction of a New Commissary, Exchange, and Future Mixed Use Development

For both options, stormwater runoff is proposed to be collected by internal roof drains (leaders) outside of building footprints with a portion of the runoff directed towards the front and back. Leaders collected and routed towards the back of the building would be routed through separate structural BMP facilities and detention facilities before being discharged into an adequate outfall in accordance with the requirements of the Virginia Stormwater Act, the Virginia Stormwater Management Program Permit regulations and the Fairfax County Public Facilities Manual. The leaders on the front half of the building would be collected by a closed conduit system and routed through a structural BMP and detention system located in the front parking bay prior to its outfall into an adequate outfall. The BMP and detention systems would be underground structural facilities.

Per the Northern Virginia BMP Handbook, adopted by Fairfax County, and used by Fort Belvoir, 40 percent phosphorus removal is required. The proponents for the new Commissary and Exchange propose to use a structural filter designed to provide 50 percent phosphorus removal efficiency. Construction of the Commissary and Exchange would incorporate stormwater management and protection methods as well as correcting and retrofitting existing problem areas. For construction of the new Commissary, Exchange and future mixed use development, BMPs would be in accordance with Fort Belvoir's MS4, the erosion and sediment control requirements and stormwater management requirements set forth under the Virginia Erosion and Sediment Control Law and Regulations, the Virginia Stormwater Management Program Permit in addition to the requirements set forth under the Fairfax County Public Facilities Manual.

Option 1 would increase the total area of impervious surfaces by as much as 38 acres and under Option 2 impervious surfaces would increase by as much as 32 acres. Preliminary runoff estimates were generated for the proposed site under both Options. Table 3 depicts the runoff generated during a two-year and 10-year storm assuming that all developed surfaces would be impervious. However, pervious paving will be incorporated in the final design in accordance with low impact development goals.

Table 4. Peak Runoff Generated During a Two-Year and Ten-Year Storm Based on Site Conditions

Storm Event	Existing Condition (cfs)[a]	Option 1 (cfs)	Option 2 (cfs)
2-Year Storm	139	208	192
10-Year Storm	335	417	400

[a] cfs = cubic feet per second

Stormwater runoff under Option 1 is greater than Option 2 by 16 cfs during a two-year storm and 17 cfs during a 10-year storm. Down-cutting of streams, erosion and sedimentation would be avoided by implementing appropriate stormwater management to mitigate for impacts.

Under both options, construction would follow the new EPA Effluent Limitation Guidelines, in which discharges from construction sites that disturb 20 or more acres of land at one time must comply with the numeric effluent limitation and monitoring requirement. The contractor will be responsible for meeting all monitoring requirements including but not limited to sampling and testing. The Effluent Limitation Guidelines were effective February 2010, although compliance with the numeric limitation is not required until August of 2011. The Effluent Limitation Guidelines require that owners and operators implement a range of erosion and sediment control measures to control pollutant discharges from construction sites in order to meet the numeric standard for pollutant turbidity in stormwater discharges. Stringent controls for construction activities such as dewatering and concrete washout, and soil stabilization are also included in the Effluent Limitation Guidelines.

Required compliance with Effluent Limitation Guidelines depends on when the Commonwealth of Virginia will reissue its Virginia Stormwater Management Program General Permit for Discharges of Stormwater from Construction Activities incorporating Effluent Limitation Guidelines. Currently, Virginia is considering new state regulations/revised permit with the Effluent Limitation Guidelines for December of 2010. Technical issues such as numeric limits and monitoring requirements are being considered. Another issue that may take precedent over the Effluent Limitation Guidelines requirement is the Chesapeake Bay Total Maximum Daily Load (Bay TMDL) restrictions on sediment and turbidity and the Accotink Creek Watershed Total Maximum Daily Load (Accotink TMDL) restrictions for stormwater flows. The Virginia Stormwater Management Program General Permit will incorporate the requirements set forth in the Effluent Limitation Guidelines, the Chesapeake TMDL, and the Accotink Creek TMDL in accordance with the location of the project. Currently, the Virginia Stormwater Management Program General Permit for construction expires June 30, 2014.

The revised Virginia Stormwater Management Program may contain language to grandfather/exempt projects from the requirements of the Effluent Limitation Guidelines, the Chesapeake TMDL and the Accotink Creek TMDL. Exemption factors may include projects undergoing certain design phase and financial commitment in place prior to the implementation date of the revised Virginia Stormwater Management Program.

3.3.6.2 Mitigation Measures

Mitigation measures that would be used in construction activities associated with the construction of the Commissary, Exchange and future mixed use development may include, but would not be limited to:

- As necessary, provide for stream channel restoration mitigation on-site or within the same watershed.

- Identification of candidate areas for removal of existing impervious surface to offset the increase of impervious surface resulting from development of Fort Belvoir. Pervious paving materials will be incorporated in the final design as practicable to reduce stormwater runoff.

- Final design should include 100 percent pervious areas planted with trees in the interior of constructed parking areas to provide shade and pervious areas that would receive rain water and aid in the percolation to groundwater.

- Construct site-specific controls for water quality management of impervious areas consistent with LID practices.

- Conserve water and reduce consumption through LEED® Silver design and construction

- Provide stable outfalls and mitigate impacts for the receiving channel. If the receiving stream channel exhibits failures of banks and bed in the existing conditions, the stream should be restored to a stable condition prior to receiving additional flows from the development.

The implementation of stormwater management throughout the project would, in general, provide a long-term benefit to the Dogue Creek and Accotink Creek watersheds and ultimately, the Potomac River.

3.4 BIOLOGICAL RESOURCES

3.4.1 Fort Belvoir Integrated Natural Resources Management Plan

Fort Belvoir developed an Integrated Natural Resources Management Plan that embodies the Installation's principles of ecosystem management to preserve native biodiversity. The plan establishes procedures to ensure the sustainability of the land. It outlines conservation efforts for the Installation's natural resources (e.g., aquatic resources, flora, and fauna) and establishes procedures to ensure compliance with related environmental law and regulations (Horne 2001). Fort Belvoir uses an ecosystem management approach to conserve and protect biodiversity. Baseline surveys of each resource area have been conducted to characterize the resources on the Installation and to assess their significance. Management strategies have been developed and implemented and goals for the program were established. Attachment I of the Integrated Natural Resource Management Plan contains Fort Belvoir's Tree Removal and Protection Policy. This policy outlines requirements and criteria for tree protection and replacement whenever construction or other activities require the removal of trees and includes tree removal mitigation of two new trees planted for each tree four inches and larger in diameter removed through construction activities (Horne 2001).

3.4.2 Vegetation

3.4.2.1 Undeveloped Areas

Vegetation resources at Fort Belvoir have been characterized, mapped, and assessed including the identification of rare plant species and communities during a number of surveys and inventories. Undeveloped portions of the Upper North Post Community Support area are primarily characterized as second-growth "Beech-Mixed Oak" forest followed by "Oldfield Grassland". The Beech/Mixed Oak community type is an upland forest located on more gradual slopes. The canopy plant species include white oak (*Quercus alba*) and northern red oak (*Quercus rubra*). American beech (*Fagus grandifolia*), flowering dogwood (*Cornus florida*), red maple (*Acer rubrum*), and cherryleaf viburnum (*Viburnum prunifolium*) are found within the

understory. Oldfield Grassland includes unimproved open fields or areas that are infrequently mowed. Dominant plant species include a mix of grasses and wildflowers, such as broomsedge (*Andropogon virginicus*), tall fescue (*Festuca elatior*), and bushclover (*Lespedeza cuneata*). Urban Land is the third most prevalent community and includes all developed areas including buildings and landscaped areas. Plant species include a variety of landscaped trees and shrubs.

In addition to the three dominant vegetation communities, several other vegetation communities also occur:

- Virginia Pine. The community type is classified as an early successional forest of oldfields or other land clearings dominated by Virginia Pine (*Pinus virginiana*).

- Loblolly Pine. Small areas of this community type can be found at the site. These areas have been planted and are not native stands at Fort Belvoir.

- Mixed Pine/Hardwood. This community type is characterized as a transitional forest between early successional pine and climax hardwood types. Hardwood species and pine species are evenly distributed throughout the forest. Virginia Pine is generally the dominant species, but loblolly pine (*Pinus taeda*) is also present. Dominant hardwood species are variable.

3.4.2.2 Impact Analysis

No Action

Current conditions would continue. No impacts to vegetation would occur under the No Action Alternative.

Construction of a New Commissary, Exchange and Mixed Use Development

Under either option, the construction of the new Commissary, Exchange, and future mixed use areas would result in the division of the approximately 77-acre undeveloped area into two, smaller distinct areas separated by the new Commissary and Exchange developments. Upon completion of all projects proposed for the development of the Community Support Area the existing undeveloped area would be reduced by approximately 49 percent for Option 1 and 42 percent for Option 2. As a consequence, long-term moderate adverse impacts would occur from the permanent loss of wooded vegetation communities and the potential for compromised viability of the remaining vegetation communities.

In the southeast portion of the Community Support Area, the proposed future residential and mixed-use development would further result in the permanent loss of vegetation though much of the area has been previously developed. Long-term minor adverse impacts to vegetation associated with currently existing undeveloped area are expected from the development of future mixed use facilities.

Option 1

Option 1 would require tree and vegetation removal for site preparation and permanent placement of the proposed new Commissary, Exchange, and future residential/mixed use areas. In addition, associated parking and pedestrian infrastructure would be developed and combined would require the removal of approximately 38 acres of trees and/or vegetation. Clearing would result in a long-term, major adverse effect due to permanent loss of existing natural plant

communities and wildlife habitat. The Fort Belvoir Tree Removal and Protection Policy requires that trees over 4 inches in diameter be replaced at a ratio of 2:1 (Horne 2001). A tree survey and analysis of tree density indicated that there are approximately 160 trees larger than 4-inches in diameter per acre in the wooded area of the site, or approximately 6,000 trees within the area of construction disturbance for Option 1. This translates into approximately12,000 replacement trees to be planted on site or in a designated location (to be determined during the design process) as mitigation for the implementation of Option 1. The policy also states that any tree or shrub removal or any construction activity that may impact trees on the Installation must be approved by the Directorate of Public Works, Environmental and Natural Resource Division (ENRD) and requires that contractors and sub-contractors notify the Fort Belvoir Directorate of Public Works for a review of natural resource protection requirements in conjunction with the excavation permit. These requirements emphasize tree preservation and the avoidance of impacts through site planning and appropriate construction practices. The Directorate of Public Works, ENRD would determine the size and species appropriate for the conditions and location where replacement trees would be planted.

Option 2

Tree and vegetation clearing would be required for Option 2; however, because of the planned use of more previously developed area, the adverse effect of tree removal would be approximately 17 percent less. Approximately 32 acres of undeveloped area would be cleared for Option 2; the Installation's tree removal and protection policy would also be enforced resulting in the removal of about 5,000 trees and the replacement of about 10,000 trees. Long-term, moderate adverse impacts from the loss of woodland vegetation communities would occur.

3.4.2.3 Mitigation Measures

Mitigation measures for the impacts to vegetation include:

- Protect mature and significant trees during construction by limiting grading in wooded areas.

- AAFES will minimize tree loss and adhere to the negotiated tree restoration plan to prevent net tree loss. There would be replacement of 4,725 trees within the limits of clearing and grading on the project site and other designated areas of the Installation resulting in no net tree loss. Sixty percent (2,835) of the trees would be 2-1/2 inch caliper trees and the remaining 1,890 trees would be smaller and planted as "tube" protected trees (AAFES 2010).

- Implement an invasive/exotic vegetation control plan that would focus on controlling invasive species.

- Compensate for habitat loss by repairing and restoring habitat condition. Restoration projects could correct existing stormwater management problems, stabilize eroded and undercut stream channels, remove unnecessary impervious surfaces within riparian areas, re-vegetate disturbed and cleared portions of riparian areas, and remove invasive/exotic vegetation from riparian areas and adjoining upland areas.

3.4.3 Wetlands

EO 11990, Protection of Wetlands, directs all federal agencies to avoid to the extent practicable the long- term moderate adverse impacts associated with the modification or destruction of wetlands and to enhance the natural and beneficial values of wetlands. When there are no alternatives, actions proposed must be modified to preserve and enhance wetland values and minimize degradation. Activities proposed in wetland areas are also regulated by provisions of the Clean Water Act. Wetlands on Fort Belvoir are defined constraints to development on the installation.

A wetland delineation was conducted on July 22 and 23, 2008 and 0.003 acres (145 square feet) of palustrine forested wetland located within tributary system #2 on the Community Support Center site. A jurisdictional determination by the USACE concurred with the wetland delineation (USACE 2009). The palustrine forested wetland is not located within or adjacent to any proposed construction or development.

3.4.3.1 Impact Analysis

No Action

Under the No Action Alternative, there would be no impacts to wetlands.

Construction of a New Commissary, Exchange, and Mixed Use Development

There are no impacts to the delineated freshwater, forested wetland resulting from the proposed development under either option.

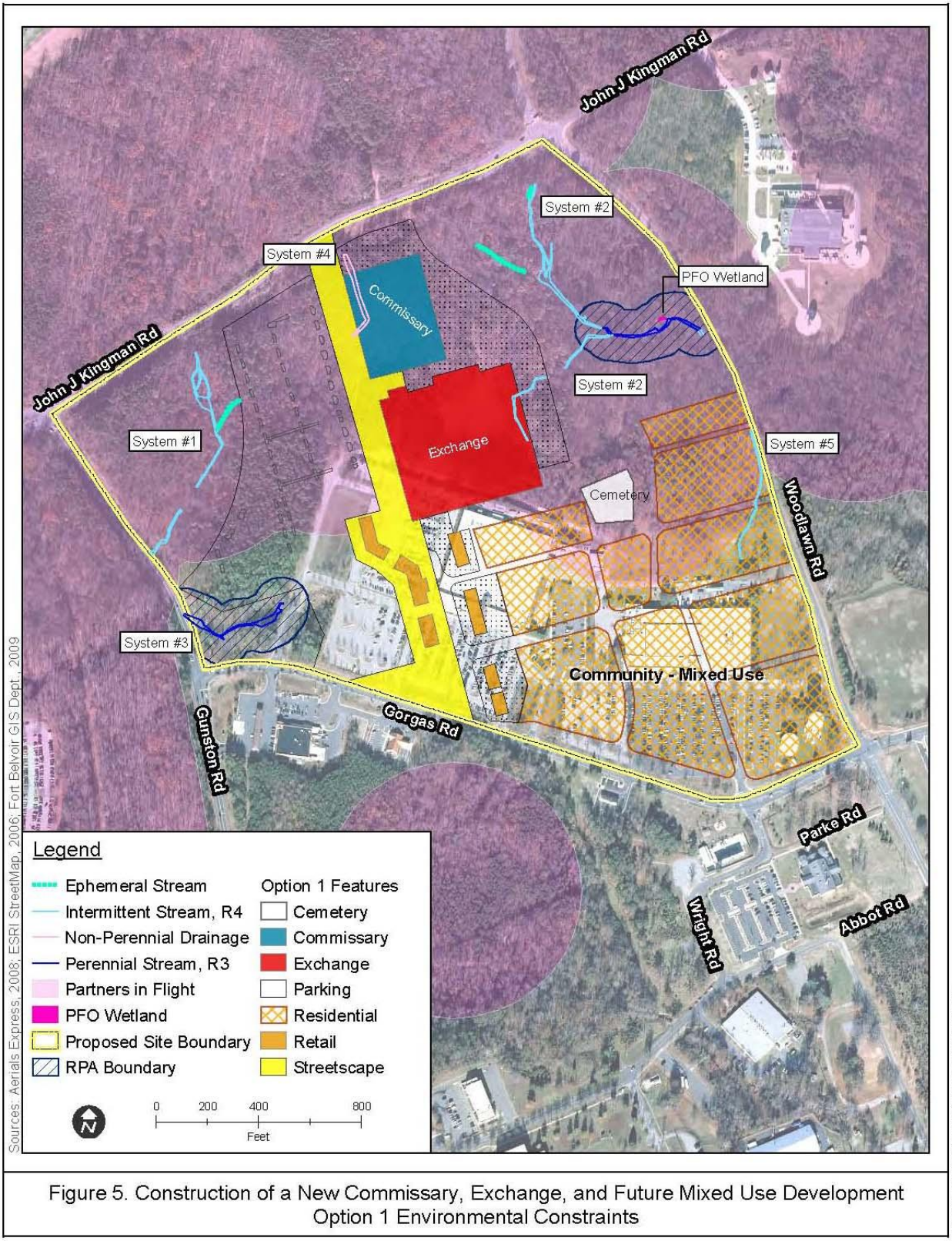


Figure 5. Construction of a New Commissary, Exchange, and Future Mixed Use Development Option 1 Environmental Constraints

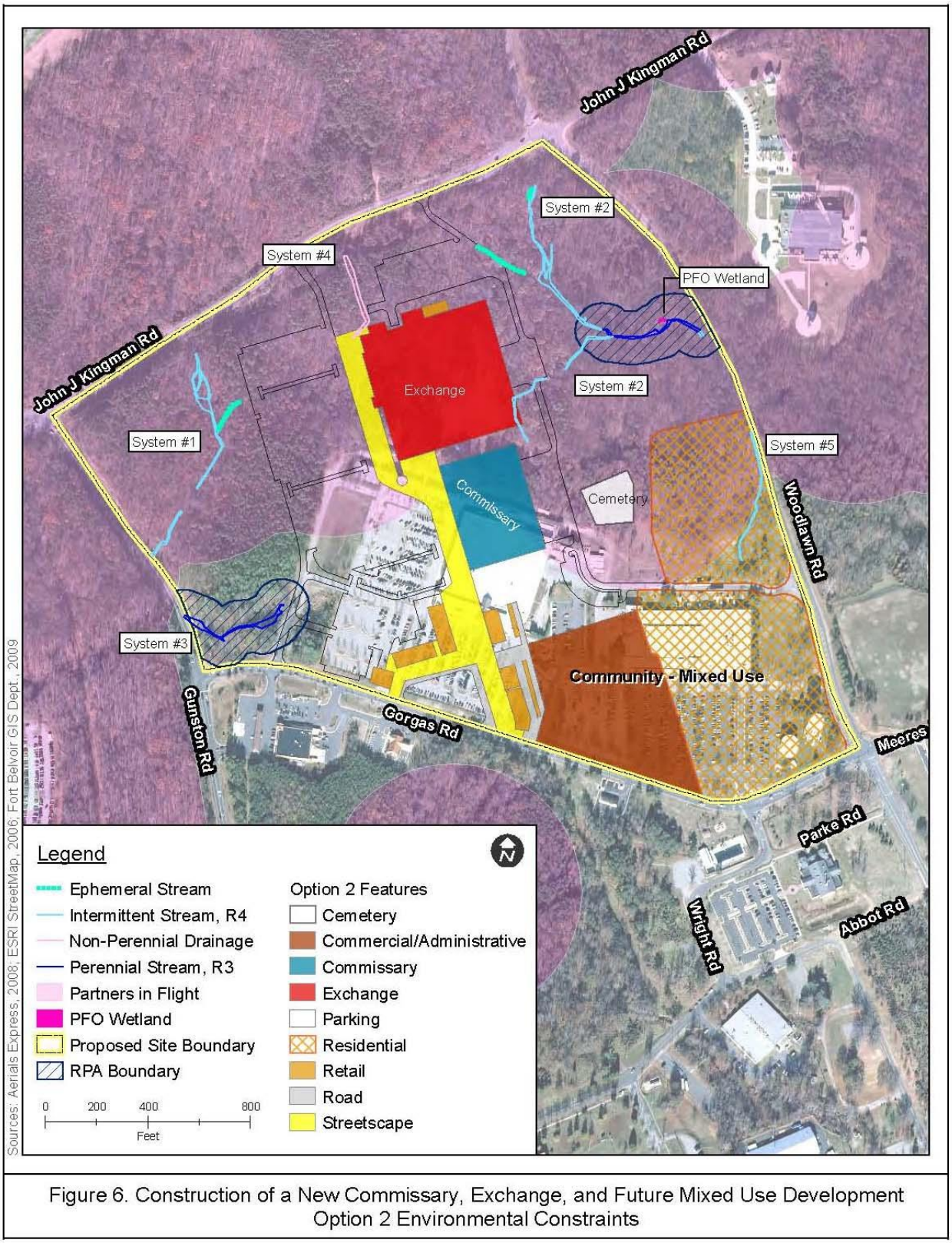


Figure 6. Construction of a New Commissary, Exchange, and Future Mixed Use Development Option 2 Environmental Constraints

3.4.3.2 Mitigation Measures

No mitigation is required.

3.4.4 Wildlife

Fort Belvoir has set aside 2,524 acres of land for wildlife, including the Accotink Bay Wildlife Refuge, a conservation area in Training Area 17, the Jackson Miles Abbott Wetland Refuge, and a Forest and Wildlife Corridor that maintains habitat connectivity for wildlife movement and migration. These and other undeveloped areas of Fort Belvoir, such as stream valleys and slopes, provide habitat for various wildlife species. An installation-wide inventory of wildlife, excluding bats and invertebrates, has been conducted and based on information from the surveys, the Installation contains habitat for 42 species of mammals, 260 species of birds, 32 species of reptiles, and 27 species of amphibians (U.S. Army Garrison 2002). In general, wildlife likely to be found in and around the Commissary and Exchange site are species that are not dependent on permanent water features and species that are tolerant of more developed areas and human activities. Table 5 provides the common species that may occur within habitats found in the Upper North Post Community Support Area.

Table 5. Common Species of Wildlife That May Occur on the Upper North Post Community Support Area

Scientific Name	Common Name
Mammals	
Didelphis virginiana	Opossum
Blarina brevicauda	Northern short –tailed shrew
Scalopus aquaticus	Eastern mole
Procyon lotor	Raccoon
Mustela vison	Mink
Lutra canadensis	River otter
Mephitis mephitis	Striped skunk
Vulpes vulpes	Red fox
Marmota monax	Woodchuck
Tamias striatus	Chipmunk
Sciurus carolinensis	Eastern gray squirrel
Castor canadensis	Beaver
Peromyscus leucopus	White-footed deer mouse
Microtus pinetorum	Woodland vole
Ondatra zibethicus	Muskrat
Rattus norvegicus	Norway rat
Mus musculus	House mouse
Sylvilagus floridana	Eastern cottontail rabbit
Odocoileus virginianus	White-tailed deer
Birds	
Pandion haliaeetus	Osprey
Buteo lineatus	Red-shouldered hawk
Zenaida macroura	Mourning dove

Table 5 (Continued). Common Species of Wildlife That May Occur on the Upper North Post Community Support Area

Scientific Name	Common Name
Chaetura pelagica	Chimney swift
Melanerpes carolinus	Red-bellied woodpecker
Vireo olivaceus	Red-eyed vireo
Poecile carolinensis	Carolina chickadee
Hylocichla mustelina	Wood thrush
Mimus polyglottos	Northern mockingbird
Wilsonia citrina	Hooded warbler
Piranga olivacea	Scarlet Tanager
Cardinalis cardinalis	Northern cardinal
Passerina cyanea	Indigo bunting
Carduelis tristis	American goldfinch
Amphibians	
Ambystoma maculatum	Spotted salamander
Plethodon cinereus	Red-backed salamander
Bufo americanus	American toad
Pseudacris crucifer	Northern spring peeper
Rana sylvatica	Wood frog
Reptiles	
Chelydra serpentina	Snapping turtle
Terrapene carolina	Eastern box turtle
Chrysemys picta	Painted turtle
Sceloporus undulatus	Eastern fence lizard
Eumeces fasciatus	Five-lined skink
Nerodia sipedon	Northern water snake
Thamnophis sirtalis	Eastern garter snake
Heterodon platirhinos	Eastern hognose snake
Coluber constrictor	Northern black racer
Agkistrodon contortrix	Copperhead

Source: Horne 2001, USACE 2007a, U.S. Army Garrison 2002

The undeveloped, forested lands located immediately to the north and east (across Kingman Road and Gunston Road) of the 109-acre Commissary and Exchange site are part of the designated Forest and Wildlife Corridor established as mitigation for BRAC actions in the early 1990s (U.S. Army Garrison 2002). The Wildlife Corridor provides a band of undeveloped habitat that allows wildlife to move through the Installation, connecting the Huntley Meadows Regional Park and Jackson Miles Abbot Wetlands Refuge in the north with Accotink Bay Wildlife Refuge, Mason Neck National Wildlife Refuge, Mason Neck State Park, and Pohick Regional Park along the Potomac River.

Fort Belvoir promotes and supports Department of Defense's Partners in Flight (PIF) Program. Partners in Flight is a program that within an umbrella network of agencies, non-governmental organizations and corporations, works to develop cooperative programs and projects focusing on

the conservation of all birds requiring terrestrial habitat (DoD PIF 2010). DoD is a signatory to the federal Memorandum of Agreement with Partners In Flight which allows DoD partnership on the national PIF Management and Joint Steering Committees (DoD PIF 2010). Many terrestrial land bird species, including Neotropical migrants require large tracts of forest when nesting and are limited by habitat fragmentation and habitat edges. Designated breeding habitat for PIF species of concern: wood thrush (*Hylocichla mustelina*), hooded warbler (*Wilsonia citrina*), and scarlet tanager (*Piranga olivacea*) is present on the Upper North Post Community Support Center area (Figures 5 and 6). Wood thrush breeding habitat covers the northeastern quarter of the area bounded by Woodlawn, Kingman, and Gunston Roads and the existing Exchange. Fort Belvoir uses the wood thrush population as an indicator of forest ecosystem health on the Installation because they require large tracts of forest that also support other animal species (Horne 2001). Scarlet tanager breeding habitat covers the northwestern quarter of this area, and the hooded warbler breeding habitat is concentrated along Gunston Road, overlapping the scarlet tanager habitat. All three breeding habitats extend beyond Kingman Road into the Forest and Wildlife Corridor.

3.4.4.1 Impact Analysis

No Action Alternative

Current conditions would continue under the No Action Alternative.

Construction of a New Commissary, Exchange, and Future Mixed Use Development

For Options 1 and 2, there could be a long-term, minor adverse effect to wildlife species that currently inhabit, find shelter, or forage in the undeveloped areas of the Community Support Area. Tree and vegetation clearing would result in the permanent loss and/or alteration of habitat available for wildlife. Areas where construction would eventually locate structures, parking and roads would be permanently lost; areas cleared for construction access, would eventually become re-vegetated but the type of habitat available would, for the long-term be altered. Re-establishment of native vegetation by planting, colonization from adjacent remaining vegetation and the existing seed bank would allow some areas to eventually re-establish habitat types.

Direct mortality of smaller, slow-moving animals, such as invertebrates, reptiles, and amphibians, could occur as a result of construction activities. Birds and more mobile territorial mammals, such as raccoons, skunks, foxes, and woodchucks would likely be displaced, at least temporarily moving into adjacent appropriate habitat. In addition, under either option, the development of the Community Support Area including the new Commissary and Exchange and the infrastructure associated with both facilities would result in the division of the existing, large, undeveloped area into two smaller undeveloped tracts with the new development centered between. The central developed area resulting from the construction of the new Commissary and Exchange could act as a barrier to some wildlife species that would be unable or unwilling to move through or around the developed area; however, the presence the nearby Wildlife Corridor would remain intact and available to mobile wildlife species.

The PIF habitat on the Community Support Center area together with the Forest and Wildlife Corridor currently form a large, relatively intact parcel of undeveloped woodlands currently available for use by PIF species. Although designated PIF habitat for these species is found in other locations on Fort Belvoir, tree and vegetation clearing, as proposed for both Options, could adversely affect successful breeding of PIF and other bird species through direct loss of breeding

habitat especially if clearing activities are scheduled during the nesting season (approximately 1 April through 31 August). Breeding habitat for the three PIF high-priority Neotropical bird species (wood thrush, hooded warbler, and scarlet tanager) found on-site would be permanently reduced in size as a result of clearing. Under Option 1, PIF habitat would be reduced by approximately 33 acres and under Option 2, PIF habitat would be reduced by approximately 28 acres. The fragmentation of the woodlands on the project site could preclude PIF species from using the remaining woodland portions due to their life requisite for relatively large, unbroken forest tracts for breeding.

Loss of breeding habitat during the nesting season can result in direct impacts to nesting species from inadvertent mortality of eggs, nestlings, or adults as trees and shrubs are cleared or nests/fledglings are abandoned as a result of disturbance. Scheduling the clearing of woodland habitat outside of the nesting season for birds is a mechanism that would provide a protection of potentially nesting bird species including PIF designated species and would still allow development to move forward.

EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. E.O. 13186, Section 3 asks federal agencies to:

> 1) Support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions;
>
> 2) Restore and enhance the habitat of migratory birds, as practicable;
>
> 3) Prevent or abate the pollution or detrimental alteration of the environment for the benefit of migratory birds, as practicable; and
>
> 4) Design migratory bird habitat and population conservation principles, measures, and practices, into agency plans and planning processes.

Options 1 or 2 would result in long-term, minor adverse impacts to wildlife. The future residential and mixed-use development to be located in the southeast portion of the Community Support Center would have only short-term, minor impacts to wildlife since the area is already developed.

3.4.4.2 Mitigation Measures

- Construction activities would comply with goals and management policies specified in Fort Belvoir's Integrated Natural Resources Management Plan, and with general performance criteria found in the Chesapeake Bay Preservation Area regulations.

- Mitigation measures described in Section 3.4.2, *Vegetation*, would benefit wildlife species.

- Tree replacement plantings would restore loss of PIF habitat and as development has occurred on Fort Belvoir, additional land has been and will continue to be set aside, including add-on lands to the refuges when feasible to offset the incremental loss of wildlife habitat.

3.4.5 Rare, Threatened, and Endangered Species

Protection of rare, threatened, and endangered species is regulated by the Endangered Species Act of 1973 and administered by the U.S. Fish and Wildlife Service (USFWS) and the Virginia Department of Conservation and Recreation. Section 7 of the Endangered Species Act requires federal agencies to consult with the USFWS, the National Oceanic and Atmospheric Association – National Marine Fisheries Service, and appropriate state agencies to determine if proposed actions may affect listed or candidate species or designated critical habitat. The U.S. Army ensures that consultations are conducted as required under Section 7 of the Endangered Species Act for any action that "may affect" a federally listed threatened or endangered species according to guidance in AR 200-1. The Army also complies to the extent practicable with state threatened and endangered species lists.

Fort Belvoir supports habitat for rare, threatened and endangered species including one federally listed plant species and eight Virginia state-listed animals and four plant species. Fort Belvoir also has documented 16 animals and three plants that are found on the Virginia "Watchlist" maintained by the Virginia Department of Conservation and Recreation-Natural Heritage Program. Approximately 89 other species found at Fort Belvoir are considered by the Natural Heritage Program to be state rare species; these species are not legally protected. Of the federal and Virginia state-listed species, only the bald eagle, small-whorled pogonia and the North American wood turtle were considered to have the potential to be present in the undeveloped areas of the Community Support Center area.

Bald Eagle (*Haliaeetus leucocephalus*)

The bald eagle is listed in Virginia as a threatened species and is considered a species of concern by the USFWS after removal from the endangered species list in 2007. The bald eagle prefers wooded habitat in proximity to large bodies of open water where they prey upon fish and waterfowl (USFWS 2010). The bald eagle occurs on Fort Belvoir as a nesting, foraging and wintering species, and it is possible that a bald eagle may occasionally be seen perched in a large tree or in flight over the Upper North Post. These observations would be most likely of transient individuals and would occur as isolated observations because the habitat available is not preferred habitat for the bald eagle. Therefore, it is unlikely that the bald eagle would be found within the Community Support Center area.

Small Whorled Pogonia (*Isotria medeolides*)

The small whorled pogonia is listed as threatened by the USFWS and endangered by the Commonwealth of Virginia. The species requires open, dry, upland deciduous forests having acidic soils with terrain that is gently to moderately sloping in a northerly or easterly direction. The small whorled pogonia is currently known on Fort Belvoir only from the Fort Belvoir North Area where it was documented in 2005 though habitat exists on other portions of the Installation.

A small whorled pogonia survey was conducted on July 15, 2008 by a USFWS listed qualified surveyor within the 109-acre site of the Commissary and Exchange. The study found that the majority of the forested portions of the 109-acre site were unsuitable habitat for the small whorled pogonia, but several small areas of hardwood forest located along moderate slopes and ridges were identified as having potential habitat. No individuals or colonies of the small whorled pogonia were observed during the survey. However, the small whorled pogonia may lie

dormant for up to ten years before reappearing in a given location, so the fact that the species was not observed during the 2008 survey does not conclusively determine that the species is absent from the site.

North American Wood Turtle (*Glyptemys insculpta*)

The North American wood turtle is generally uncommon to rare throughout its range and is at the southeastern edge of their range at Fort Belvoir. A Virginia state-listed threatened species, the North American wood turtle is found at Fort Belvoir primarily along Dogue Creek and Accotink Creek drainages especially in the vicinity of the Jackson Miles Abbott and Accotink Bay refuges. It has also been documented on the Main Post. Development and stormwater runoff are the main threats to the wood turtle population on Fort Belvoir (USACE 2007a).

Fort Belvoir conducted a survey of the 109-acre Commissary and Exchange site in 2002 to determine the potential habitat for North American wood turtles. The survey concluded that there was no suitable habitat for North American wood turtles because the stream corridors within the site have been severely degraded (U.S. Army Garrison 2002).

3.4.5.1 Impact Analysis

No Action Alternative

Current conditions would remain under the No Action Alternative and there would be no impacts to any federal- or state-listed threatened or endangered species.

Construction of a New Commissary, Exchange and Future Mixed Use Development

Under both Options, it is unlikely that bald eagle would use Community Support Center area because it is not in proximity to their preferred habitat near large bodies of open water; as a result, no impacts to the bald eagle are expected for either option.

A survey of the site for suitable habitat for North American wood turtles found no turtles and no suitable habitat. No impacts are expected to wood turtles under either option.

The field survey conducted on the Community Support Center area in July 2008, identified habitat for small-whorled pogonia. The July 2008 small whorled pogonia survey expires in 2010 and because suitable habitat for small-whorled pogonia exists within the Community Support Center, additional surveys would be conducted by AAFES and DeCA prior to ground disturbing activities for facilities and associated infrastructure. Surveys must be conducted during the period when small-whorled pogonia is conspicuous (June 1 – July) and the survey results would be valid for a period of up to two years. If small-whorled pogonia is located within the construction limit of disturbance for either project as well as any future mixed use facilities, coordination with FWS and VDCR would be necessary.

The future development of residential housing in the southeastern portion of the Community Support Center area may also affect identified potential habitat for the small-whorled pogonia. Depending on final design and scheduling of the proposed project, additional surveys for small whorled pogonia may be required. The same criteria for surveys and expiration period for any survey conducted would apply.

3.4.5.2 Mitigation Measures

Fort Belvoir would conduct surveys to ensure impacts to rare, threatened, and endangered species impacts are avoided. Consultation with agencies would be maintained throughout the construction phase of the project if rare, threatened or endangered species are identified on-site.

3.5 CULTURAL RESOURCES

Federal agency actions must comply with the National Historic Preservation Act of 1966 (NHPA), as amended. The intent of the NHPA is to integrate consideration of historic preservation issues into the early stages of project planning by a federal agency. Section 106 of the NHPA requires federal agencies to take into account the effects of their proposed actions on historic properties and provide the Advisory Council on Historic Preservation with the opportunity to comment on proposed actions. The Section 106 process attempts to accommodate historic preservation concerns with the needs of federal actions through early stage consultations (36 CFR Part 800.1).

The Section 106 process uses consultation among federal agencies and other parties with an interest in the potential effects of a federal action on historic properties to assist with the identification of historic properties potentially affected by the proposed action; assess effects; and find ways to avoid, minimize, or mitigate any adverse effects on historic properties (36 CFR Part 800.2). Compliance with Section 106 of the NHPA may be coordinated with the NEPA process such that the requirements of both statutes are met in a combined effort that is timely and coordinated 36 CFR Part 800.3; Part 800.8). For the proposed new Commissary and Exchange, environmental analysis for Section 106 is provided as part of this NEPA process.

In addition to Section 106, Section 110, as amended, of the NHPA directs federal agencies to establish a program to locate, inventory, and nominate to the Secretary of the Interior all properties under their ownership or control that appear to qualify for inclusion in the National Register of Historic Places. In fulfillment of Section 110, AR 200-1 chapter 6, *Cultural Resources Management*, requires each installation to produce an Integrated Cultural Resource Management Plan. Fort Belvoir has an Integrated Cultural Resource Management Plan that provides management strategies and standard operating procedures to assist the installation with managing and maintaining archeological and historical architectural resources. The procedures contained within the Integrated Cultural Resource Management Plan are based on the NHPA and other federal laws and regulations that protect cultural resources (Goodwin 2001).

Fort Belvoir identified a geographical area within which the proposed action may directly or indirectly result in alterations in the character or use of historic properties known as the Area of Potential Effect (36CFR 800.16). For this project the Area of Potential Effect is considered to be the 109-acre area defining the project area for description and analysis of potential project effects for other resource topics. During initial consultation, Fort Belvoir requested information on and identification of known historic resources within the study area (within 0.25 mi of the Area of Potential Effect) (D. Manning, personal communication 2010).

As part of the consultation, agencies and interested parties were asked to identify their knowledge of, or concerns with historic properties in the area and issues related to the proposed action (36 CFR Part 800.4). In February 2010, Fort Belvoir informed potentially interested parties including: the Virginia State Historic Preservation Office; the Advisory Council for Historic Preservation; Alexandria Monthly Meeting of the Religious Society of Friends; Catawba

Tribal Historic Preservation Office; Fairfax County Park Authority; Fairfax County Historical Society; Fairfax County Department of Planning and Zoning; the National Trust for Historic Preservation; Woodlawn and Frank Lloyd Wright's Pope-Leighey House; Woodlawn United Methodist Church; and Woodlawn Baptist Church that Fort Belvoir would coordinate Section 106 and NEPA compliance in accordance with 36 CFR 800.8. In addition, the letter solicited comments on the Area of Potential Effect and efforts to identify resources (D. Manning, personal communication 2010).

No historic architectural resources were identified within 0.25 mi of the Area of Potential Effect/project area. However, thirteen archeological resources were identified within the study area, nine of which were determined to be ineligible for listing on the National Register of Historic Places. Four were recommended for further study (44FX 1208; 44FX 1210; 44FX 1589; and 44FX 1815). After further investigation, resource 44FX 1815 was determined not to be eligible for listing on the National Register of Historic Places (U.S. Army Garrison 2002). Woodlawn United Methodist Cemetery (44FX 1210), is located immediately to the south of the APE; however, the viewshed of this cemetery lacks historic integrity due to the existing modern development surrounding it. The remaining two archeological resources are: Resource 44FX 1589 located adjacent to Woodlawn Road, just south of Kingman Road and Resource 44FX 1208, Lacey Hill Cemetery which is considered an archaeological resource though final determination of eligibility has not been reached (D. Manning, personal communication 2010). The Lacey Cemetery is located southeast of the proposed site for the new Commissary and Exchange.

The Advisory Council for Historic Properties replied in a letter dated February 24, 2010 requesting notification in the event Fort Belvoir determines the proposed activities may adversely affect historic properties listed, or eligible for listing, on the National Register of Historic Places (Hall 2010). The Virginia Department of Historic Resources, State Historic Preservation Office replied by email on February 24, 2010 stating that they do not have any substantive comments on the proposed project, and would wait until the draft NEPA document is provided (Holma 2010). No further comments have been received (D. Manning, personal communication, 2010).

3.5.1 Impact Analysis

No Action Alternative

Current conditions would continue under the No Action Alternative; no impacts to cultural resources would occur.

Construction of a New Commissary, Exchange, and Mixed Use Development

There are no National Register-listed or National Register-eligible resources within the proposed project site for either Option 1 or Option 2. Two archeological sites that have been recommended for further study were identified in the project site. Lacey Cemetery (44FX1208) is located adjacent to the proposed construction. Construction of either option would require clearing vegetation and grading during site preparation. Lacey Cemetery would be avoided and protected during construction through establishment of a 50-foot buffer. This buffer would also help to conceal construction activities and completed facilities from view from within the cemetery by preserving the vegetative buffer between the cemetery and the new development. Archeological resource 44FX1589 is located outside of the projected limit of disturbance and

would be avoided during construction under either Option 1 or Option 2. As a result, no adverse effects to identified cultural resources are expected from implementation of either option for construction of a new Commissary and Exchange.

3.5.2 Mitigation Measures

A fence will be constructed 50 feet from the Lacey Cemetery for protection and monitored to prevent inadvertent impacts.

To reduce the loss of vegetation and prevent any accidental impacts, a 50-foot tree buffer would be established. The tree buffer would also help to conceal the structure from view from within the cemetery.

The Integrated Cultural Resources Management Plan provides guidance for unexpected discoveries during construction. If archeological resources, such as archeological artifacts, features, human remains, etc., are discovered, work would cease and reasonable efforts to protect the artifacts and the site would be initiated. The installation Cultural Resource Manager would be contacted immediately following the discovery. The Cultural Resource Manager would make reasonable efforts to avoid or minimize damage to the property until it has been assessed (36 CFR 800.11[b][3]) in accordance with NHPA, 36 CFR 800, and the Native American Graves Protection and Repatriation Act, as applicable. Construction contracts for the construction alternative would include requirements for notification, security, and protection of cultural resources on-site (Goodwin 2001).

3.6 SOCIOECONOMICS

This section describes the economics and social conditions of Fort Belvoir in relation to the National Capital Area. The socioeconomic indicators used for this analysis include regional economic activity, population, housing, and quality of life. These indicators characterize the region of influence (ROI), a geographic area that would be most affected by the proposed construction of a new Commissary and Exchange at Fort Belvoir. The ROI for socioeconomic conditions is considered to be Fort Belvoir itself and those counties and other jurisdictions that fall at least partially within a 30 mile radius of Fort Belvoir. These areas include:

- Virginia – Fairfax County, Prince William County, Stafford County, King George County, Loudoun County, Arlington County and the cities of Fairfax, Arlington, Falls Church, Manassas, Manassas Park and Alexandria.
- Maryland – Montgomery County, Prince George's County and Charles County
- Washington, D.C.

3.6.1 Demographics

Fort Belvoir is located in southern Fairfax County, within a densely populated region of more than 4.9 million people. The population density within the ROI is about 2,455 persons per square mile in comparison to the population density of the Commonwealth of Virginia, which are approximately 178 persons per square mile (U.S. Census Bureau 2009c). Growth within the ROI was estimated to have increased by nearly 11 percent between 2000 and 2009 (U.S. Census Bureau 2009b).

Strong population growth is expected through 2030 based on the anticipated long-term strength of the region's economy, high rates of immigration and international migration, and a less rapid decline in average household size than previously expected (USACE 2007a). Data from the 2006-2008 American Community Survey estimated the resident population within the Fort Belvoir Census Designated Place (CDP) which coincides with the boundaries of Fort Belvoir to be 7,176 (U.S. Census Bureau 2009a).

Implementation of BRAC 2005 recommendations will continue to occur at Fort Belvoir through 2011 and will increase the working population on the Main Post of Fort Belvoir by approximately 4,100 military and civilian personnel. An additional 8,500 personnel will be stationed on Fort Belvoir North Area and 6,400 will be stationed at the Mark Center in Alexandria, Virginia; the total population as a result of the BRAC 2005 recommendations will be 19,000. The expected total employee population at the end of BRAC is approximately 37,000 military and civilian personnel.

3.6.2 Environmental Justice

Environmental justice addresses the race, ethnicity, and poverty status of populations within the ROI. On 11 February 1994, President Clinton issued EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. The order is designed to focus the attention of federal agencies on the human health and environmental conditions in minority and low-income communities. Environmental justice analyses are performed to identify potential disproportionately high and adverse effects from proposed actions and to identify alternatives that might mitigate these effects (CEQ 1997). Fort Belvoir CDP has a substantially greater proportion of minority populations, whether non-whites or Hispanics, than both Fairfax County and the Commonwealth. The estimated ethnic make-up of the Fort Belvoir CDP based on 2006-2008 data identifying a population of 55.7 percent white, 31.8 percent black, 10.5 percent Hispanic, 8.2 percent other non-white, and 4.3 percent of two or more races (U.S. Census Bureau 2009a). Accotink Village, a small village located on U.S. Route 1, is surrounded by Fort Belvoir property and qualifies as an environmental justice neighborhood because more than half of the population of Accotink Village belongs to a racial or ethnic minority.

3.6.3 Employment and Income

The Fort Belvoir installation supports a working population of approximately 22,000, about 6,400 of which are military personnel; the remainder is civilian and contractor employees.

According to the U.S. Census Bureau's 2006 – 2008 American Community Survey, the median household income for the county was $106,785; the median family income was $127,085. A total of 3.3 percent of the county's residents lived at or below poverty level. The Fort Belvoir CDP includes a median household income of $39,592 and a median family income of $39,107. A total of 5.6 percent of the Installation's residents lived at or below poverty level compared to approximately 4.5 percent of Fairfax County and 9.6 percent of the Virginia Commonwealth (U.S. Census Bureau 2009a). However, it should be noted that military personnel may receive housing and other allowances that offset the median household income.

Fort Belvoir's primary shopping area is the existing Exchange Mall on North Post, a discount retail store run by the AAFES that provides goods and services to active duty military, their families, retirees, and reservists. With the exception of the Commissary, the AAFES oversees

operation of all other retail establishments on the installation, including shoppettes, Class VI, tailor shop, military clothing store, service stations (gasoline and automobile maintenance), dry cleaner, and barber and beauty shops. The Fort Belvoir Commissary operated by the DeCA, sells groceries and health and beauty aids. Current employment for the Community Support Center is 415 people (BNVP 2010).

3.6.4 Protection of Children

On 21 April 1997, President Clinton issued EO 13045, *Protection of Children From Environmental Health Risks and Safety Risks*. This EO directs each federal agency to ensure that its policies, programs, activities, and standards address disproportionate environmental health or safety risks to children that may result from the agency's actions. EO 13045 recognizes that a growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health and safety risks due to still developing neurological, immunological, physiological, and behavioral systems. Examples of risks to children include increased traffic volumes and industrial- or production-oriented activities that would generate substances or pollutants that children could come into contact with and ingest.

Historically, children have been present at Fort Belvoir as residents and visitors (e.g., living in family housing, attending schools, using recreational facilities). The Army has taken precautions for their safety by a number of means, including using fencing and limiting access to certain areas including construction sites.

3.6.5 Impact Analysis

No Action Alternative

Under the No Action Alternative, there would be no impacts on local or regional demographics. The area would not receive the direct and indirect economic benefits to be derived from implementation of the proposed project. The increasing population would burden the capacity of the existing facilities and the quality of services offered.

Construction of a New Commissary, Exchange, and Future Mixed Use Development

Both Options would have short-term and long-term beneficial impacts to the local and regional economy. In the short-term, the implementation of the project would result in economic benefits for the contractors who perform the construction and demolition work, their employees and the surrounding local communities. Construction contractors and their employees would increase sales of goods and services in the surrounding community during construction from purchases of fuel, food, and other necessities as well as equipment purchases and rentals and rental of temporary housing.

Over the long-term, the proposed new Commissary and Exchange would benefit the local economy as new jobs are created to provide services to customers of the new Commissary and Exchange. The employment would increase by 135 personnel from 415 to 550 people for the Community Support Center. The local economy would also benefit from additional retail and commercial tenants which would, in turn, provide additional shopping, dining and other services.

The future residential development would provide housing for approximately 250 people (BNVP 2010). These housing units are part of the Residential Community Initiative lease for 2,071 units. New mixed use development would provide additional opportunities for the purchase of goods and services. Future residents living in the proposed residential development could

become a part of the customer base for the enhanced Community Support Area especially, as the design concept of pedestrian-friendly, walkable areas result from the proposed development. Neighboring residents would add to the customer base for the Community Support area and result in a beneficial impact to the local economy through the purchase of goods and services.

The Options do not have the potential to disproportionately affect minority, low-income, or children populations.

3.6.6 Mitigation Measures

No mitigation would be required for socioeconomic impacts. The construction of a new Commissary, Exchange, and future mixed development would not be located in proximity to the environmental justice neighborhood population within Accotink Village. As a result, no adverse impacts to Accotink Village residents are expected.

3.7 LAND USE

3.7.1 Local Land Use

The Community Support Center area is located in the northeast corner of the Lower Potomac Planning District of Fairfax County (FCCP 2007). Developed land around Fort Belvoir is predominantly residential with commercial and industrial development located along U.S. Route 1. Fairfax County planning districts are further subdivided into community planning sectors; the Fort Belvoir Community Planning Sector is comprised of the Main Post and the Village of Accotink (FCCP 2007).

The Installation land use plan designates the Community Support Center area of the Installation as Community. Community land use is defined in AR-210-20 as "Facilities allowed include religious, family support, personnel services, professional services, medical, community, housing, commercial and recreational services. Users of community land use live both on- and off-Post and may include soldiers, dependents, retirees, and other civilian personnel." Adjacent to the Community Support Center area, land use designations are Institutional or Residential.

The tract of land proposed for the Commissary, Exchange, and future mixed use development project is considered developable though there are environmental, cultural, historical and operational constraints within the area that must be considered in the development planning. Design factors for the proposed project include sustainability strategies to avoid resource depletion of energy, water, and raw materials; prevent environmental degradation caused by facilities and infrastructure throughout their life cycle; and create built environments that are livable, comfortable, safe, and productive. The current location of the Commissary and Exchange acts as an anchor for the present services for the Community Support Center development area.

Aesthetics and visual resources are the natural and man-made features of a landscape. They include cultural and historic landmarks, landforms of particular beauty or significance, water surfaces, and vegetation. Together these features form the overall impression that a viewer receives of an area or its landscape. Fort Belvoir consists of numerous areas that possess aesthetic value, such as large tracts of open space and meadows, wetlands, mature forests, and streams. The North Post is the least developed area on the Main Post and contains pockets of undeveloped land. The project area is characterized by forested areas with mixed hardwoods and developed infrastructure. The proposed project area is also adjacent to the Woodlawn Historic

Zoning Overlay District. Additionally, the Davison Army Airfield provides building height restrictions for the entire Post.

Construction of a New Commissary, Exchange and Mixed Use Development

Both Options would have a long-term minor adverse effect on aesthetics within the Upper North Post site due to construction and development of a relatively large, currently intact, undeveloped parcel. Visual aesthetics of the surrounding Woodlawn Historic Overlay district would not be affected by the implementation of either option.

Based on a review of the Woodlawn Historic District Viewshed Study, the Commissary and Exchange would not impede on the viewshed of the Woodlawn Historic District; the development would not be visible from the Woodlawn Historic District. Building designs for the Commissary and Exchange are one-story and would not exceed 50 feet in height.

The landscape plan for the proposed Exchange is based on current applicable land development ordinances, regulations, and adopted standards including AAFES Landscape Specification Guidelines and the Fort Belvoir Installation Design Guide (AAFES 2008). Design factors that were considered include: preserving existing trees; developing landscaping and maintenance guidelines; thermal shading of interior parking lots to reduce heat, and provide impervious surface; selection of native or naturalized plants; selecting plants with LEED® consideration; proposed planting details for mulch, water, and planting mixture; and plant materials that maximize seasonal interest. The goal is to create an outdoor space for pedestrians that link the proposed neighborhood centers, retail, office, and public spaces to the Commissary and Exchange. Outdoor seating and gathering areas will be provided to create a positive and beneficial impact on aesthetics.

3.7.2 Local and Regional Plans and Programs

Real Property Master Plan

The Real Property Master Plan provides the Installation with the direction, vision, and framework for the long-term and short-term development and sustainment of its real property assets, which include land and facilities. The Real Property Master Plan also incorporates the professional practice of community planning, as implemented by all DoD services and agencies (BNVP 2009).

AR 210-20 authorizes the Real Property Master Plan and the Plan also adheres to the guidance outlined in the Installation Management Command's Master Planning Technical Manual. Components of the Real Property Master Plan include the Real Property Master Plan Digest, Short Range Component, Long Range Component, the Installation Design Guide and the Capital Investment Strategy.

National Capital Planning Commission

The National Capital Planning Commission is the central planning agency for the federal government in the National Capital Area. The National Capital Planning Commission prepares the federal elements of the Comprehensive Plan for the National Capital Region. Within the Comprehensive Plan, the element Federal Workplace: Location, Impact, and the Community lists policies with regards to building and development codes, energy efficiency, working environment, and physical security. Policies that may be applicable to the proposed action include:

- Using innovative energy conserving techniques [e.g., Leadership in Energy and Environmental Design (LEED®)] in the design and construction, operation, location, and orientation of federal workplaces.

- Designing security barriers and checkpoints at vehicular entry points on federal installations to accommodate vehicular queuing on-site, and to avoid adverse effects on adjacent public roadways operations and safety.

A second element of the National Capital Planning Commission's Comprehensive Plan, Transportation, lists federal parking policies and associated parking ratios in response to the area's congestion and poor air quality. For suburban federal facilities more than 2,000 feet from a Metrorail Station, the parking ratio should reflect a phased approach linked to planned improvements over time (U.S. Army Garrison 2008).

3.7.3 Sustainability

Sustainable design principles in architecture and engineering can increase life and reduce operational costs of buildings. Effective with the military construction program for Fiscal Year 2008, U.S. Army policy is to build new construction to the nationally accepted benchmark for design, construction, and operation of high performance green buildings: LEED® Green Building Rating System. U.S. Army new construction of vertical buildings is required to qualify for the LEED® Silver standard based on sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, innovation and design, and regional priority (USGBC 2010). The construction of a new Commissary and Exchange will meet LEED® Silver standard designation and will meet or exceed the intent of EO 13514, *Federal Leadership in Environmental, Energy and Economic Performance*.

The project intends to meet the requirements of the Energy Policy Act 2005, Energy Independence and Security Act 2007 and Executive Orders 13423 and 13514. The project team would design the building systems to achieve a 30 percent energy use reduction compared to the baseline building per American Society of Heating, Refrigerating, and Air Conditioning Engineers Standard 90.1 *Setting the Energy Standard for Buildings Except Low-Rise Residential Buildings* (ASHRAE 2004) in compliance with Energy Policy Act of 2005 and helping to achieve the energy reduction goals of EO13423. Requirements for FEMP/Energy Star rated products and green products in accordance with EO13423 would be incorporated into the specifications of the project. The project will study solar water heating systems for 30 percent of the hot water demand in accordance with Energy Independence and Security Act 2007. In addition to using the LEED® rating system and mandating a silver rating, the project would incorporate the "Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings" in accordance with EO13514. The project would evaluate technologies and features such as green or reflective roofs; rainwater harvesting; alternative Heating, Ventilation, and Air Conditioning systems; and alternative lighting technologies to help achieve the LEED® silver rating and meet the requirements of EO13514.

Low Impact Development strategies for planning and land use include design practices and technologies that conserve and protect natural resources and reduce infrastructure needs. This allows land to be developed in a most cost effective manner that mitigates the environmental impacts of development.

3.7.4 Impact Analysis

No Action Alternative

Under the No Action Alternative, replacement of the Commissary and Exchange would not occur. The current viewshed and undeveloped land would remain intact until or unless other, future development occurred within the undeveloped area of the Community Support Center area. The existing Commissary and would continue to operate from its present location and would not include sustainable design principles.

Construction of a New Commissary, Exchange, and Mixed Use Development

Under both options, land use designations would not change as a result of the proposed project. Both Options 1 and 2 would have a beneficial effect on land use and sustainability as a result of sustainable design principles that would be incorporated into the design plan, including LEED® Silver standards. The proposed project would establish a street framework and block pattern that will allow for a variety of scenarios of intensity or diversity of use. In addition, under either alternative, the future redevelopment of existing developed area in the southeastern portion of the parcel to include new mixed-use and residential areas would minimize adverse effects resulting from new construction and additional development to support the goals of the Real Property Master Plan.

The planned layout of development for Option 1 would require more clearing of undeveloped area and does not efficiently re-use the previously developed areas available after the construction of the new Exchange is complete. Under Option 2 the redevelopment of the former Exchange site for the proposed new Commissary would reduce the amount of land cleared for development.

3.7.5 Mitigation Measures

The Community Support Area development including the Commissary, Exchange and future mixed use development may use the following BMPs for sustainability:

- Training in water conservation measures for staff and contractors during construction of facilities and operation thereafter;
- Training on eligible materials for recycling municipal solid waste;
- Providing adequate containers for recycling materials; and
- Incorporation of recycling requirements for construction demolition debris into all contracts for outside construction contractors.
- Adhere to Installation Design Guide for landscaping and maintenance guidelines;
- Provide thermal shading of parking lot for interior parking lots;
- Plant native or naturalized plants with LEED® consideration;

- Create an outdoor space for pedestrians that link the proposed neighborhood centers, retail, office, and public spaces to the Commissary and Exchange. Outdoor seating and gathering areas would also be provided.

3.8 TRANSPORTATION

3.8.1 Transportation Systems

Transportation improvements are being implemented on Fort Belvoir to accommodate the expansion of Fort Belvoir under BRAC actions. Additional traffic improvements are either occurring or may occur off-Post as a result of Virginia Department of Transportation projects in Fairfax and Prince William counties planned to accommodate continued growth in the region.

Highway and Street Network

Fort Belvoir is serviced by many types of roadways including public highways, major and minor arterial roads, collector streets, local streets, and unpaved vehicle trails. In the developed areas of the North and South Post, the installation roads are primarily paved two-lane roads.

In the vicinity of Fort Belvoir, the northern Virginia highway system primarily consists of four roadways that serve as both local commuter routes and longer-distance non-commuter routes. The roadways that are primary access to the Commissary and Exchange site include:

- Interstate 95 (I-95). I-95 is a freeway that runs in a north-south direction approximately two miles northwest of Fort Belvoir. Access to Fort Belvoir from I-95 is primarily by an interchange with the Fairfax County Parkway. Lorton Road and Route 1 interchanges also provide access to Fort Belvoir.

- US Route 1 (Jefferson Davis Highway). US Route 1 is classified as a principal arterial with a generally north-south regional orientation. However, it runs in an east-west direction across Fort Belvoir. Route 1 divides Fort Belvoir by a four-lane undivided highway with exclusive turn lanes at major intersections.

- Fairfax County Parkway. This road is a principal arterial road and connects Fort Belvoir to I-95.

- Telegraph Road. Telegraph Road is classified as a minor arterial road that runs along the northern boundary of Fort Belvoir. It is currently a four-lane facility.

Primary roads provide main access into the Post and are heavily traveled. Roadways servicing the Community Support Center include Kingman Road that provides connection between the Community Support Center and the Fairfax County Parkway to other roadways such as I-95 and Gunston Road, which provides connection between North Post and South Post and is a major internal arterial for traffic circulation on Main Post (BNVP 2008). Secondary roads include Woodlawn Road, which provides access along the eastern boundary of the Community Support Center to the residential and civic areas on the Lower North Post, and Gorgas Road, which provides site access into Community Support Center area from Gunston Road (BNVP 2008). Currently there are three signalized intersections in the vicinity of the Community Support Center: Kingman/Gunston Roads, Gunston/Gorgas Roads, and Woodlawn/Gorgas Roads. Other intersections in the area are stop-controlled intersections. Operationally, congestion occurs along

Gunston Road adjacent to the Community Support Center due to intersections under stop-control, which typically perform at a less efficient level than signalized intersections. No direct access by public transportation is currently available to the North Post.

3.8.2 Impact Analysis

No Action Alternative

Under the No Action Alternative, the existing Commissary and Exchange would remain in operation at its current location and under current conditions. There would be a long-term negative effect on the traffic patterns with the increase of employees, residents, and off-post visitors (i.e., retirees, patrons from the National Capital area) due to the BRAC re-alignment activities. Traffic has the potential to become congested, increasing travel time to and from the Commissary and Exchange.

Construction of a New Commissary, Exchange, and Mixed Use Development

A traffic analysis was conducted by Belvoir New Vision for the Master Plan that included the North Area of the Installation. In addition, Fort Belvoir conducted a "traffic fit" study for the roadways within Community Support Center area (Parsons 2010). The two options under consideration for the construction of the new Commissary, Exchange and future mixed use area are contained within the "macro block" bordered by Kingman Road, Gunston Road, Gorgas Road, and Woodlawn Road and equivalent to the Community Support Center area. To determine the existing and future trip patterns, a ratio of the proposed development over the existing development total square footage was developed. Table 6 presents the existing, planned, and future site trips for the Commissary and Exchange project during peak hours but does not include trips due to other development, existing or proposed, in the macro block (Parsons 2010). A number of the new trips would be a "trip capture or" "trip diversion" such as a Fort Belvoir employee stopping by the Commissary or Exchange as they leave the Installation at the end of the day so not all trips are considered new trips to the Installation. The number of trips for AM and PM are lower than planned for in the Real Property Master Plan analysis (Parsons 2010).

The Real Property Master Plan 2030 analysis analyzed AM and PM peak hours for the Installation but not specifically for the Community Support Center area; peak trips to the Commissary or Exchange could occur on a Saturday evening when more people are out shopping and dining. Additional traffic analysis would be conducted during site design for each access point to determine the number of turn lanes needed, length of turn lanes, and whether stop-control or signal control is needed (Parsons 2010). In addition, a Comprehensive Traffic Engineering Study for Fort Belvoir, currently being completed will provide guidance for traffic requirements such as road layouts and traffic engineering for the final project design.

Table 6. Existing, Planned, and Future Peak Hour Site Trips for the Proposed Commissary and Exchange

Peak Hour Trips	Existing Trips			Current Planned Development*			Future Trips**		
	In	Out	Total	In	Out	Total	In	Out	Total
AM Trips	250	100	350	370	150	520	430	170	600
PM Trips	470	400	870	700	595	1,295	805	685	1,490

Note: Number of trips presented in the table is based on the increase of square footage in the area.

*Current Planned Development includes trips to the Commissary and Exchange and does not include the additional mixed-use development.

**Future Trips depicted in Master Plan, including the additional mixed-use development.

Under both options, the number of estimated trips would not change. The Proposed Action includes roadway improvements such as widening, intersection signalization and inclusion of pedestrian/bicyclist circulation. In the vicinity of the Community Support Center area, the proposed roadway projects include:

- Extension of Belvoir Road to four lanes from Gunston to Woodlawn Roads
- Widening of Kingman Road to four lanes from Gunston to Woodlawn Roads; Gunston Road to four lanes from Kingman Road to 12th Street; and Gorgas Road to four lanes between Gunston and Woodlawn Roads.
- Signalization of four intersections around the Community Support Center: Gunston and Gorgas: Belvoir/Woodlawn and Gorgas; Kingman and north Community Support Center driveway; and Gorgas and south Community Support Center driveway.
- Inclusion of pedestrian and bicycle facilities as part of roadway improvements, to provide internal circulation paths for pedestrian and cyclist, and to link the site to adjacent land uses.

These roadway projects and intersection improvements would improve the traffic circulation, and provide the opportunity for walking and cycling as an alternative to the automobile for short trips on the Main Post. Either option would result in long-term, minor adverse impacts to transportation as a result of increased traffic; however, roadway improvements within the Community Support Center area and traffic projects identified during the final design using guidance from the Comprehensive Traffic Engineering Study being prepared would mitigate future congestion.

Employment and activity levels for the new Commissary, Exchange and future mixed use development will increase under both options and transit demand would be expected to increase. The new Commissary and Exchange facilities would be located within the vicinity of the existing buildings and those who currently use public transportation to access the existing Commissary and Exchange would still be able to do so under either site option plan. As a result, any effects to public transportation traffic under either option would be negligible.

3.8.3 Mitigation Measures

A Transportation Management Plan is being developed as part of the Real Property Master Plan Long Range Component (BNVP 2008). The Transportation Management Plan establishes policies, procedures, and infrastructure necessary for Fort Belvoir to meet traffic demand management goals. The proposed near-term goal for Fort Belvoir is a 10 percent reduction in single-occupancy vehicle trips during peak rush hour and correlates with the near-term period following BRAC implementation. As development is implemented in the long-term, Fort Belvoir proposes to require the utilization of a broad range of strategies to meet traffic demand management goals. Strategies that may be employed include parking management; carpooling, ride matching, van pools; increase in transit services; economic incentives that reduce single occupancy vehicle use; telecommuting; alternate work schedules; guaranteed ride home program for users of public transit; increasing signalization at intersections; and pedestrian and bicycling support facilities. The transportation coordinator is responsible for implementing, promoting, monitoring, and evaluating a full range of strategies as well as coordinating with local, regional, and state agencies on transportation issues as a representative of Fort Belvoir's interests (BNVP 2009).

The proposed project includes intersection and roadway improvements to alter traffic flow and reduce traffic congestion. In addition, the Comprehensive Traffic Engineering Study being completed would provide guidance for any additional mechanisms that could be employed in the final design stage.

3.9 UTILITIES

3.9.1 Water

Supply of potable water to Fort Belvoir has been privatized. American Water owns the Post distribution system and operates it under contract with the Defense Energy Support Center. Potable water is supplied to Fort Belvoir by way of two separately metered primary vaults/pump stations connected to a 30-inch main on Telegraph Road and a 24-inch main Fairfax Water line on Pole Road (USACE 2007a). A new 16-inch water line is being planned by Fort Belvoir along Gunston Road to John Kingman Road. Construction of the new water line is scheduled to be completed in FY 2010 (TJG 2009).

The Fort Belvoir Main Post has a purchased capacity of 4.6 million gallons per day (mgd) peak flow from Fairfax Water, and when the demand reaches 80 percent of the purchased capacity, the Virginia Department of Health (VDOH) requires a plan to be submitted for a complete system upgrade. Approximately 1.0 mgd are held in emergency storage in government-owned tanks. Currently the Commissary and Exchange are fed from two water towers located at the corner of Gorgas Road and Woodlawn Road. The towers operate for a limited time (8-hours) on a daily basis during peak usage times on the Installation. During non-peak hours, the existing uses are fed from other sources south of Gorgas Road (TJG 2009).

There are no active potable water wells on the installation, and all abandoned wells have been closed and filled.

3.9.1.1 Impact Analysis

No Action Alternative

Implementation of the No Action Alternative would result in no changes in water supply requirements for potable water.

Construction of a New Commissary, Exchange, and Future Mixed Use Development

Under both options, an increase in personnel is expected to operate both facilities which will increase the demand for potable water. Potable water would be supplied by approximately 3,800 linear feet of new 10-inch water line. A new loop could be installed around the proposed Exchange and connect to the existing water line north of the proposed Commissary location. A new water line can be installed in the corridor between the proposed Commissary location and the area where future community center type facilities will be placed. Interconnections will be made on the existing water line running parallel to Gorgas Road and just west of the Community Support Center buildings. A new water connection may also need to extend west on Kingman Road to Beulah Road (BNVP 2008). Connections to the existing water main servicing the existing Exchange shall be performed such that service interruptions will be avoided. Both options including the options for future mixed use development would require various improvements in the potable water distribution system to maintain adequate pressure and supply, and support fire suppression systems.

Water demand would not be adversely affected by either option.

3.9.2 Wastewater

Fairfax County trunk lines traverse both the Main Post and Fort Belvoir North Area and deliver to the Noman M. Cole, Jr. Pollution Control Plant (formerly the Lower Potomac Pollution Control Plant). Fort Belvoir has purchased collection/treatment capacity to handle flows of 3 million gallons per day (mgd) (average) and 6 mgd (peak) from Fairfax County for the Main Post. The Main Post currently uses approximately 1.1 mgd of the purchased capacity and is predicted to increase to approximately 2 mgd as population on the installation increases as a result of BRAC (USACE 2007a).

3.9.2.1 Impact Analysis

No Action Alternative

Implementation of the No Action Alternative would result in no changes in infrastructure at the Installation and no changes in generation of wastewater.

Construction of a New Commissary, Exchange and Future Mixed Use Development

Sanitary sewer services would be provided by American Water. Currently, sanitary sewer capacity is adequate to support the Commissary and Exchange; however, the sanitary sewer line has little or no excess capacity. With the expansion of the Commissary and Exchange, it is anticipated that flows from these facilities would increase approximately 15 percent. The sanitary sewer capacity would most likely be inadequate when future residential and mixed-use developments are constructed (TJG 2009). Under Option 1 and Option 2, there would be a slight increase in wastewater generation, resulting in a long-term, minor adverse impact. New sewer lines will be needed to service the Commissary and Exchange. A new 8-inch sanitary sewer main will be constructed; the exact location of the tie-in to the existing gravity line is still being

determined. Wastewater would be collected at a new sanitary lift station to be constructed on the site and pumped through a sanitary force main to a manhole where sewage would be conveyed through an existing pipe. Once drained from the manhole by gravity, the effluent would be collected and combined with other discharges through the system within the sanitary sewer outfall interceptor and delivered to the main Post lift station used to pump the collected effluent to a nearby treatment facility. Under both options, the construction activities may result in a temporary, minor adverse impact to wastewater during connection activities.

3.9.3 Electric Power

The Main Post of Fort Belvoir is supplied power by Dominion Virginia Power delivered from a single main Dominion-owned substation (Belvoir Substation) at 34.5 kilovolts (kV) to four 34.5-kV distribution circuits on the Installation. Except for the substation, Fort Belvoir owns all system components including electrical lines, on-Post substations, transformers, and grounding points. Effective August 2007, Dominion assumed control and management of the electric distribution system under a 50-year contract.

Dominion indicates that the incoming distribution circuits are currently operating at approximately 50 percent capacity and the main 34.5-kV circuits are operating at 50 to 70 percent capacity (USACE 2007a). The current distribution system for the Commissary and Exchange is adequate. If additional supply is needed in the future, Dominion Virginia Power would be able to provide the Community Support Center development including future mixed use development with additional capacity (BNVP 2008).

3.9.3.1 Impact Analysis

No Action Alternative

Implementation of the No Action Alternative would result in no changes in infrastructure at the Installation and no changes in the demand for electric power.

Construction of a New Commissary, Exchange and Future Mixed Use Development

Construction of Options 1 and 2 would not result in adverse impacts to electric service. The Main Post of Fort Belvoir is supplied power by Dominion Virginia Power under the rate schedule MS – Federal Government Installations. The current distribution system within the Community Support Center is adequate for existing functions. If additional supply is needed in the future, Dominion Virginia Power would be able to provide the additional capacity.

3.9.4 Natural Gas

Washington Gas owns and operates the natural gas system supply for Fort Belvoir, Davison Army Airfield, and the surrounding community. The current distribution system is an 8-inch steel medium distribution main operating at 100 pounds per square inch along the east side of Woodlawn Road. This system is adequate for existing Commissary and Exchange functions. If additional supply is needed in the future, Washington Gas should be able to provide the Community Support Center area including future mixed use development with additional capacity (BNVP 2008).

3.9.4.1 Impact Analysis

No Action Alternative

Implementation of the No Action Alternative would result in no changes in infrastructure at the Installation and no changes in the demand for natural gas.

Construction of a New Commissary, Exchange and Future Mixed Use Development

Washington Gas has installed numerous distribution lines within the project site, but the existing facilities are not connected. A new connection to the existing main would be provided at Woodlawn and Siebert Roads for the proposed projects. No adverse impacts to natural gas service would result from the implementation of either option.

3.9.5 Communications

On the Main Post, telecommunication and information services consist of a copper and fiber-optic data distribution network. The network backbone is an asynchronous transfer mode and the telephone switch is integrated services digital network capable. The installation owns the entire system including cables, poles, and computerized switchboard systems. Telephone service is provided by Verizon Communications (Verizon Federal will provide government lines and Verizon commercial will provide commercial lines) (TJG 2009). Cable television service is provided by Comcast Cable (USACE 2007a).

3.9.5.1 Impact Analysis

No Action Alternative

Implementation of the No Action Alternative would result in no changes in infrastructure at the Installation and no changes in the communications network.

Construction of a New Commissary, Exchange and Future Mixed Use Development

Cable, hardwire voice, and fiber optic systems would be provided to the replacement Commissary and Exchange for both Options. Both Options would result in beneficial impacts due to the installation of new and upgraded communication systems that would use current and more efficient equipment. Systems would be able to supply future mixed use development in the Community Support

3.9.6 Heating/Cooling Energy System

Existing structures at Fort Belvoir use steam or individual boilers to provide heat and hot water. The existing Community Support Center area does not contain any Central Energy Plan or piping distribution to multiple buildings. In the Community Support Area, it is recommended that Energy Systems (heating and chilled water) be provided on an individual building basis in lieu of centralized utilities. Providing heating and cooling for these buildings on an individual building basis would allow each building to provide a unique solution to heating and cooling based upon building type while accomplishing the sustainability goals including energy and water reduction. This would also allow buildings to be built based upon individual construction budgets and not have each tenant rely upon a central energy plant that would have to be constructed prior to any other development. The concept of individual energy sources for each building allows for maximum metering flexibility of individual tenants and allows for phasing to be accomplished without reliance on outside energy sources. The individual buildings can then consider renewable alternatives such as solar photovoltaics and even solar hot water heating (BNVP

2008). Future mixed use development would also use individual systems for heating and cooling.

3.9.6.1 Impact Analysis

No Action Alternative

Implementation of the No Action Alternative would result in no changes in infrastructure at the Installation and no changes in the heating/cooling energy system.

Construction of a New Commissary, Exchange, and Mixed Use Development

Under Option 1 and Option 2, the project would result in a beneficial impact to the sustainable policies Fort Belvoir is enforcing by using individual heating and cooling system for each building. This would allow help to accomplish the sustainability goals to reduce energy and water consumption. The capacity to supply natural gas and electricity for air conditioning is adequate for all proposed construction projects.

3.9.7 Solid Waste

Fort Belvoir generates approximately 6,694 tons of municipal solid waste annually that are disposed of off-Post by a contract hauler. A letter of agreement between the Division of Solid Waste Disposal and Resource Recovery of Fairfax County and Fort Belvoir has a cap of 100 tons per day of municipal solid waste. Approximately 2,719 tons of municipal solid waste are recycled including tires, fluorescent lighting, and scrap metal which are recycled through several recycling programs. Wood debris, mulch, leaves, and grass clippings are composted on-Post. Household and office trash are disposed of off-Post by a contract hauler to the I-95 Energy/Resource Recovery Facility owned and managed by Covanta Fairfax, Inc. The Resource Recovery Facility annually processes over one million tons of waste. Residual ash generated by the process is disposed of in an adjacent landfill complex. Fairfax County expects the Resource Recovery Facility to have sufficient capacity to handle disposal needs through 2025 (USACE 2007a).

Bulk waste (appliances, furniture, etc.) and construction/demolition waste are disposed of at Hilltop Sand and Gravel Company Debris Landfill in Fairfax County. The landfill along with two other landfills accepting construction waste in Fairfax County, have an expected capacity life of less than 7 years remaining on the basis of forecasted county construction/demolition debris rates provided in the Fairfax County Solid Waste Management Plan 2004-2024 (Fairfax County 2005). Fairfax County currently has no county recycling program for construction demolition/debris.

The Installation has a mandatory Installation-wide recycling program that collects white paper, colored paper, newspaper, aluminum cans, bi-metal (tin/steel) cans, scrap metal, cardboard, glass bottles, plastic containers, used oil, and toner cartridges at the Building 1089 Recycling Facility. Fort Belvoir also has a 10-year Integrated Solid Waste Management Plan, last updated in 1999. The general goal of the plan is to reduce solid waste management costs and environmental effects by reducing the quantity of materials that must be disposed of by incineration or landfill including construction demolition/debris waste (USACE 2007a).

3.9.7.1 Impact Analysis

No Action Alternative

Implementation of the No Action Alternative would result in no changes in solid waste generation at the Installation. The Installation's Integrated Solid Waste Management Plan and the mandatory recycling program would apply to the Commissary and Exchange and would continue to reduce solid waste generation.

Construction of a New Commissary, Exchange and Mixed Use Development

Option 1 and Option 2 would result in negligible impacts to municipal solid waste. It is not expected that the proposed project will generate substantial waste in monthly or yearly quantities. Under Option 1, construction activities would generate more woody debris due to a larger area of site clearing than under Option 2; however, timber harvesting of marketable trees during the initial phase of site clearing would reduce the amount of woody debris created under either option.

3.9.7.2 Mitigation Measures

Mitigation measures would be the same as described in the Land Use section. Additional mitigation measures would include:

- Construction would be designed to meet EO13423 total operational reduction goals for energy and water conservation
- Possibly institute rainwater catchment systems for use in landscape irrigation
- Demolition waste would be recycled to the extent practicable

3.10 HAZARDOUS, TOXIC, AND RADIOACTIVE SUBSTANCES

Military operations performed at Fort Belvoir historically required the storage and use of hazardous substances and hazardous materials to successfully accomplish missions. Hazardous substances and hazardous materials include substances defined as hazardous by Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), and the Toxic Substances Control Act. In general, these substances might present an unacceptable risk to public health or welfare, or to the environment because of their quantity, concentration, or physical, chemical, or toxic characteristics if released into the environment. Fort Belvoir manages hazardous materials and substances in compliance with programs regulated by EPA and VDEQ as well as local regulations implementing federal statutory requirements including U.S. Army regulations. Fort Belvoir Directorate of Public Works -ENRD has an active environmental program that maintains compliance specific to hazardous substances and materials. The existing Commissary and Exchange carries, sells, and uses hazardous substances for household use, such as pesticides, fertilizers, and cleaning supplies. Hazardous substances and materials that may be present are described below with the exception of radioactive material, radon and Solid Waste Management Units as none have been identified in proximity to the Commissary and Exchange site.

3.10.1 Hazardous Waste

The management of hazardous waste at Fort Belvoir is conducted in compliance with RCRA. Fort Belvoir has both a Hazardous Waste Management Plan and a Hazardous Waste Minimization Plan.

The RCRA/Waste Management Program at Fort Belvoir is responsible for the storage, use, characterization, manifesting, remediation, and proper disposal of all hazardous waste generated at the installation. EPA identified 27 Solid Waste Management Unit sites as unpermitted Hazardous Waste Management Units (U.S. Army Garrison 2002). As a result, Fort Belvoir entered into a facilities compliance agreement with EPA in 1992 and all sites were investigated and remediated. VDEQ issued letters of concurrence determining that no further action was necessary for all 27 sites.

Fort Belvoir is permitted to store hazardous waste under a RCRA Part B permit issued by VDEQ (U.S. Army Garrison 2002). Hazardous Waste is stored at Building 1490 on the South Post and at a temporary accumulation site at Building 2628 on the North Post. More than 20 satellite accumulation areas are also located on the Main Post. Current and former hazardous waste-permitted facilities present potential constraints to future development, in that closure of such sites is required prior to reuse. Closures are subject to regulatory approval. Household hazardous wastes are disposed of under existing state law and the installation collection system.

3.10.2 Petroleum Constituents

Fort Belvoir Directorate of Public Works-ENRD implements a Petroleum Management Program that includes scheduling operation and maintenance, compliance monitoring, tank closure and removal, environmental investigations, remediation system design, and management and reporting on petroleum storage areas (underground storage tanks and aboveground storage tanks) and petroleum release sites. At the federal level, EPA under RCRA Subtitle I regulates storage of petroleum; however, enforcement authority has been delegated by EPA to VDEQ, and Fort Belvoir manages its Petroleum Storage Areas and release sites under the VDEQ Petroleum Program.

Three Petroleum Storage Areas (1 active and 2 inactive), have been identified within the existing Commissary and Exchange site. The Petroleum Storage Areas are located in close proximity to each other on the north side of the Commissary.

3.10.3 Asbestos-Containing Materials

Fort Belvoir maintains an active asbestos program, and asbestos data are available for nearly all facilities on-Post. The Asbestos Program Manager is responsible for all elements of the asbestos program including surveys, sampling, operation and maintenance, permitting, asbestos abatement design and oversight, and restoration. In addition, the Asbestos Program Manager provides evaluation of proposed renovation and demolition projects, oversight for any abatement, and is responsible for the overall compliance of the asbestos response actions enacted on the installation including training, operation and maintenance, and public notice requirements. The Asbestos Program Manager ultimately ensures compliance with all applicable regulations and that air samples meet the acceptance criteria.

An asbestos survey would be required before demolition of the existing Exchange and Commissary.

3.10.4 Lead-Based Paint

Fort Belvoir's lead program is similar in structure to the asbestos program and the Lead Program Manager is responsible for all elements of the lead program including paint inspections, risk assessments, operation and maintenance, permitting, lead abatement design and oversight, and restoration. When renovation and demolition projects are scheduled on-Post, the Lead Program Manager must evaluate each project for potential effects of lead-based paint.

A lead based paint survey would be required before demolition and construction of the existing Exchange and Commissary.

3.10.5 PCBs

Fort Belvoir performs surveys of buildings scheduled for demolition and prepares a checklist identifying regulated wastes including polychlorinated biphenyls (PCBs). Wastes are collected for proper disposal. Although the U.S. Army considers Fort Belvoir to be compliant with the Toxic Substance Control Act of 1976, because of the size, complexity, and age of the electrical infrastructure at Fort Belvoir, the possibility of encountering PCB-containing electrical equipment still exists. A checklist of identified regulated wastes including PCBs would be prepared prior to the demolition of the existing Commissary and Exchange.

3.10.6 Pesticides

Pesticides have been used historically at Fort Belvoir and an Integrated Pesticide Management Program has been developed to reduce the use of pesticides. The Integrated Pest Management Plan was updated in 2006 and is in accordance with the U.S. Army's Pollution Prevention Program. The application of all pesticides is performed in accordance with both the U.S. Army's Integrated Pest Management techniques and the Integrated Pest Management Plan. The Commissary and Exchange supply household and garden pesticides for purchase by their customers. Use and sale of pesticides are regulated under the Federal Insecticide, Fungicide, and Rodenticide Act of 1947 and was amended in accordance with the Food Quality Protection Act in 1996. Because the Commissary and Exchange would both use and sell food as well as pesticides the regulations of the Federal Insecticide, Fungicide, and Rodenticide Act as amended in 1996 would apply to both facilities.

3.10.7 Ordnance Areas

Because of the long and active history of Fort Belvoir as a military facility, the potential exists for the presence of ordnance in any location on the installation. The Military Munitions Response Program at Fort Belvoir addresses unexploded ordnance and any associated contamination under CERCLA. A Phase I Qualitative Assessment Report under the Operational Range Assessment Program was conducted for ranges on the Main Post of Fort Belvoir and identified two former training ranges, on the North Post. The development of the area for the Community Support Center tract includes 64 acres of former training range. The Military Munitions Response Program historical records review as well as historical aerial photography and record searches indicate two former ranges existed in the northern half of the 107-acre site. These areas include the T-15 Range and "Gas Area" in the vicinity of currently existing Kingman Road and Woodlawn Road. The T-15 Range was used for small arms training until 2002. The "Gas Area", used for training in the 1940s, overlaps the T-15 area in the northeast corner of the footprint for both options (BNVP 2008)

Site investigations on both range areas were conducted in 2006. No unexploded ordnance or hazardous debris was observed during the investigation. Within the "Gas Area," five soil samples were collected on the site that depicted iron and arsenic concentration levels exceeding the industrial Radiation Boundary Condition values; however, this exceedance was not considered significant since background concentrations in Northern Virginia and across the Installation are historically known to be high. Within the T-15 Range, soil sampling and testing for explosives and metals, in particular lead, were performed and concluded that no further clean up or investigation was necessary (BNVP 2008).

3.10.8 Impact Analysis

No Action Alternative

Under the No Action Alternative, there would be no change in operations of the existing Commissary and Exchange and there would be no additional use of hazardous materials or generation of hazardous waste. Current conditions would continue.

Construction of a New Commissary, Exchange and Future Mixed Use Development

Both Options 1 and 2 could generate additional hazardous waste from demolition and construction activities, depending on results from asbestos and lead paint surveys. Long-term, minor adverse effect in generating additional waste will occur due to the new facilities including future mixed use development.

Short-term minor adverse effects would result from an increase in the use of hazardous materials during construction activities for the Commissary, Exchange and future mixed use development. Additional potentially hazardous materials that could be found on-post during construction and operational activities include paints, thinners, asphalt, and fuel and motor oils for vehicles and equipment.

No effects would be expected from hazardous waste disposal. The installation is a large-quantity generator of hazardous wastes and has established procedures for managing and disposing of hazardous wastes. A permitted hazardous waste storage facility is located on the Main Post and the current hazardous waste disposal procedures would continue with implementation for Options 1 and 2. All hazardous wastes would be managed in accordance with the installation's Hazardous Waste Storage Permit and RCRA requirements.

Three Petroleum Storage Areas, 1 active and 2 inactive, have been identified within the proposed Commissary and Exchange site. The Petroleum Storage Areas are located in close proximity to each other on the north side of the existing Commissary and future residential and mixed-use development would be located within the area. Long-term beneficial effects would result by mitigating the Petroleum Storage Areas at the existing Commissary and Exchange. The mitigation measure would be integrated into the construction phase of the project in concert with the site preparation and earthwork features for minimal impact to the overall construction schedule. Any construction of new storage facilities to handle storage requirements would be done in accordance with applicable laws regarding construction materials, leak protection, monitoring, and spill containment.

Asbestos and lead based paint surveys would be required before demolition and construction of the Commissary and Exchange. Long-term minor beneficial effects would be expected if asbestos and lead based paint were found and removed in the existing Commissary and Exchange buildings when buildings are demolished or renovated. Asbestos and lead based paint

would be handled in a manner consistent with applicable rules and regulations including the National Emissions Standards for Hazardous Air Pollutants regulations, and thus no environmental or health effects from the removal, handling, and disposal of these materials would be expected during demolition or construction activities.

No adverse effects or environmental effects would be expected from ordnance. Construction activities have the potential to generate solid wastes, which could impact the environment. A hazardous waste determination must be made for any solid wastes generated via generator knowledge, Material Safety Data Sheet review or sampling, in some cases.

During operation of the proposed Commissary and Exchange there is the potential to generate solid waste (as defined by 40 CFR 262) in the form of broken pallets, glassware, etc. Hazardous materials (fertilizer bags, insecticide containers, cleaning products, etc.) if released, may meet the definition of a hazardous waste. Any solid of hazardous wastes generated shall be managed in accordance with Fort Belvoir's recycling or waste management program. Similarly, future development of mixed use areas would not produce any hazardous or be affected by it.

3.10.9 Mitigation Measures

Hazardous waste would be handled by applicable standards and regulations. No mitigation measures are required.

3.11 AIR QUALITY

Air quality in Virginia is regulated by US EPA Region 3, and the VDEQ. Under the 1970 Clean Air Act and the Clean Air Act Amendments of 1977 and 1990, EPA has established primary and secondary National Ambient Air Quality Standards (NAAQS) for the following criteria pollutants: coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, and lead. Short-term (1-hour, 8-hour, and 24-hour) levels have been established for pollutants contributing to acute health effects and long term (annual averages) levels have been established for pollutants contributing to chronic health effects. Virginia has adopted the federal NAAQS as its ambient air quality standards (Table 7). The secondary standards were established to protect public health and welfare. Units of measure for the standards are parts per million (ppm) by volume and micrograms per cubic meter of air ($\mu g/m^3$). Nonattainment areas are defined as Air Quality Control Regions, or subdivisions thereof, that exceed the NAAQS for one or more criteria pollutant standards. Fairfax County, including Fort Belvoir Main Post and North Area, is within the National Capital Interstate Air Quality Control Region 47 and is currently designated by the EPA as moderate nonattainment for the 8-hour O_3 standard and nonattainment for the annual $PM_{2.5}$ standard. The region is in attainment with all other NAAQS.

Table 7. National Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
Carbon Monoxide	9ppm	8-hour	---	
	35ppm	1-hour	---	
Lead	0.15µg/m^3	Rolling 3-month average	Same as Primary	
	1.5µg/m^3	Quarterly Average	Same as Primary	
Nitrogen Dioxide	0.053ppm	Annual (Arithmetic Mean)	Same as Primary	
	0.100ppm	1-hour	---	
Particulate Matter (PM_{10})	150µg/m^3	24-hour	Same as Primary	
Particulate Matter ($PM_{2.5}$)	15.0µg/m^3	Annual (Arithmetic Mean)	Same as Primary	
	35µg/m^3	24-hour	Same as Primary	
Ozone	0.075ppm	8-hour (2008 standard)	Same as Primary	
	0.08ppm	8-hour (1997 standard)	Same as Primary	
	0.12ppm	1-hour	Same as Primary	
Sulfur Dioxide	0.03ppm	Annual (Arithmetic Mean)	0.5ppm	3-hour
	0.14ppm	24-hour		

Note: August 23, 2010 the annual and 24-hour primary SOx standards will be revoked and a new 1-hour primary standard of 75 ppb will become effective. http://www.epa.gov/ttn/naaqs/standards/so2/fr/20100622.pdf
Source: USEPA 2010b

The Clean Air Act Amendment in 1990 mandated that state agencies adopt State Implementation Plans (SIPs) that implement measures to eliminate or reduce the severity and number of violations of the NAAQS. The Clean Air Act Amendment requires federal agencies to ensure that their actions conform to the SIP in a nonattainment area. Because the monitored levels of ozone in the Washington, D.C. metropolitan area exceeded the earlier 1-hour NAAQS, the Commonwealth of Virginia, State of Maryland and Washington, D.C. were required to develop SIPs that outlined actions to be taken to achieve the 1-hour NAAQS for ozone before 2007. The three jurisdictions developed a SIP which presented a regionally coordinated air quality plan for attainment of the federal 1-hour NAAQS for ground-level ozone. The regional plan was approved by the EPA. As of June 15, 2005, the Washington, D.C. metropolitan area is no longer subject to the 1-hour ozone NAAQS, since the 1-hour ozone NAAQS was revoked by EPA.

April 2004, US EPA designated the Washington, D.C. metropolitan area as a "moderate" nonattainment area for the 8-hour ozone standard. The region is required to reduce all ozone precursor emissions to a level sufficient to attain the 8-hour standard by June 15, 2010. The 8-Hour Ozone Attainment Plan for the Washington nonattainment area was developed by the Metropolitan Washington Air Quality Committee in cooperation with Maryland, Virginia, and the District of Columbia. The 8-Hour Ozone Attainment Plan is intended to show the progress being made to improve air quality in the Washington nonattainment area and the efforts underway to assure that all necessary steps are taken to reach the federal health standard for ground-level ozone by September 2009 (Metropolitan Washington Air Quality Committee 2007). On January 6, 2010, US EPA proposed to further strengthen the standards for ground-

level ozone by revising the primary standard and setting a distinct secondary standard. As a result EPA decided to extend the deadline for designating areas for the 8-hour ozone standard. EPA will issue final standards by August 31, 2010 and make final area designations by July 2011.

In January 2005 USEPA designated the Washington, D.C. metropolitan area as a nonattainment area for the (1997) $PM_{2.5}$ NAAQS. The SIPs have been developed for states with nonattainment areas and submitted to USEPA before the deadline of April 5, 2008. The Metropolitan Washington nonattainment area is required to attain the standards no later than April 2010 or April 2015 with an extension. The SIPs include an attainment demonstration and associated air quality modeling, adopted state regulations to reduce emissions of $PM_{2.5}$ and its precursors, and other supporting information (Metropolitan Washington Air Quality Committee 2008). EPA will determine the region's attainment on the basis of air quality data for 2007-2009.

Two separate sets of regulations, one for transportation projects (Transportation Conformity) and one for non transportation projects (General Conformity) have been developed by EPA to ensure that federal actions do not interfere with progress toward attainment under SIPs. The proposed action is a non transportation project within a nonattainment area and therefore requires a General Conformity analysis with respect to the 8-hour ozone and fine particulate NAAQS.

The General Conformity Rule specifically lists threshold emission levels by pollutant (40 CFR 93 Subpart B §93.153(b)(1)) to determine applicability of conformity requirements for a project. For an area in moderate nonattainment for the 8-hour ozone NAAQS within the ozone transport region, the applicability criterion is 100 tons per year for nitrogen oxide and 50 tons per year for volatile organic compounds. For an area in nonattainment for the fine particulates $PM_{2.5}$ NAAQS, the applicability criterion is 100 tons per year for fine particulates, nitrogen oxide, and sulphur dioxide.

Mobile Sources

Primary automobile-related or mobile-source air pollutants are carbon monoxide, nitrogen oxides, and volatile organic compounds. Air quality effects from traffic for a specific project are evaluated as micro-scale analysis which identifies localized "hot spots" of criteria pollutants at the intersection level. Existing carbon monoxide levels were predicted for receptor locations (potential "hot spots" for criteria pollutants) during weekday worst-case peak periods at eight intersections near Fort Belvoir selected on the basis of existing traffic conditions and potential for maximum increase in traffic volumes and congestion associated with implementing BRAC (USACE 2007a). The eight locations include:

- Route 1 and Fairfax County Parkway
- Fairfax County Parkway and John J. Kingman Road
- Franconia Springfield Parkway EB Ramp and Backlick Road
- Franconia Springfield Parkway and Beulah Street
- Franconia Springfield Parkway and Spring Village Drive
- Route 1 and Backlick Road–Pohick Road
- Route 1 and Belvoir Road
- Route 1 and Telegraph Road–Old Colchester Road

These intersections were selected on the basis of their existing traffic conditions and potential for maximum increase in traffic volumes and congestion associated with implementing the proposed project. Individual intersections were examined based on traffic conditions on the associated roadways. Beyond the immediate area surrounding the intersections, carbon monoxide emissions are anticipated to decrease rapidly with distance. Carbon monoxide concentration levels at the other intersections of the study area are expected to be comparatively lower. The carbon monoxide levels show no existing violations of the NAAQS for any of the modeled intersections. The traffic from these intersections is not anticipated to exceed the NAAQS for $PM_{2.5}$ because it does not involve new highways or expressways (USACE 2007a).

Stationary Sources

VDEQ oversees the programs for permitting the construction and operation of new or modified stationary source air emissions in Virginia and permitting is required for many industries and facilities that emit regulated pollutants. Significant stationary sources at Fort Belvoir include boilers and generators, degreasers, a gasoline dispensing facililty, and a firefighting training facility. Insignificant stationary sources of air emissions include small boilers and emergency generators, closed sanitary landfills, fuel storage tanks, spray painting operations, welding operations, oil-water separators and woodworking activities. It is anticipated that new stationary sources of air pollution will be installed as part of this project and will include boilers for space heating, domestic hot water heaters, and engines for providing back-up power.

Construction Permits

Three types of construction permits are available through VDEQ for the construction and operation of new emission sources. Thresholds that determine the type of construction permit that may be required depend on the emissions (quantity and type) and if the permitted source is a new source or a modification to an existing source.

Major New or Modified Source Construction Permits in Nonattainment Areas are required for any major new sources or major modifications to existing sources in an area designated as nonattainment.

A Prevention of Significant Deterioration permit protects air quality in attainment areas and regulations impose limits on the amount of pollutant that major sources may emit.

Minor New Source Review permits are required to construct minor new sources, modifications of existing sources, and major sources not subject to Nonattainment New Source Review (NSR) or Prevention of Significant Deterioration permit requirements.

Operation Permits

Title V Federal Operating Permits are required for major sources of either criteria or hazardous pollutants as defined in 40 CFR Part 70. For Fairfax County, the Title V major source thresholds for pollutant emissions are the same as the Nonattainment NSR thresholds for major new sources and major modifications as shown in Table 8.

Table 8. Major Thresholds of Pollutants Regulated Under the Clean Air Act within Fairfax County

Pollutant	New Major Source (tons per year)		Major Modification to an Existing Source (tons per year)	
	PSD[1]	NNSR[2]	PSD[1]	NNSR[2]
Carbon Monoxide	250	N/A	100	N/A
Nitrogen Oxides	N/A	100	N/A	40
Sulfur Dioxide	250	N/A	40	N/A
Particulate Matter	250	N/A	25	N/A
Large Particulates	250	N/A	15	N/A
Fine Particulates	N/A	100	N/A	10
Volatile Organic Compounds	N/A	50	N/A	40
Lead	250	N/A	0.6	N/A

1 PSD = Prevention of Significant Deterioration Limits.

2 NNSR = Nonattainment New Source Review Limits.

Source: USACE 2007a.

Fort Belvoir is considered a major stationary source because of its potential to emit (PTE) carbon monoxide, nitrogen oxides, and sulphur dioxides, all of which exceed thresholds in Table 8. The Installation holds a Title V Permit that was issued on March 24, 2003. This permit requires Fort Belvoir to submit an Emissions Statement reporting emissions from its Title V significant sources for each calendar year. Table 9 presents the data reported in the 2009 Emissions Statement

Table 9. 2009 Emissions from Significant Stationary Sources at Fort Belvoir (tpy)

SO_2	CO	PM_{10}	$PM_{2.5}$	NOx	VOC	Lead
21.95	22.74	2.14	2.08	43.11	2.74	4.22E-04

tpy = tons per year.

In addition to the permitting requirements to construct and operate new or modified emission sources, New Source Performance Standards and the National Emissions Standards for Hazardous Pollutants set emission control standards for categories of new stationary emissions sources of both criteria and hazardous pollutants.

New construction projects would be accomplished in full compliance with current and pending Virginia regulatory requirements (9 Virginia Administrative Code 5, Chapter 40, Part II), through the use of compliant practices and/or products. These requirements relate to the following aspects of the project: visible emissions and fugitive dust and emissions, asphalt

paving operations, open burning, use of portable fuel containers, architectural and industrial maintenance coatings, and consumer products. The U.S. Army and any contractors must comply with all applicable Virginia air pollution control regulations.

3.11.1 Impact Analysis

No Action Alternative

The No Action Alternative would not result in changes in ambient air quality conditions if the Commissary and Exchange were not constructed. No construction activities would be undertaken, and no changes in operations or traffic would take place. However, under the No Action Alternative, regional traffic growth would continue.

Construction of a New Commissary, Exchange, and Future Mixed Use Development

An air emissions analysis was conducted for Option 1 and Option 2. Under both of these options construction of a new Post Exchange (PX), demolition of the old PX, construction of a new Commissary, and demolition of the old Commissary will occur in 2011, 2012, and 2013; construction of new mixed use facilities including commercial and residential spaces will be constructed in 2014. Estimates of the actual amounts of criteria pollutants and greenhouse gases from direct and indirect air emissions were determined based on the size of the construction site for both Options, size and type of structures to be constructed, amount of impervious surfaces, expected usage of construction equipment, size of existing buildings proposed for demolition, and vehicle usage for construction and operation. Direct emissions are emissions that would be caused or initiated by a federal action (project) and that occur at the same time and place as the action. Indirect emissions are defined as reasonably foreseeable emissions that would be caused by the action (project), but may occur later in time or be farther removed in distance from the action itself, and that the federal agency can practicably control. Project-related direct and indirect emissions would result from the following:

- Demolition and construction activities—use of construction equipment (e.g., bulldozers, backhoes) and vehicles including workers' vehicles and trucks hauling and delivering construction materials, use of architectural coatings containing volatile organic compounds, paving off gasses, and fugitive particles from surface disturbances.

- Operational activities— Privately-owned vehicle emissions from employees and customers, emissions from product delivery and operational waste removal, and emissions from stationary sources such as fuel-burning heating equipment (of any size) and emergency generators.

Tables 10 and 11 provide estimated air emissions from both construction and operational activities for both Options. Detailed emissions calculations are attached in the Appendix C.

Table 10. Emission Estimates for Option 1

Activity	Pollutants (tons/year)						
	VOC	NO_x	CO	SO_2	PM_{10}*	$PM_{2.5}$*	GHG***
Construction Emissions 2011	3.54	13.28	12.63	0.03	9.06	2.51	1,445
Construction Emissions 2012	3.52	13.19	12.39	0.03	9.05	2.50	1,445
Construction Emissions 2013	3.42	12.65	11.96	0.01	9.02	2.45	1,450
Construction Emissions 2014	10.71	14.40	18.42	0.02	46.74	10.44	1,835
Operational Emissions**	35.89	38.59	353.62	0.32	28.61	6.47	17,467

*PM_{10} and $PM_{2.5}$ estimates include dust and exhaust
**Emission estimates include the Commissary, Exchange, future mixed-use development and vehicle usage without any mitigation measures.
*** Although GHGs from combustion sources include CO_2, N_2O and CH_4, the latter two represent extremely small contributions and have not been included.

Table 11. Emission Estimates for Option 2

Activity	Pollutants (tons/year)						
	VOC	NO_x	CO	SO_2	PM_{10}*	$PM_{2.5}$*	GHG***
Construction Emissions 2011	3.54	13.28	12.63	0.03	9.06	2.51	1,445
Construction Emissions 2012	3.52	13.19	12.39	0.03	9.05	2.50	1,445
Construction Emissions 2013	3.42	12.64	11.95	0.01	9.02	2.45	1,450
Construction Emissions 2014	10.06	14.19	17.53	0.02	46.73	10.43	1,759
Operational Emissions**	34.05	37.40	341.40	0.30	27.45	5.96	16,851

*PM_{10} and $PM_{2.5}$ estimates include dust and exhaust
**Emission estimates include the Commissary, Exchange, future mixed-use development and vehicle usage without any mitigation measures.
*** Although GHGs from combustion sources include CO_2, N_2O and CH_4, the latter two represent extremely small contributions and have not been included.

Under both Options, activities related to the construction of the new Commissary and Exchange, and the demolition of the old facilities, would cause short-term, minor adverse impacts to air quality.

For both Options 1 and 2, carbon monoxide levels would be slightly higher than under the No Action Alternative as a result of increased local traffic. The increase of carbon monoxide levels

would result in long-term, minor impacts and would not cause violations of either the 1-hour or 8-hour carbon monoxide standard.

Maximum annual estimated emissions of volatile organic compounds, nitrogen oxides, particulate matter, and fine particulate matter precursor pollutants during both the construction and operational phases of the project are expected to be less than the relevant General Conformity applicability thresholds. Thus, no further analysis is necessary to demonstrate that the project conforms to the applicable SIP.

3.11.2 Mitigation Measures

If the proposed project conforms and does not overlap with BRAC construction, no mitigation is required. However, the following mitigation measures would be required where the proposed project overlaps with BRAC construction:

- limitations on construction activity on Code Orange, Red, and Purple ozone days;
- requirements that diesel construction equipment with engines larger than 60 hp and all off-road trucks be retrofitted with emission control devices if the engines do not meet Tier 2 emission standards or better; and
- implementation of anti-idling for on-road and non-road vehicles and equipment.

3.12 NOISE

Sound varies by intensity and frequency and the human ear responds differently to different frequencies. Sound pressure level is described in decibels (dBA) and is used to quantify sound intensity. Hertz is used to quantify sound frequency. "A-weighted" dBA approximate the perception of sound by humans and describe steady noise levels, though few noises are constant. A change of a few dBA in noise level is barely perceptible to most people; however, a 10-dBA change is considered a substantial change, and these thresholds are used to estimate a person's likelihood of perceiving a change in noise levels.

3.12.1 Traffic Noise

The Federal Highway Administration and Virginia Department of Transportation use a noise metric, equivalent sound level (Leq) that has been developed to represent the average sound energy over a 1-hour time period presented in dBA. The Leq-1 estimates the degree of annoyance that results from changes in traffic noise. In addition, the Federal Highway Administration has established noise abatement criteria that define traffic-related noise thresholds. The thresholds vary depending on the type of land use and provide a benchmark with which to assess nuisance noise levels. Category B currently describes the areas surrounding the Main Post, including the North Post. Category B represents moderately sensitive land uses; activity categories within Category B include picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals and are quantified as 67 Leq-1 for exterior noise.

3.12.2 Existing Ambient Noise Levels

Existing ambient noise levels adjacent to the main traffic routes near the Main Post were modeled using the Federal Highway Administration's Traffic Noise Model, Version 2.5

(USACE 2007a). This model combines the noise from automobiles, medium and heavy trucks, busses, and motorcycles. Morning and afternoon peak traffic periods have the highest potential for adverse noise conditions; however, the model results estimated noise levels at less than the noise abatement criteria for Category B land uses (67 dBA).

3.12.3 Construction Noise

Construction can result in noise levels that can be relatively high during day-time periods and within several hundred feet of the construction activity. The zone of relatively high construction noise typically extends to distances of 400 to 800 feet from the operating equipment. Locations more than 1,000 feet from construction sites experience little disturbance from noise. Table 12 presents the typical noise levels (dBA at 50 feet) that EPA has estimated for the main phases of outdoor construction.

Table 12. Noise Levels Associated With Outdoor Construction

Construction Phase	Sound Level (dBA)
Ground clearing	84
Excavation, grading	89
Foundations	78
Structural	85
Finishing	89

Source: US EPA 1971. Noise from Construction Equipment and Operations, Building Equipment and Home Appliances PB 206717, 1971.

3.12.4 Impact Analysis

No Action Alternative

The No Action Alternative would have no impacts on future noise levels. These would likely be worse than is presently the case because of the increase in new employee traffic resulting from several post-wide development projects related to BRAC activities. The primary source of noise at Fort Belvoir is vehicular traffic.

Construction of a New Commissary, Exchange, and Mixed Use Development

Short-term, minor, adverse effects from noise would occur during construction activities associated with both Options 1 and 2. Impacts would include noise from the operation of construction equipment and construction or delivery vehicles traveling to and from the site. Noise impacts would also vary widely, depending on the phase of construction – and clearing and excavations, foundation and capping, roadway and parking lot paving, demolition, etc. – and the specific task being undertaken. Increased noise levels would be the greatest during the early stages of construction, although these periods would be of relatively short duration. Under these circumstances, the noise generated would be similar to noise generated by other construction projects in the area and would not be significant.

There would be long-term, minor adverse effects to noise due to increase in traffic volumes from future employees and patrons, and residents traveling to and from the Community Support Center area. Currently, no residences are located in the immediate vicinity of the proposed site for the new Commissary and Exchange, so noise-abatement criterion for residential land uses

would not be exceeded. During future development, and depending on the scheduling of phases for future mixed use (commercial/administrative) and residential housing construction, noise-abatement criterion could be exceeded during construction if residential housing were constructed prior to any adjacent planned mixed use construction.

Impacts from noise would be considered temporary, minor and adverse for either option during construction phases for either option. The utility infrastructure associated with the Commissary and Exchange buildings are not expected to be a significant source of noise. Standard building features will include thermal insulation that will suppress noise from the infrastructures. Noise impacts resulting from operation of the New Commissary, Exchange and future mixed-use development would be negligible.

3.12.5 Mitigation Measures

BMPs would be required and implemented for construction noise. BMPs implemented during construction may include:

- Limiting construction to predominately occur during normal weekday business hours.
- Properly maintaining construction equipment mufflers to be in good working order.

Apart from the BMPs listed above, no specific mitigation measures with respect to noise would be required.

3.13 ENVIRONMENTAL EFFECTS SUMMARY

Table 13 provides a summary of comparison for the potential impacts resulting from construction of the new Commissary and Exchange under both options and the No Action Alternative. A brief summary of potential mitigation measures is also included and would be applicable to either option.

Table 13. Anticipated Effects on Resources as a Result of the Construction of a New Commissary, Exchange, and Future Mixed Use Development

Construction of a New Commissary, Exchange and Future Mixed Use Development				
Resources	**No Action**	**Option 1**	**Option 2 (preferred)**	**Mitigation/BMPs**
Soils/Topography	No impact	Temporary, minor impacts to soils due to erosion from construction activities. Long-term, moderate adverse impacts to soils due to compaction and coverage, increasing stormwater runoff.	Temporary, minor impacts to soils due to erosion from construction activities. Long-term, moderate adverse impacts to soils due to compaction and coverage, increasing stormwater runoff.	Implementation standard engineering practices, BMPs, and building codes; stormwater BMPs implemented to reduce erosion and sediment impacts; development of a stormwater pollution prevention plan; use of landscaping and revegetation of disturbed areas
Groundwater	No impact	Long-term minor adverse impact	Long-term minor adverse impact	Stream channel restoration on-site or within the same watershed; removal of impervious surface; use of pervious paving materials as feasible; Low Impact Development practices and LEED® Silver design and construction; provision of stable outfalls; erosion and sediment BMPs
Surface Water	No impact	Long-term, moderate adverse impact to ephemeral streams. Short-term, temporary minor adverse impact due to construction activities	Long-term, moderate adverse impact to ephemeral streams. Short-term, temporary minor adverse impact due to construction activities.	
Stormwater Management	No impact	Long-term, moderate, adverse impacts	Long-term, moderate, adverse impacts	
Floodplains	No impact	No impact.	No impact.	Not required

Table 13. Anticipated Effects on Resources as a Result of the Construction of a New Commissary, Exchange, and Future Mixed Use Development

Construction of a New Commissary, Exchange and Future Mixed Use Development				
Resources	**No Action**	**Option 1**	**Option 2 (preferred)**	**Mitigation/BMPs**
Coastal Zone Management	No impact	Temporary, minor, adverse impacts to air pollution, point source pollution, coastal lands management, and land disturbing activities needing erosion and sediment control.	Temporary, minor, adverse impacts to air pollution, point source pollution, coastal lands management, and land disturbing activities needing erosion and sediment control.	Incorporation of stormwater management and protection methods as outlined for surface water resources
Vegetation	No impact	Long-term, major adverse impacts	Long-term, moderate, adverse impacts	Protection of mature, significant trees; minimization of tree loss by replacement of trees cleared in accordance with Fort Belvoir's Tree Policy; implement an invasive/exotic vegetation control plan; riparian area and /or habitat restoration and repair projects
Wetlands	No impact	Long-term, moderate, adverse impacts	Long-term, moderate, adverse impacts	Not required
Wildlife	No impact	Long-term, minor, adverse impacts. Construction activities will have a long-term, moderate, adverse impact on slow-moving, smaller animals.	Long-term, minor, adverse impacts. Construction activities will have a long-term, moderate, adverse impact on slow-moving, smaller animals.	Restoration of vegetation and tree plantings would offset loss of wildlife habitat; land set asides or add-ons when feasible and available; Avoidance of PIF habitat clearing during the

Table 13. Anticipated Effects on Resources as a Result of the Construction of a New Commissary, Exchange, and Future Mixed Use Development

Construction of a New Commissary, Exchange and Future Mixed Use Development				
Resources	**No Action**	**Option 1**	**Option 2 (preferred)**	**Mitigation/BMPs**
				nesting season
Rare, Threatened and Endangered Species	No impact	Not likely to adversely affect rare, threatened and endangered species. Long-term, minor to moderate, adverse impact to habitat that may support rare, threatened and endangered species - future site planning for areas that may affect could minimize effects.	Not likely to adversely affect rare, threatened and endangered species. Long-term, minor to moderate, adverse impact to habitat that may support rare, threatened and endangered species - future site planning for areas that may affect could minimize effects.	Conduct species specific surveys during the period when the species is most conspicuous and prior to any ground-disturbing activities; maintain consultation with applicable agencies
Cultural Resources	No impact	No impacts.	No impacts.	Provision of a 50-ft buffer surrounding Lacey Cemetery; monitoring to prevent inadvertent impacts; cease and desist if cultural resources are discovered; consultation

Table 13. Anticipated Effects on Resources as a Result of the Construction of a New Commissary, Exchange, and Future Mixed Use Development

Construction of a New Commissary, Exchange and Future Mixed Use Development				
Resources	**No Action**	**Option 1**	**Option 2 (preferred)**	**Mitigation/BMPs**
Socioeconomics	No impact	Temporary, short-term beneficial impact for construction workers. Long-term, major, beneficial impact for employees and communities.	Temporary, short-term beneficial impact for construction workers. Long-term, major, beneficial impact for employees and communities.	None Required
Land Use/Sustainability	No impact	No impact	No impact	Water conservation measures; recycling materials including training for recycling construction waste; landscaping and maintenance guidelines; thermal shading for parking areas; use of native plant species
Transportation	No impact	Negligible impact.	Negligible impact.	Preparation of a Traffic Management Plan as a project with more than 500 people. Road projects constructed in concert with development. Development of traffic mitigation measures through road improvement projects as required using guidance from the Comprehensive Traffic Engineering Study

Table 13. Anticipated Effects on Resources as a Result of the Construction of a New Commissary, Exchange, and Future Mixed Use Development

Construction of a New Commissary, Exchange and Future Mixed Use Development				
Resources	**No Action**	**Option 1**	**Option 2 (preferred)**	**Mitigation/BMPs**
				during final design of projects
Utilities	No impact	Long-term beneficial impacts due to upgraded utilities. Short-term, minor, adverse impact during connection activities.	Long-term beneficial impacts due to upgraded utilities. Short-term, minor, adverse impact during connection activities.	LEED sustainable practices implemented during design; rainwater catchment mechanisms considered
Solid Waste, Hazardous Waste, Toxic, Radioactive Substances	No impact.	Short-term, minor, adverse impacts from site clearing activities. Long-term, minor adverse effect in generating additional waste due to new facilities.	Short-term, minor, adverse impacts from site clearing activities. Long-term, minor adverse effect in generating additional waste due to new facilities.	Hazardous waste would be handled by applicable standards and regulations. No mitigation measures are required. Construction designed to meet EA 13423 total operational reduction goals – recycle demolition waste Training for staff and contractors in water conservation
Air Quality	No impact	Short-term minor localized adverse impacts from construction vehicles and equipment. Long-term, minor impacts from increased CO levels resulting from an increase in local traffic	Short-term minor localized adverse impacts from construction vehicles and equipment. Long-term, minor impacts from increased CO levels resulting from an increase in local traffic.	BMPs for air quality would not be required if the project conforms and does not overlap with BRAC. Fort Belvoir would work with DeCA and to minimize air quality impacts

Table 13. Anticipated Effects on Resources as a Result of the Construction of a New Commissary, Exchange, and Future Mixed Use Development

Construction of a New Commissary, Exchange and Future Mixed Use Development				
Resources	**No Action**	**Option 1**	**Option 2 (preferred)**	**Mitigation/BMPs**
Noise	No impact on future noise levels	Short-term, minor adverse effect due to construction noise.	Short-term, minor adverse effect due to construction noise.	BMPs would be required and may include: limiting construction to normal weekday business hours and maintaining construction equipment mufflers in good working order

4 CUMULATIVE EFFECTS

CEQ regulations define a cumulative impact as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions." In accordance with these regulations this environmental assessment examines the cumulative effects of these types of actions on Fort Belvoir and in Fairfax County. Adverse minor effects due to cumulative activities would be expected on the varied resources in and around Fort Belvoir (USACE 2007a).

The construction of a new Commissary and Exchange would replace existing buildings at Fort Belvoir in order to improve services to customers consistent with the goals of the Real Property Master Plan. BRAC 2005 activities at Fort Belvoir are approaching the final stages of development. In addition to BRAC activities, approximately 20 additional projects are in various stages of planning, construction, or completion. Several current or proposed projects are located in the vicinity of the Commissary and Exchange and are depicted in Figure 7. Table 14 lists the projects and whether or not a cumulative impact may be expected when considered with the proposed construction and operation of a new Commissary and Exchange.

Table 14. Projects in the Vicinity of the Proposed Community Support Area Development, North Post, Fort Belvoir

Project	Location	Cumulative Impact	Storm-water	Wetlands/ Streams	Traffic
BRAC 5/132	Lower North Post	Yes	X	X	---
National Museum of the Army	North Post	Yes	X	X	X
North Post Access Control Point	Lower North Post	Yes	X	X	---
INSCOM SCIF - Nolan Building Expansion	Lower North Post	Yes	X	X	---
911th Eng/DC-National Guard	Lower North Post	Yes	X	X	---

Locally, outside of the Main Post, the development of an approximately 150-acre site at the intersection of Telegraph Road and Beulah Street is planned as the Hilltop Village Center. The site is currently occupied by a construction and demolition debris landfill and a nine-hole golf course. The new Hilltop Village Center would occupy approximately 33 acres of the site and would include a 150,000 square foot Wegmans grocery store and is planned for a 96,000 square foot office building with a parking garage; a 63, 732 square foot retail space in four buildings that would contain office space on the upper floors and two banks. Parking for Wegmans would include 890 spaces of 2,100 for the total site. Approximately 400 employees would work at Wegmans. In addition, to the Hilltop Village Center, the developers are planning active recreational facilities including minor modifications to the existing golf course (Hagee 2008).

Several hotel/motel projects are planned for U.S. Route 1 in the Hybla Valley area approximately 7.5 miles southeast of the Community Support Center. These projects are not expected to add

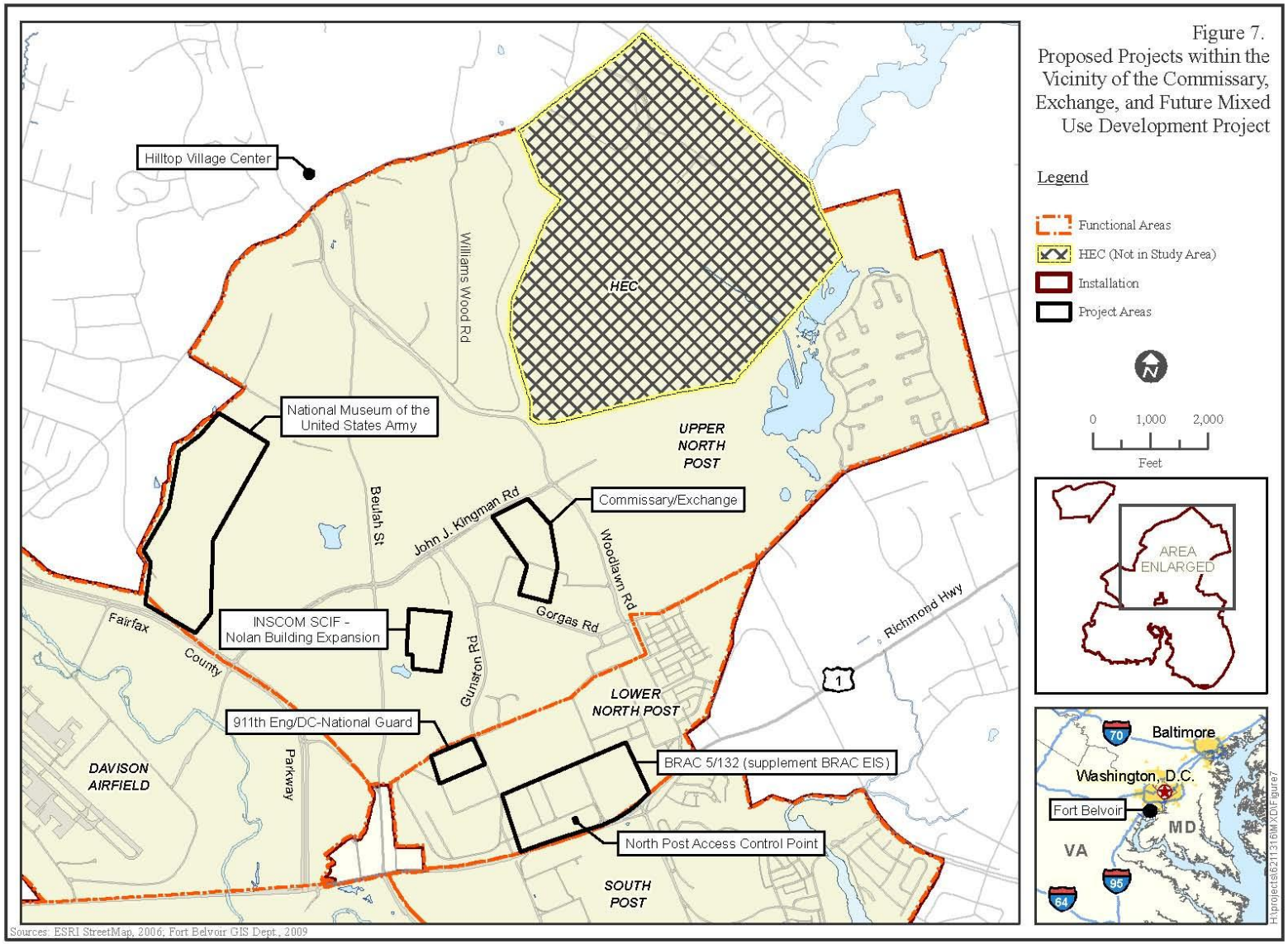
cumulatively to the effects of the proposed development of the Community Support Center under either alternative.

Analysis of the proposed options identified impacts to stormwater, wetlands and ephemeral streams, vegetation, and traffic. Each of these resources was also analyzed for cumulative effects from the site preparation, construction and operation of the new Commissary and Exchange and the future residential and mixed use development in relation to other projects in the vicinity of the project and in the local area. Vegetation disturbance and/or removal was determined not to have a discernible cumulative impact because mitigation would replace trees.

Stormwater

The construction and operation of the Commissary and Exchange and the future development of residential and mixed use areas would not alter the designated land use under either Options 1 or 2. Increased stormwater runoff has occurred in the region as a result of commercial and residential development, and road construction. Soil in areas of the North Post have been historically affected by human activity from agriculture, and other activities to Installation activities and development; more recently, clearing and grading has occurred to construct the existing Commissary and Exchange facilities at the site. These activities have adversely impacted soils, through compaction and displacement, to varying degrees. Impacts from existing roads and developments would remain.

Continued development of impervious surfaces associated with transportation improvements and development of projects in the vicinity of the Commissary and Exchange (Figure 9) and land disturbances associated with soil excavations would cause potentially greater cumulative soil erosion and sedimentation to receiving water bodies and wetlands, and eventually, the Potomac River and Chesapeake Bay from stormwater runoff and as well as an increase in impervious surfaces. The mitigation of stormwater impacts with the use of BMPs, a stormwater management plan for land disturbance greater than one acre, and the project proponent's compliance with the erosion and sediment requirements and stormwater management requirements set forth under the Virginia Erosion and Sediment Control Law and Regulations, the Virginia Stormwater Management Program Permit in addition to the requirements set forth under the Fairfax County Public Facilities Manual would ensure that non-source pollution control impacts are minimized during construction of the new Commissary and Exchange as well as the future development of the residential and mixed use area of the site. The project proponent would also follow the Fairfax County Chesapeake Bay Preservation area regulations to minimize long-term impacts on water quality. Stormwater management ponds would be designed to provide compliance with BMP nutrient reduction goals; therefore, the Commissary and Exchange contribution to cumulative impacts on receiving surface waters, under both Options, would be negligible. Mitigation measures would also be employed on other nearby projects as part of the project proponent's compliance with state and local regulations including Fort Belvoir's MS4 Permit. As a result, the cumulative impacts from construction of the Commissary and Exchange when added to other present and foreseeable future actions would result in negligible, incremental, cumulative adverse impacts to these resources.


Hilltop Village Center
Williams Wood Rd
HEC
National Museum of the United States Army
UPPER NORTH POST
Beulah St
John J. Kingman Rd
Commissary/Exchange
Woodlawn Rd
Fairfax County
INSCOM SCIF - Nolan Building Expansion
Gorgas Rd
Gunston Rd
Richmond Hwy
1
LOWER NORTH POST
911th Eng/DC-National Guard
DAVISON AIRFIELD
Parkway
BRAC 5/132 (supplement BRAC EIS)
North Post Access Control Point
SOUTH POST
Sources: ESRI StreetMap, 2006; Fort Belvoir GIS Dept., 2009
Figure 7.
Proposed Projects within the Vicinity of the Commissary, Exchange, and Future Mixed Use Development Project
Legend
Functional Areas
HEC (Not in Study Area)
Installation
Project Areas
N
0
1,000
2,000
Feet
AREA ENLARGED
Baltimore
70
Washington, D.C.
Fort Belvoir
MD
VA
95
64
H:\projects\621-316M\GIS\Figure7

Wetlands and Ephemeral Streams

Permanent loss and temporary disturbance to ephemeral streams and wetlands associated with those streams would occur under either Option for the new Commissary and Exchange. Depending on site conditions, wetlands and/or streams may be lost or disturbed for other projects planned within the North Post of Fort Belvoir. However, because Fort Belvoir would be required to mitigate for wetland and stream impacts for the Commissary and Exchange project or any other project on the Installation, cumulative wetland and stream impacts resulting from projects on the North Post, in combination with the other actions would result in minor adverse cumulative impacts; however, the construction of a new Commissary and Exchange would contribute a small portion of these effects.

Traffic

As previously discussed in Section 3.10, *Transportation*, roads and highways servicing the Community Support Center area heavily traveled and intersections in the vicinity are currently over capacity during morning, evening or both peak travel periods. No direct public access is available to the area. Within the North Post, the National Museum of the Army is proposed for a location near the southeast corner of U.S. Route 1 and Belvoir Road and would be anticipated to attract up to 750,000 visitors annually. In addition, the Hilltop Village Center development would add to local traffic volume in the vicinity of Fort Belvoir. The project would increase traffic volumes on regional roadways surrounding Fort Belvoir, mainly U.S. Route 1 and the Fairfax County Parkway. It is expected that the total portion of the traffic on these facilities due to the proposed National Museum of the Army would be less than 10 percent of the total traffic stream during the AM and PM peak hours due to traffic expected to occur during the off-peak hours (U.S. Army Garrison 2008).

In addition, multiple roadway and transportation improvement projects are currently underway or in the planning process in the vicinity surrounding Fort Belvoir. Virginia Department of Transportation projects include the following (VDOT 2010):

- Hot Lane construction on Interstates 95, 495, and 395
- Continued development of the Springfield Interchange (Interstates 95, 495, and 395)
- Fairfax County Parkway extension to Fort Belvoir North Area
- Interstate I-95 widening
- Franconia-Springfield Parkway ramp connections to I-95

Other transportation improvements in the vicinity of the Commissary, Exchange and future residential and mixed use area are related to other projects (including some BRAC actions) in the vicinity of the North Area and have been previously outlined in *Section 3.10 Transportation.*

The National Capital Planning Commission requires the development of a Transportation Management Program for any project that will increase the employment level on a worksite to 500 or more employees (excluding existing and proposed employees). The BRAC *Record of Decision* (USACE 2007b) directed Fort Belvoir to provide a position of Transportation Demand Management Coordinator to oversee the development and implementation of transportation

management program initiatives and the preparation of a Transportation Management Plan in conjunction with the Real Property Master Plan. The Transportation Management Plan is currently in the development process but would encourage the use of ridesharing, transit, and other modes of efficient travel by employees. The development and implementation of the Transportation Management Plan, along with local, regional and Installation-related transportation improvements would mitigate to some extent the traffic impacts within the vicinity of the proposed new Commissary and Exchange. Overall, the Commissary and Exchange project comprise a small portion of the current and planned development activity at Fort Belvoir and the region and would contribute less than 10 percent of the traffic at key intersections (Parsons 2010).

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APPENDIX A

Coastal Zone Management Act – Consistency Determination

for

Proposed Construction of a new Commissary, Exchange, and Future Mixed Development at Fort Belvoir

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT BELVOIR
9820 FLAGLER ROAD, SUITE 213
FORT BELVOIR, VIRGINIA 22060-5928

REPLY TO
ATTENTION OF

August 6, 2010

Directorate of Public Works

SUBJECT: Determination of Consistency with Virginia's Coastal Resources Management Program, Construction of a New Commissary, Exchange and Future Mixed Use Development at Fort Belvoir

Ms. Laura McKay
Virginia Coastal Zone Management Program Manager
Department of Environment Quality
629 East Main Street
Richmond, Virginia 23219

Dear Ms. McKay:

The Army plans to construct and operate a new Commissary and Exchange at Fort Belvoir. Future mixed use development (residential, commercial/administrative and retail) is planned for a portion of the same project area. The enclosed Environmental Assessment (EA) has been drafted to evaluate the potential environmental effects of this proposed action. The Determination of Consistency with Virginia's Coastal Resources Management Program is included as Appendix A of this EA.

Fort Belvoir has proposed the construction of a new 132,000 square foot Defense Commissary Agency (DeCA) Commissary and a new 270,000 square foot Army Air Force Exchange Service (AAFES) Exchange for the purpose of providing the Soldiers, their Families, eligible civilians and military retirees within the National Capital Region with a destination for shopping, dining and social activities consistent with the Real Property Master Plan.

The AAFES Exchange would be constructed on an approximately 35-acre site within the existing Community Support Center tract, an approximately 109-acre area on the Upper North Post of the Installation bounded by Gunston, John J. Kingman, Woodlawn, and Gorgas Roads. A future, adjacent DeCA Commissary would be constructed on an approximately 21.5-acre parcel. Associated parking and infrastructure for each facility would be constructed in concert with the new buildings. Additional future mixed use development (administrative, residential and retail) consistent with the Real Property Master Plan is planned for the southeastern portion of the tract.

"LEADERS IN EXCELLENCE"

The Construction of a New Commissary, Exchange, and future mixed use development would be phased since the proposed development encroaches into the existing Exchange site, and the existing Exchange must remain operational until the new Exchange is functional. As a result, the proposed project would be completed by: 1) preliminary site preparation; 2) construction of the Exchange; 3) demolition of the old Exchange; 4) site preparation and Commissary construction; 5) demolition of the old Commissary; and 6) in-filling of the former Commissary site and along access roads with mixed development.

Design phase would incorporate patron parking following Fairfax County guidelines of four spaces per 1,000 square feet of retail space, while providing parking for the Exchange's employees and accommodating potential overlap of shift schedules. Final employee parking would not exceed 60 percent of total employees. Design would also allow for potential re-use of some existing parking area. Delivery and loading areas have been developed along the rear or eastern portion of the site and would include planning for future delivery service for DeCA's new facility. Construction is scheduled for 2011-2013 time-frame.

The Community Support Center area will support a future residential and mixed use development to be constructed where the existing Commissary and Exchange are currently located and adjacent areas. The residential community would follow the standards of Traditional Neighborhood Design, which is a development pattern that reflects the character of smaller, older communities of the late 19th and early 20th centuries (BNVP 2009). These traditional communities are typically characterized by mixed land uses, grid street patterns, pedestrian circulation, intensively-used open spaces, architectural character, and a sense of community. Traditional Neighborhood Design is also consistent with the original character of Fort Belvoir Main Post and other development occurring on the Installation. Other potential mixed use under consideration includes but is not limited to an Auto Service Center, restaurant and administrative office space.

Enclosed are two figures illustrating the two concept site plans (Option 1 and Option 2). Construction of either option would require: clearing and grading, excavating and trenching for utilities, construction and demolition of buildings, paving and other improvements. We have determined that the Virginia Coastal Zone would not be adversely affected by the proposed action under either option, and we request your concurrence with this determination and with the Draft EA within a maximum of 45 days of the receipt of this letter. This project is linked to fiscal year-specific funding. Your ability to expedite a response would assist the US Army Garrison Fort Belvoir in executing the project by the end of the fiscal year.

The enclosed Determination of Consistency inserted into the EA represents an analysis of project activities in light of established Virginia Coastal Resources Management Program Enforceable Policies and Programs. Furthermore, submission of this Determination of Consistency reflects the commitment of the Army to comply with those Enforceable Policies and Programs. The new Commissary, Exchange, and future mixed development would be constructed and operated in a manner consistent with the Virginia Coastal Resources Management Program.

The Army has determined that the construction and operation of the new Commissary, Exchange and future mixed use development would have minor impacts on land and water uses or natural resources of the Commonwealth of Virginia's coastal zone.

Point of contact is Mr. Patrick McLaughlin, Chief, Environmental and Natural Resources Division, Directorate of Public Works by telephone at 703-806-4007, or by email at patrick.mclaughlin@us.army.mil.

Sincerely,

John J. Strycula
Colonel, US Army
Commanding

Enclosures

Determination of Consistency with Virginia's Coastal Resources Management Program

Pursuant to Section 307 of the Coastal Zone Management Act of 1972, as amended, this is a Federal Consistency Determination for the construction and operation of a new Commissary, Exchange and future mixed use development at Fort Belvoir, Virginia. The Army is required to determine the consistency of its activities affecting Virginia's coastal resources or coastal uses with the Virginia Coastal Resources Management Program (CRMP).

This document represents an analysis of project activities in light of established Virginia CRMP Enforceable Policies and Programs. Furthermore, submission of this consistency determination reflects the commitment of the Army to comply with those Enforceable Policies and Programs. The proposed action would be constructed and operated in a manner consistent with the Virginia CRMP. The Army has determined that the construction and operation of the new Commissary, Exchange, and future mixed use development would have a minor impact on the land and water uses or natural resources of the Commonwealth of Virginia's coastal zone.

1 Description of the Proposed Action

Fort Belvoir has proposed the construction of a new 132,000 square foot Defense Commissary Agency (DeCA) Commissary and a new 270,000 square foot Army Air Force Exchange Service (AAFES) Exchange for the purpose of providing the Soldiers, their Families, eligible civilians and military retirees within the National Capital Region with a destination for shopping, dining and social activities consistent with the Real Property Master Plan.

The AAFES Exchange would be constructed on an approximately 35-acre site within the existing Community Support Center tract, an approximately 109-acre area on the Upper North Post of the Installation bounded by Gunston, John J. Kingman, Woodlawn, and Gorgas Roads. A future, adjacent DeCA Commissary would be constructed on an approximately 21.5-acre parcel. Associated parking and infrastructure for each facility would be constructed in concert with the new buildings. Additional future mixed use development (administrative, residential and retail) consistent with the Real Property Master Plan is planned for the southeastern portion of the tract.

Roadways serving the Community Support Center area include Kingman Road which provides access to Fairfax County Parkway and Gunston Road which connects the site to Lower North Post and Main Post. Gunston Road is also the main arterial for traffic circulation on the Main Post. Woodlawn Road provides access to residential and civic areas from the eastern boundary of the Community Support Center and Gorgas Road accesses the Community Support Center area from Gunston Road.

The Construction of a New Commissary, Exchange, and future mixed use development would be phased since the proposed development includes redevelopment of the sites of the existing Commissary and Exchange. As a result, the proposed project would be completed by: 1) preliminary site preparation; 2) construction of the Exchange; 3) demolition of the old Exchange; 4) site preparation and Commissary construction; 5) demolition of the old Commissary; and 6) in-filling of the former Commissary site and along access roads with mixed development. Two site plans are considered for the new facilities and are presented in this environmental assessment as Option 1 and Option 2.

Post Exchange

The construction of the new Exchange would consolidate the existing North Post Exchange (141,970 square feet) with the current Home and Garden Center (69,220 square feet) and Military Clothing Sales Store (10,419 square feet) from the South Post into a single, one story 270,000 square foot facility. Concepts evaluated show a total of 786 parking spaces for employees and patrons. Design phase would incorporate patron parking following Fairfax County guidelines of four spaces per 1,000 square feet of retail space, while providing parking for the Exchange's employees and accommodating potential overlap of shift schedules. Final employee parking would not exceed 60 percent of total employees. Delivery and loading areas have been developed along the rear or eastern portion of the site and would include planning for future delivery service for DeCA's new facility.

The proposed new AAFES Exchange construction would occur in an undeveloped wooded area; construction would be phased to allow the existing Exchange to remain operational during construction of the new facility.

Demolition of the existing Exchange will take place following completion and opening of the new Exchange to allow for the construction of the new Commissary on the old Exchange site.

Commissary

DeCA proposes to relocate and construct a new Commissary on a site of approximately 21.5 acres adjacent to the new Exchange. The new Commissary would be approximately 132,000 square feet with loading areas. Concepts evaluated show approximately 549 spaces for employee and patron parking. Design phase would incorporate patron parking following Fairfax County guidelines of four spaces per 1,000 square feet of retail space, while providing parking for the Exchange's employees and accommodating potential overlap of shift schedules. Final employee parking would not exceed 60 percent of total employees. Design would also allow for potential re-use of some existing parking area. Construction is scheduled for the 2013 time frame.

Future Mixed Use Development

The Community Support Center area will support a future residential and mixed use development to be constructed where the existing Commissary and Exchange are currently located and adjacent areas. The residential community would follow the standards of Traditional Neighborhood Design, which is a development pattern that reflects the character of smaller, older communities of the late 19th and early 20th centuries (BNVP 2009). These traditional communities are typically characterized by mixed land uses, grid street patterns, pedestrian circulation, intensively-used open spaces, architectural character, and a sense of community. Traditional Neighborhood Design is also consistent with the original character of Fort Belvoir Main Post and other development occurring on the Installation. Other potential mixed use under consideration includes but is not limited to an Auto Service Center, restaurant and administrative office space.

Option 1

Construction of the development under Option 1 is consistent with the Real Property Master Plan. Option 1 locates the Exchange partially within the footprint of the existing Exchange building and associated parking lot. The Commissary building would be located within the undeveloped forested area to the north of the site proposed for the new Exchange (Figure 1).

Option 1 conceptually designates an area of future community-mixed use containing 80 percent residential and 20 percent administrative/commercial that would be developed in the southeastern portion of the Community Support Center area.

This alternative site layout does not meet DeCA functional, operational, and expansion requirements. Construction of the Commissary and Exchange in this option would require excessive tree removal requiring mitigation of 2:1 replacement ratio consistent with the Installation's tree removal policy (Horne 2001). In addition, retaining walls along steep slopes and excessive pavement slopes would be required. Access from Kingman Road to the site would be difficult for both delivery trucks and customers (DeCA 2009).

Option 2 (Preferred Alternative)

Option 2 for the Exchange and Commissary new construction is a different configuration proposed for the same parcel. Option 2 is also consistent with designated land use in the Real Property Master Plan.

Option 2 meets DeCA and AAFES functional, operational, and expansion requirements. The layout associated with Option 2 will reduce site costs by reducing the number of trees to be removed. Option 2 would also reduce the need for pavement slopes and retaining walls. This layout also maximizes the use of existing impervious areas and provides for improved traffic circulation (Figure 2). The community-mixed use development concept for the Option 2 Alternative would be approximately 50 percent residential and 50 percent administrative/commercial development located in the same southeastern corner of the Community Support Center area as proposed in Option 1; however, in Option 2 less horizontal land area is developed. The Option 2 layout would reduce the footprint for adjacent residential development and the number of parking spaces; however, the parking volume would be adequate.

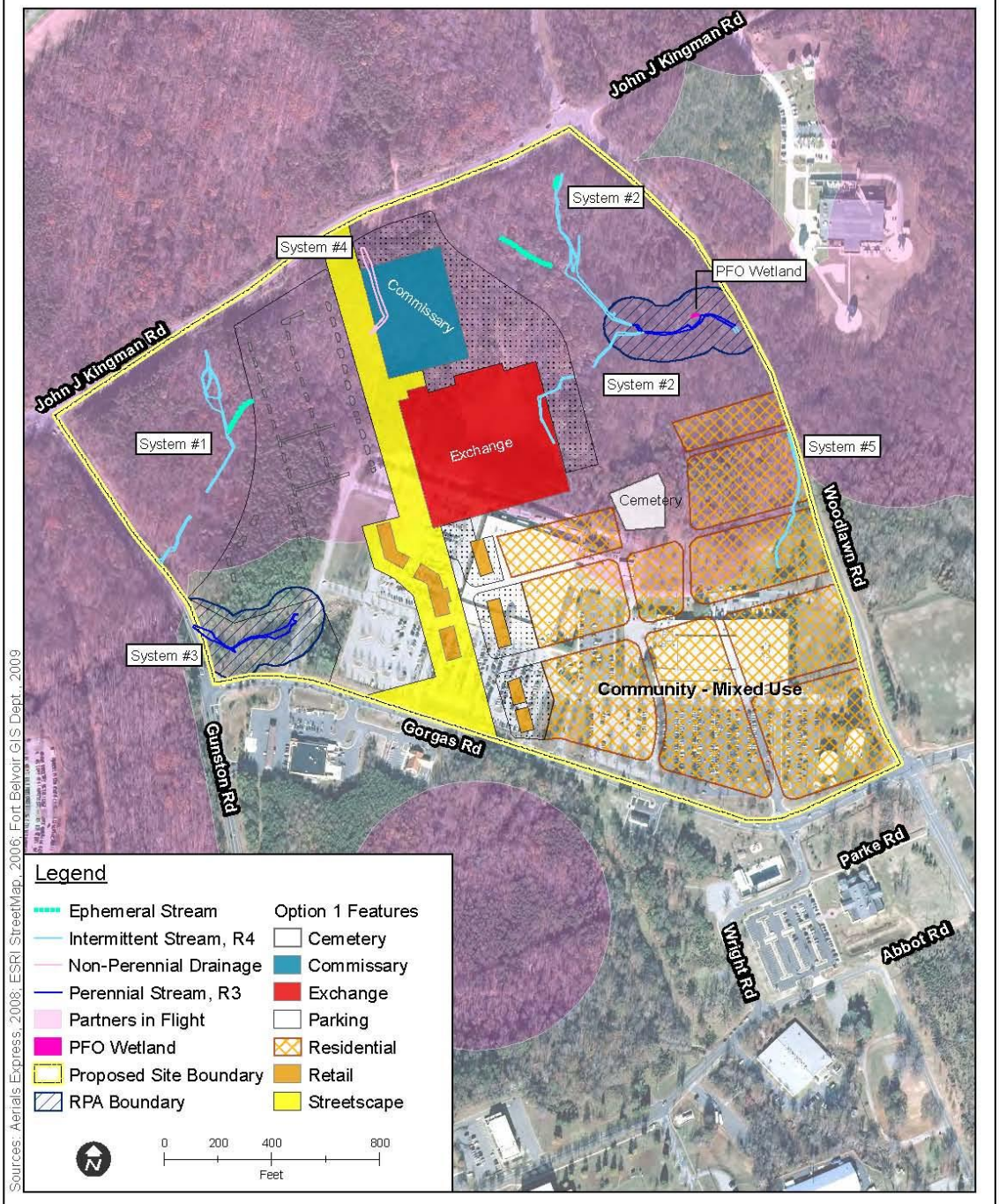

Figure 1. Construction of a New Commissary, Exchange, and Future Mixed Use Development
Option 1 Environmental Constraints

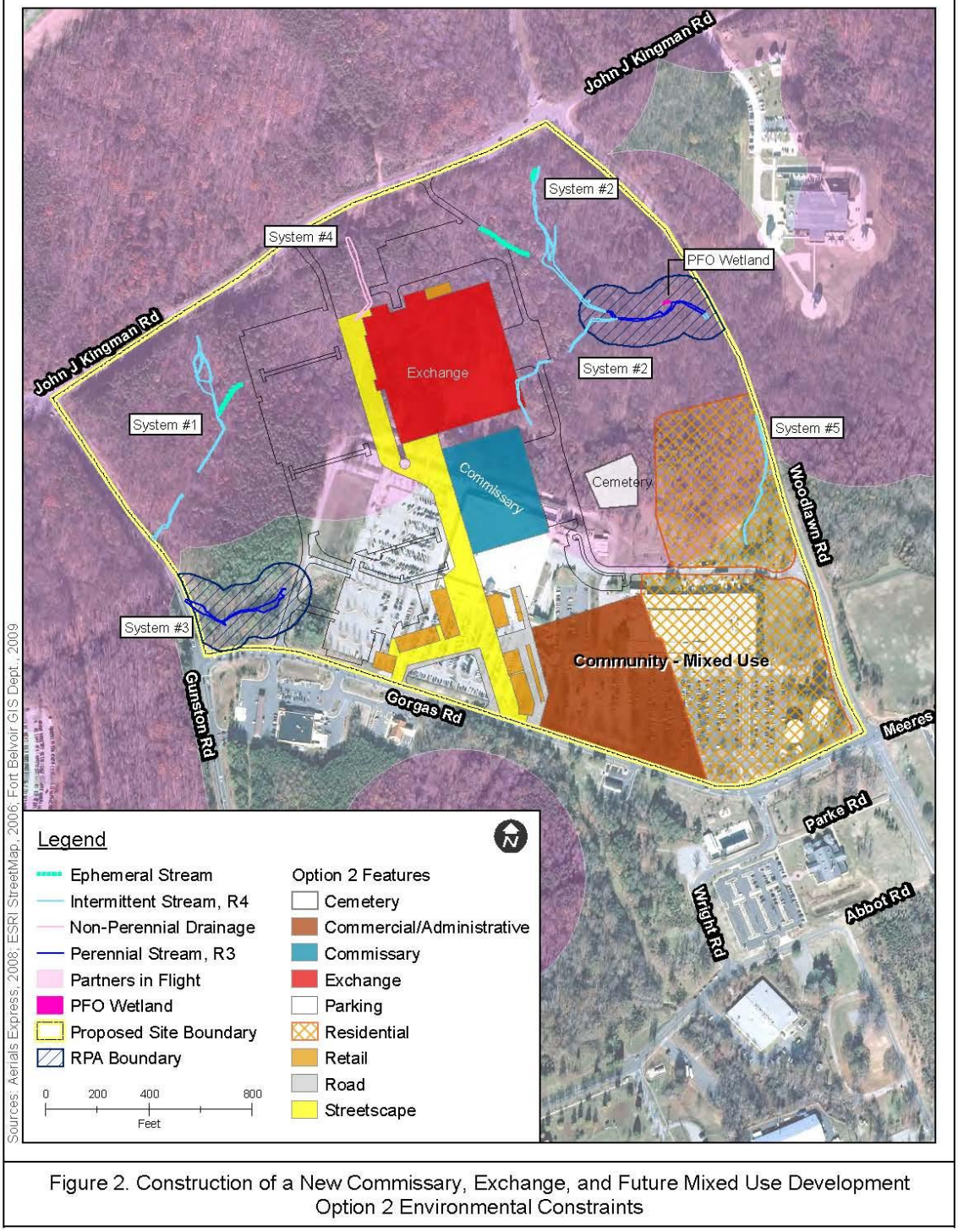

Figure 2. Construction of a New Commissary, Exchange, and Future Mixed Use Development
Option 2 Environmental Constraints

2 Assessment of Probable Effects

AAFES and DeCA in coordination with the Army would obtain all applicable permits required for the implementation of the proposed action. A review of the permits and/or approvals required under the enforceable policies is being conducted. The Army has evaluated the construction and operation of the Commissary, Exchange and future mixed development on the following enforceable policies:

Fisheries – The proposed action has no foreseeable impacts on fish or shellfish resources and would not affect the promotion of commercial or recreational fisheries. The Upper North Post Community Support Center site is located on a topographic upland between tributaries that drain to the Dogue Creek and Accotink Creek watersheds. Most of the water draining the site is received through culverts under the bordering roads and flows as ephemeral and intermittent tributaries to larger tributaries that eventually drain into Dogue or Accotink Creeks. Dogue Creek reaches the Potomac River approximately three miles from the site. Seasonal and stormwater drainage from the Upper North Post site flowing to tributaries of Accotink Creek ultimately reaches Gunston Cove and the Potomac River approximately 2.5 miles from the site. Two segments of tributaries on the southwestern and eastern portion of the site have perennial flow and have delineated Resource Protection Areas (RPAs) based on a jurisdictional determination by the US Army Corps of Engineers in 2009. A segment of intermittent stream may be affected by construction of the AAFES Exchange either option; however, the final design of the Exchange would determine if any adverse affects to the intermittent stream and RPA buffer would occur and it is the intent of the tenant organizations to design and construct these facilities with zero impacts to regulated streams located within the Community Support Center.

Contractors would be required to implement best management practices (BMPs) associated with stormwater management to reduce erosion and sediment impacts in accordance with the Virginia Stormwater Management Program. Construction site operators will be required to develop and submit as part of the Virginia Stormwater Management Program Registration Statement, a Stormwater Pollution Prevention Plan that identifies potential sources of pollutants in stormwater discharges from the construction site; describe control measures that will be used to minimize pollutants in stormwater discharges from the construction site; and comply with the terms and conditions of General Permit VAR10, the "General Permit for Discharges of Stormwater From Construction Activities", effective date July 1, 2009 and any subsequent Virginia Stormwater Management Program authorization to discharge under the Virginia Stormwater Management Program and the Virginia Stormwater Management Act.

Subaqueous Lands Management – The Virginia Marine Resources Commission pursuant to Virginia Administrative Code (VAC) Section 28.2-1204, has jurisdiction over encroachments in, on, or over, any State-owned rivers, streams and creeks. The proposed project would have no foreseeable impact on subaqueous resources.

Tidal and Non-Tidal Wetlands – A small (0.003 acre) palustrine forested wetland was delineated on the Community Support Center site; however, it is not located within the project footprint under either option. Two RPAs have been designated along segments of perennial stream on site. Final design of the project will avoid designated RPAs and perennial stream segments to the extent practicable to eliminate the potential for impacts to perennial stream and designated RPA riparian buffer. In areas where avoidance is not possible, the contractor would use culverts or other methods to minimize impacts, or mitigations would be identified during the

Construction and operation of the Commissary, Exchange and future mixed use development would, therefore, have a negligible impact on point source pollution.

Shoreline Sanitation – Neither of the proposed options for the construction of a new Commissary, Exchange and future mixed development would be equipped with a septic system. The proposed action would, therefore, have no impact on shoreline sanitation.

Air Pollution Control - Under both Options, construction activities would cause short-term, minor adverse impacts to air quality as a result to the following:

- Fugitive dust – generated during construction operations. Fugitive dust emissions will be controlled by adherence to local ordinances, application of water, periodic street sweeping, and wetting down paved roadway surfaces. Annual estimated emissions of fine particulates, nitrogen oxide, and sulphur dioxide are below the thresholds of 100 tons per year which would trigger the General Conformity Rule.

- Emission of volatile organic compounds and nitrogen oxides (precursors of O_3) – Construction activities that would cause emissions include use of construction equipment, movement of trucks containing materials, use of paving equipment, commuting of construction workers. Annual estimated emissions of volatile organic compounds and nitrogen oxides are less than the threshold of 50 tons per year and 100 tons per year, respectively. Thus, the proposed project is not subjected to the General Conformity Rule.

For both Options 1 and 2, carbon monoxide levels would be slightly higher than under the No Action Alternative as a result of increased local traffic. The increase of carbon monoxide levels would result in long-term, minor impacts and would not cause violations of either the 1-hour or 8-hour carbon monoxide standard.

Development of mixed use facilities including residential areas would also follow Commonwealth of Virginia guidelines. Development would occur after construction of the Commissary and Exchange and as a result, no cumulative effects to air quality from construction are expected.

A construction emissions estimate indicates that the construction activity would not generate sufficient emissions to trigger a need for a full General Conformity Determination. No changes to Fort Belvoir's Title V Permit would be required. No mitigation is required; however, Fort Belvoir would work with the tenant organizations to prepare and implement construction specifications with emission control measures to minimize air quality impacts. Measures would include:

- limitations on construction activity on Code Orange, Red, and Purple ozone days;

- requirements that all non-diesel equipment be retrofitted with emission control devices if the equipment does not meet Tier 2 or better standards;

- implementation of anti-idling devices for on-road and non-road vehicles and equipment;

- use of Ultra-Low Sulphur Diesel and alternative fuels;

permitting process. AAFES and DeCA in coordination with the Army would obtain permits from the U.S. Army Corps of Engineers (USACE) and the Virginia Department of Environmental Quality (VDEQ) prior to any ground-disturbing activity. Compensation would be provided as required by the USACE and the VDEQ for unavoidable impacts.

Dunes Management – No sand dunes are located at or near the site. The proposed action would not affect any coastal primary sand dunes at either site.

Non-point Source Water Pollution Control – Land disturbing activities during construction would require a Virginia Stormwater Management Program (VSMP) Permit, and a Stormwater Pollution Prevention Plan (SWPPP). A federal Nationwide Permit #39 for Commercial and Institutional Development would be obtained from the USACE Baltimore District and a state authorization would be obtained from the VDEQ. In addition, Fort Belvoir would continue to adhere to the requirements set forth under the Virginia Erosion and Sediment Control Law and Regulations and the Virginia Stormwater Management Program Permit in addition to the requirements set forth under the Fairfax County Public Facilities Manual.

The implementation of erosion and control features for all phases of construction would ensure that no sediment laden runoff will exit the construction site without proper treatment. BMPs integral to construction activities on Fort Belvoir would be planned and employed to incorporate all applicable state and local stormwater and erosion control requirements to offset pollutant loadings in streams.

For each new development project, downstream water quality would be protected by treating the site with BMPs that are at least 40 percent efficient at removing phosphorus. Mechanisms to control of erosion and sediment to efficiently reduce phosphorus entering water bodies would be applied.

Post-construction BMPs would be incorporated into the site design to ensure proper treatment for localized runoff that may affect downstream areas, instability of natural channels receiving stormwater discharges, excess sediment within stream channels, and excess nutrients from runoff. Off-site impacts from increased urbanization would be mitigated by appropriate stormwater management features developed site specifically for this construction. Low Impact Development (LID) practices and stable outfall assessment and mitigation would yield stability for the receiving channel and would be employed to reduce long-term impacts from the completed development of the Upper North Post Community Support Area.

If final project designs unavoidably result in loss or alteration of non-perennial stream channels, the affected stream lengths would be mitigated by stream restoration projects preferably located on-site or within the same watershed. If no stream restoration sites are available, stream mitigation credits would be purchased.

Point Source Water Pollution Control – Wastewater would be collected at a new sanitary lift station to be constructed on the site and pumped through a sanitary force main to a manhole where sewage would be conveyed through an existing pipe. Once drained from the manhole by gravity, the effluent would be collected and combined with other discharges through the system within the sanitary sewer outfall interceptor and delivered to the main Post lift station used to pump the collected effluent to the Noman M. Cole, Jr. Pollution Control Plant (formerly the Lower Potomac Pollution Control Plant). The Army would comply with the Virginia Stormwater Management Program General Permit for associated construction activities.

- implementing new emission standards for non-road vehicles;
- except for emergency testing requirements, the testing of emergency generators would not occur on Code Orange, Red, and Purple ozone days; and

Coastal Lands Management – Construction and operation of the Commissary, Exchange and future mixed use development would have no impact on any coastal lands.

Chesapeake Bay Preservation Areas – Fort Belvoir is located in the Chesapeake Bay Preservation Area. Within the Community Support Center area, two RPAs associated with segments of perennial streams were delineated during stream and wetland delineation surveys.

Potential encroachment into designated RPA buffers could occur with the development the Community Support Center Area. Consideration of the presence of RPAs during the final design stages of the proposed development would avoid or minimize encroachment into RPAs. It is the intent of the tenant organizations to construct their facilities without affecting streams or wetlands within the Community Support Center site. The project would also include BMPs to comply with the Chesapeake Bay Resource Management Area requirements.

3 Summary of Findings

Based on the above analysis, which is elaborated on in the Environmental Assessment, Fort Belvoir personnel would: ensure that tenant organizations' contractor personnel use and maintain appropriate BMPs; obtain the requisite permits and approvals; and implement measures to mitigate potential environmental impacts. Fort Belvoir finds that the proposed construction and operation of a new Commissary, Exchange and future mixed development would be consistent to the maximum extent practicable with the federally approved enforceable provisions of Virginia CRMP, pursuant to the Coastal Zone Management Act of 1972, as amended and in accordance with 15 CFR 930.30.

Sincerely,

John J. Strycula
Colonel, U.S. Army
Commanding

APPENDIX B

RECORD OF NON-APPLICABILITY (RONA)

to the Clean Air Act General Conformity Rule for the Construction and Operation of a New Commissary, Exchange and Future Mixed Use Development

at Fort Belvoir, Virginia

for

Proposed Construction of a new Commissary, Exchange, and Future Mixed Development at Fort Belvoir

RECORD OF NON-APPLICABILITY (RONA)

to the Clean Air Act General Conformity Rule

for the Construction and Operation of a New Commissary, Exchange and Future Mixed Use Development at Fort Belvoir, Virginia

August 3, 2010

Air emissions were estimated for the proposed construction and operation of the new Commissary, Exchange and Future Mixed Use Development at Fort Belvoir. Emissions from demolition of existing structures; land clearing and grading; construction of buildings, associated parking areas and structures; and the application of interior and exterior building coatings were assessed in order to estimate construction phase emissions. Operational emissions from motor vehicles and stationary sources of air emissions were also assessed.

General Conformity under the Clean Air Act, Section 176, has been evaluated according to the requirements of 40 CFR Part 93, Subpart B. Regardless of which option is ultimately selected, the requirements of this rule are not applicable because:

The highest total annual direct and indirect emissions from this proposed action have been estimated at 38.59 tons NO_X, 35.89 tons VOCs, 10.44 tons $PM_{2.5}$, and 0.32 tons SO_2, which would be below the conformity threshold values of 50 tons of VOCs and 100 tons for SO_2, $PM_{2.5}$, and NO_X.

Supported documentation and emissions estimates:

( ) Are attached,

(x) Appear in the NEPA documentation,

( ) Other (not necessary).

Bill L Jordus, DPW

FOR PATRICK M. MCLAUGHLIN

Chief

Environmental and Natural Resources Division

APPENDIX C

GENERAL CONFORMITY APPLICABILITY ANALYSIS

General Conformity Applicability Analysis

A General Conformity applicability analysis was conducted to determine if increases in air pollution from the construction of a new Commissary, Exchange, and future mixed use development project would cause or contribute to new violations of the National Ambient Air Quality Standards (NAAQS). The project will occur within a U.S. Environmental Protection Agency (USEPA) designated moderate nonattainment area for ozone (O_3) and nonattainment area for fine particulate matter ($PM_{2.5}$) and is subject to the federal General Conformity Rule established in 40 CFR, Part 93 entitled: *Determining Conformity of Federal Actions to State or Federal Implementation Plans*.

The General Conformity Rule was established to ensure that federal activities do not interfere with efforts to get nonattainment areas back into compliance with the NAAQS. In particular, Section 176(c) of the Clean Air Act (CAA) prohibits federal agencies, departments or instrumentalities from engaging in, supporting, licensing, or approving any action, in an area that is in nonattainment of the NAAQS, which does not conform to an approved state or federal implementation plan. Therefore, the agency must determine whether or not the project would interfere with the goals in the State Implementation Plan (SIP).

1. Project Description

As Fort Belvoir continues to grow under the BRACsupport the National Capital Area, enhanced and expanded shopping and dining services on the installation will be necessary to provide high quality, reliable services and amenities to all eligible patrons, including military retirees. As a result, the Army and Air Force Exchange Service (AAFES) and the Defense Commissary Agency (DeCA) propose to construct and operate a new 132,000 square foot Commissary and a new 270,000 square foot Post Exchange at Fort Belvoir, Virginia.

The proposed action involves constructing new facilities and associated sidewalks, parking areas, access roads, and necessary utilities and the demolition of the old Commissary and Exchange facilities. The new facilities would be located on the Upper North Post in an area bounded by John J. Kingman, Gunston, Gorgas and Woodlawn Roads designated as the Community Support Center area. The site for the new Exchange would encompass approximately 35 acres and the future, adjacent Commissary would be located on approximately 21.5 acres. Construction and demolition would be conducted in phases in order to allow the existing facilities to remain operational, as follows: 1) preliminary site preparation; 2) construction of the new Exchange; 3) demolition of the old Exchange; 4) site preparation and construction of the new Commissary; 5) demolition of the old Commissary; and 6) future in-filling of the former Commissary site and additional area with future mixed development which would include, commercial/administrative and residential uses. The design would incorporate patron parking following Fairfax County guidelines of 4 spaces per 1000 SF of retail space, while providing parking for the facilities employees on various shift schedules, not to exceed 60 percent of employees and allowing for potential re-use of some of the existing parking.

Option 1 conceptually designates 35 acres in the southeastern area for future community mixed-use development containing 80 percent residential and 20 percent administrative, commercial, and retail space. The concept plan in Option 2 would be approximately 50 percent residential

and 50 percent administrative/commercial development located in the same southeastern corner of the Community Support Center area; however, Option 2 would reduce the area of mixed-use development to approximately 32 acres by planning land use with less horizontal development.

It is expected that construction of a new Post Exchange (PX), demolition of the old PX, construction of a new Commissary, and demolition of the old Commissary will occur in 2011, 2012, and 2013; construction of new mixed use facilities including commercial and residential spaces will be constructed in 2014.

2. Regulatory Background: General Conformity Applicability Analysis

Fort Belvoir is within Fairfax County, Virginia. Washington, D.C. and adjacent counties of Virginia and Maryland constitute the National Capital Interstate Air Quality Control Region 47, designated by the USEPA as moderate nonattainment for the 8-hour ozone and nonattainment for the annual $PM_{2.5}$ NAAQS.

To regulate the emission levels resulting from a project, federal actions located in nonattainment areas are required to demonstrate compliance with the General Conformity Rule. The project area is located within a nonattainment area; therefore, a General Conformity Rule applicability analysis was conducted.

Section 93.153 of the General Conformity Rule sets applicability requirements for projects through establishment of *de minimis* levels for annual criteria pollutant emissions. These *de minimis* levels are set according to criteria pollutant nonattainment area designations. For projects below the *de minimis* levels, a full conformity determination is not required. Those at or above the levels are required to perform a Conformity Determination as established in the Rule. The *de minimis* levels apply to both direct and indirect project emissions, that can occur during both the construction and operation phases of the action.

Fort Belvoir has completed a General Conformity Rule applicability analysis in order to determine if air quality impacts from the project are significant. For ozone, emissions have been estimated for the ozone precursor pollutants NO_X and volatile organic compounds (VOCs). Annual emissions for these compounds were estimated for each of the project actions (construction and operations) to determine if they would be below or above the *de minimis* levels established in the Rule. The *de minimis* threshold for moderate ozone nonattainment areas in an ozone transport region is 100 tons per year (TPY) for NO_X and 50 TPY for VOCs. The *de minimis* levels for $PM_{2.5}$ established in the rule are 100 TPY for directly emitted $PM_{2.5}$ and each of the precursors SO_2 and NO_X.

Sources of NO_X, VOCs, $PM_{2.5}$, and SO_2 associated with the proposed project would include emissions from construction and demolition equipment, vehicles including workers' vehicles, trucks hauling and delivering construction materials, use of architectural coatings containing volatile organic compounds, paving off gasses, and fugitive particles from surface disturbances. It also includes emissions from employee commutes and stationary sources including boilers for heating, landscaping equipment and used of consumer products.

3. Conformity Applicability Analysis

This project construction- and operations- related General Conformity analysis was performed for the proposed action at Fort Belvoir. This conformity analysis and air emissions evaluation will follow the criteria specified in 40 CFR Part 51, and 93, Determining Conformity of General Federal Actions to State or Federal Implementation Plans: Final Rule (April 5, 2010). The emissions evaluation will also follow all NEPA-related criteria provided in 40 CFR Part 6.

Air emissions have been evaluated by use of the *URBEMIS* 2007 software package, Version 9.2.4. The emission factors and calculation methodologies contained in the *URBEMIS* 2007 program are based on USEPA methodologies and have been approved for use by the California Air Resources Board (CARB). *URBEMIS* is a calculation tool designed to estimate air emissions from land use development projects based on development type and size. The model uses the CARB's EMFAC2007 model for on-road vehicle emissions and the OFFROAD2007 model for off-road vehicle emissions. The model contains data that is specific for each California air basin and California Statewide for the period from January 1, 2005 to December 31, 2040. *URBEMIS* has been widely used to generate estimates of air emissions associated with land use development projects nationwide which is subject to General Conformity rule.

Estimates of air emissions are determined based on the land use date including size of the construction site, size and type of structures to be constructed, amount of impervious surfaces, expected usage of construction equipment, size of existing buildings proposed for demolition, and vehicle usage for construction and operation. *URBEMIS 2007* uses California motor vehicle emission rates, which tend to be lower than those in other states due to California's stricter emission controls. Therefore, the proposed project start date of January 1, 2005 was used in this analysis to offset the difference since it is the worst-case data set available in *URBEMIS* 2007.

3.1 Land Use Data

The land use data used in the analysis is identified in Table C-1 for both options.

Table C-1 Land Use Data

Proposed Action	*URBEMIS* Land Use Type	OPTION 1	OPTION 2
Residence	Residential-Townhouse General	150 units	100 units
Commissary	Retail-Supermarket	132,000 sq ft	132,000 sq ft
PX	Large Retail-Regional Shop Center	270,000 sq ft	270,000 sq ft
Office Building	Commercial-General Office Building	500,000 sq ft	500,000 sq ft
Retail Space	Retail-Strip Mall	100,000 sq ft	100,000 sq ft

3.2 Construction Phase Emissions

Construction emission would result from the operation of heavy equipment and delivery trucks, workforce commuters, the architectural coating of interior and exterior building structures, and the asphalt paving. Emissions are estimated separately by phase and by phase component. Each

of those components is assumed to generate emissions throughput the entire phase length. The construction phases and components included in the analysis are indentified in Table C-2.

Table C-2 Construction Phases and Components

Phase	Off-Road Fugitive Dust	Off-Road Construction Exhaust	On-Road Vehicle Exhaust	Worker Trips	Vendor Trips	Off-Gassing
Demolition	x	x	x	x		
Fine Site Grading	x	x	x	x		
Asphalt Paving		x	x	x		x
Building Construction		x	x	x	x	
Architectural Coating				x		x

The model defaults generated based on the identified land use data in Table C-1 were used in this analysis except the following data in Table C-3.

Table C-3 Construction Phases Input Data

Activity	OPTION 1	OPTION 2
Demolition	Total demolished: 5,838,000 sq ft Maximum daily demolished: 40,000 sq ft	Total demolished: 5,838,000 sq ft Maximum daily demolished: 40,000 sq ft
Grading	70.4 acres	65 acres
Asphalt Paving	26.3 acres	23.6 acres

The annual construction related emissions for both options are provided in Table C-4 and Table C-5.

C-4 Construction Emissions for Option 1

Year	Pollutants (tons/year)						
	VOC	NO_x	CO	SO_2	PM_{10}*	$PM_{2.5}$*	GHG**
2011	3.54	13.28	12.63	0.03	9.06	2.51	1,445
2012	3.52	13.19	12.39	0.03	9.05	2.50	1,445
2013	3.42	12.65	11.96	0.01	9.02	2.45	1,450
2014	10.71	14.40	18.42	0.02	46.74	10.44	1,835

*PM_{10} and $PM_{2.5}$ estimates include dust and exhaust

**Although GHGs from combustion sources include CO_2, N_2O and CH_4, the latter two represent extremely small contributions and have not been included.

C-5 Construction Emissions for Option 2

Year	Pollutants (tons/year)						
	VOC	NO_x	CO	SO_2	PM_{10}*	$PM_{2.5}$*	GHG**
2011	3.54	13.28	12.63	0.03	9.06	2.51	1,445
2012	3.52	13.19	12.39	0.03	9.05	2.50	1,445
2013	3.42	12.64	11.95	0.01	9.02	2.45	1,450
2014	10.06	14.19	17.53	0.02	46.73	10.43	1,759

*PM_{10} and $PM_{2.5}$ estimates include dust and exhaust

**Although GHGs from combustion sources include CO_2, N_2O and CH_4, the latter two represent extremely small contributions and have not been included.

3.3 Operations Phase Emissions

The source of operations emissions are the area sources and the operational (motor vehicle) sources.

Emissions were estimated using default assumptions programmed into *URBEMIS* 2007 and generated estimates of area source emissions from:

- fuel combustion emissions from space and water heating, including wood stoves, fireplaces, and natural gas fired stoves;
- fuel combustion emissions from landscape maintenance equipment;
- consumer product VOC emissions; and
- architectural coatings.

URBEMIS 2007 also estimates vehicle exhaust emissions using several pieces of input entered by the user. That information includes project year, vehicle fleet percentages, winter and summer temperature, trip characteristics, variable start information and the percentage of travel on paved versus unpaved roads. Table C-6 provides information used in this analysis.

Table C-6 Operational Phase Input Data

Project Year	2005
Vehicle Fleet Percentages	EMFAC2007 file
Winter and Summer Temperature	Winter: 30°F Summer: 90°F
Trip Characteristics	EMFAC2007 file
Variable Start Information	EMFAC2007 file
Percentage of travel	100% on paved

URBEMIS 2007 then calculates emissions for running exhaust, tire wear particulates, brake wear particulates, variable starts, hot soaks, diurnals, resting losses, and evaporative running losses.

Operations emissions were calculated for the new Commissary and Exchange, and the mixed use development including residences, office building and retails. In order to exclude emissions from the current Commissary and Exchange, additional spaces the new Commissary and Exchange will add in addition to the current footage were used as the land use data for both uses.

Table C-7 provides operations related emissions for both options.

Table C-7 Operations Emissions

Project Option	Pollutants (tons/year)						
	VOC	NO_x	CO	SO_2	PM_{10}*	$PM_{2.5}$*	GHG**
Option 1	35.89	38.59	353.62	0.32	28.61	6.47	17,467
Option 2	34.05	37.40	341.40	0.30	27.45	5.96	16,851

*PM_{10} and $PM_{2.5}$ estimates include dust and exhaust

**Although GHGs from combustion sources include CO_2, N_2O and CH_4, the latter two represent extremely small contributions and have not been included.

4. Summary of Construction and Operations Emissions

The emissions from construction and operations occur in different years and do not combine on an annual basis. The highest annual emissions for each pollutant associated with construction and operations were selected. Table C-8 shows that emissions associated with constructing and operating the proposed action, when compared to the *de minimis* values for an area that is in moderate nonattainment for ozone, nonattainment for $PM_{2.5}$ established in 40 CFR 93.153 (b) for NO_X, $PM_{2.5}$, and SO_2 for 100 tons per year; and for VOCs of 50 tons per year, fall below the *de minimis* values.

Table C-8 Annual Emissions

Activity	Pollutants (tons/year)			
	VOC	NO_x	SO_2	$PM_{2.5}$
de minimis levels	50	100	100	100
Construction	10.71	14.40	0.03	10.44
Operations	35.89	38.59	0.32	6.47

5. Conclusion

As the annual emissions are well below *de minimis* levels, a full conformity determination is not required. A draft Record of Non-Applicability (RONA) can be found in Attachment B.

APPENDIX D

CONSULTATION

-----Original Message-----
From: Holma, Marc (DHR) [mailto:Marc.Holma@dhr.virginia.gov]
Sent: Wednesday, February 24, 2010 3:44 PM
To: Manning, Derek CIV USA IMCOM
Subject: Redevelopment of PX and Commissary area, Fort Belvoir
(2010-0161)

Derek,

At this time the DHR does not have any substantive comments on the above project, as we will have to wait until the draft NEPA document is provided. However, we can say that we concur with the delineation of the APE. Also, it appears that there are two cemeteries within the APE. Be aware that there may be unmarked graves in the vicinity and to keep ground disturbing activities as far away from the cemeteries as possible. Please continue to consult once the draft NEPA document is available. Thanks.

Marc

Preserving America's Heritage

February 24, 2010

Jerry L. Blixt
Colonel, US Army
Commanding
US Army Installation Management Command
Headquarters, United States Army Garrison, Fort Belvoir
9820 Flagler Road, Suite 213
ATTN: Directorate of Public Works
Fort Belvoir, VA 22060-5928

Ref: ***Coordination of National Historic Preservation Act Compliance with the National Environmental Policy Act for the Redevelopment of the Post Exchange and Commissary Area Fort Belvoir, Fairfax County, Virginia***

Dear Colonel Blixt:

On February 12, 2010, the Advisory Council on Historic Preservation (ACHP) received Fort Belvoir's notification pursuant to Section 800.8(c) of the ACHP's regulations, "Protection of Historic Properties" (36 CFR Part 800). We appreciate receiving your notification, which establishes that Fort Belvoir will use the process and documentation required of the National Environmental Policy Act (NEPA) to comply with Section 106 of the National Historic Preservation Act in lieu of the procedures set forth in 36 CFR §§ 800.3 through 800.6.

In addition to notification to the ACHP, Fort Belvoir must also notify the Virginia State Historic Preservation Officer (SHPO) and meet the standards in Section 800.8(c)(1)(i) through (v) for the following:

- identifying consulting parties;
- involving the public;
- identifying historic properties and assessing the undertaking's effects on historic properties; and
- consulting regarding the effects of the undertaking on historic properties with the SHPO/Tribal Historic Preservation Officer (THPO), Indian tribes that might attach religious and cultural significance to affected historic properties, other consulting parties, and the ACHP, where appropriate, during NEPA scoping, environmental analysis, and the preparation of NEPA documents.

ADVISORY COUNCIL ON HISTORIC PRESERVATION
1100 Pennsylvania Avenue NW, Suite 803 • Washington, DC 20004
Phone: 202-606-8503 • Fax: 202-606-8647 • achp@achp.gov • www.achp.gov

To meet the requirement to consult with the ACHP as appropriate, Fort Belvoir should notify the ACHP in the event Fort Belvoir determines, in consultation with the SHPO/THPO and other consulting parties, that the proposed undertaking(s) may adversely affect historic properties listed, or eligible for listing, on the National Register of Historic Places. The regulations do not specifically require that an agency submit a NEPA document to the ACHP. However, keep in mind that, in the case of an objection from the ACHP or another consulting party, Sections 800.8(c)(2)(ii) and (c)(3) provide for ACHP review of a NEPA document to determine whether preparation of the NEPA document has met the standards set forth in Section 800.8(c)(1) and/or to evaluate whether the substantive resolution of the effects on historic properties proposed in a NEPA document is adequate.

If Fort Belvoir's determination of adverse effect will be documented in a NEPA document, we request that you notify us of the adverse effect and provide adequate documentation for its review. The ACHP's decision to review a NEPA document will be based on the applicability of the criteria in Appendix A of the ACHP's regulations.

Thank you for your notification pursuant to Section 800.8(c). If you have any questions or if we may be of assistance, please contact Ms. Katharine R. Kerr at (202) 606-8534 or via e-mail at kkerr@achp.gov.

Sincerely,

Caroline D. Hall
Assistant Director
Federal Property Management Section
Office of Federal Agency Programs