

**DAVISON ARMY AIRFIELD HAZARDOUS TREE REMOVAL  
ENVIRONMENTAL ASSESSMENT**



**U.S. ARMY GARRISON FORT BELVOIR**

**VIRGINIA**

**JUNE 2016**



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**Draft Finding of No Significant Impact**  
Davison Army Airfield Hazardous Tree Removal  
U.S. Army Garrison, Fort Belvoir  
Directorate of Public Works  
Fort Belvoir, Virginia

**Name of Action:** Davison Army Airfield (DAAF) Hazardous Tree Removal

**Description of Proposed Action and Need:** The Proposed Action entails the removal of trees on DAAF airfield proper that violate the primary surface, approach-departure clearance surface, transitional surface, taxiway clearance, and apron clearance safety areas to ensure pilot safety and to comply with regulatory guidance outlined in Unified Facilities Criteria (UFC) 3-260-01, Airfield and Heliport Planning Design, and Federal Aviation Regulation (FAR) Part 77.

In accordance with UFC 3-260-01, Airfield and Heliport Planning Design, trees that project into imaginary surfaces must be removed or lowered to a distance that does not violate airfield and airspace criteria. Imaginary surfaces are surfaces in space established around airfields in relation to runway(s), helipad(s), or helicopter runway(s) that are designed to define the obstacle free airspace around the airfield. The imaginary surfaces for Department of Defense (DOD) airfields are the primary surface, the approach-departure clearance surface, the transitional surface, the inner horizontal surface, the conical surface, and the outer horizontal surface. Under the Proposed Action, Fort Belvoir would remove trees that encroach the imaginary surface creating a hazardous condition.

The Proposed Action is needed for safety and compliance purposes. During the 2012 Installation Management Command (IMCOM) Quality Assurance Evaluation, 2013 Airfield Certification and Safety Inspection, and 2014 United States Army Aeronautical Service Airfield Waiver Package review, it was determined that DAAF was not in compliance with regulatory guidance due to trees that penetrate the imaginary surfaces and create hazardous obstructions to aviation operations around the airfield.

Trees would be removed from five sections of DAAF by topping or cutting: 24 trees in the Northeast Section, 8 trees in the West Section, 2.5 acres of tree removal in the Northwest Section, 9.2 acres of tree removal in the Southwest Section, and 4.7 acres of tree removal in the Southeast Section. The stumps would be left in place. In compliance with the Federal Emerald Ash Borer quarantine (7 Code of Federal Regulations [CFR] 301.53), all trees removed for this project would be chipped or taken to landfills within the quarantine zone.

**Alternatives:** The Environmental Assessment evaluated the Proposed Action and the No Action Alternatives. Implementation of the No Action Alternative would not meet the safety and compliance requirements of UFC 3-260-01 or FAR Part 77.

**Environmental Consequences:** The EA, which is attached hereto and incorporated by reference into this Finding of No Significant Impact (FNSI), examines the potential effects of the Proposed Action and the No Action Alternative on the following resource areas: air quality, water resources, biological resources, and coastal zone. No impact or negligible impacts to the following resources are anticipated and were not further analysed in the EA: land use; noise; geology and topography; cultural resources; socioeconomics; environmental justice; traffic and transportation; utilities; hazardous materials and wastes; and visual and aesthetic resources.

**Summary of Environmental Impacts:** It is anticipated that the Proposed Action would result in no or negligible impacts to land use; noise; geology; topography; cultural resources; socioeconomics; environmental justice; traffic and transportation; utilities; hazardous materials and wastes; visual and aesthetic resources; ground water; floodplains; rare, threatened, and endangered species; and the coastal zone. Minor impacts to air quality would be anticipated from the use of equipment for the tree cutting. Minor impacts would be anticipated to surface water with regard to potential for erosion due to use of heavy machinery and from the loss of tree land cover that could result in increased stormwater runoff; all appropriate Virginia Stormwater permit requirements would be followed and appropriate temporary erosion and sediment control measures and stormwater management planning would determine the appropriate best management practices to minimize these impacts. Minor impacts would be anticipated to water resources where tree cutting activities would take place in wetland areas and permanently convert palustrine forested wetlands to palustrine emergent wetlands; this impact would be mitigated through purchase of wetland mitigation credits. Minor temporary impacts from bringing vehicles into wetland areas for tree cutting would be minimized through the use of deck mats that prevent compaction and rutting but are considered temporary fill in the wetlands. Minor impacts to biological resources would be anticipated from the loss of trees, though the adjacent forested habitat would remain intact. Minor impacts are expected to occur from trees being removed in the resource protection area. Minor impacts to wildlife and wildlife habitat from the removal of trees that would convert forested habitat to shrub habitat are expected. Tree cutting activities would take place outside of the northern long-eared bat time of year restriction to avoid impacts. No significant cumulative impacts are anticipated. No significant impacts on human health or the environment are expected to result from the Proposed Action.

**Notice of Availability:** A Notice of Availability was published on June 22<sup>nd</sup> in the Mount Vernon Voice and on June 23<sup>rd</sup> in the Springfield Connection and the Mount Vernon Gazette with comments due on July 30<sup>th</sup>, 2016. Copies of the draft EA and draft FNSI were available for review at the Van Noy Library, Fort Belvoir, Virginia; the Lorton Branch of the Fairfax County Library in Lorton, Virginia; and the Sherwood Regional Branch, and the Kingstowne Branch of the Fairfax County Library in Alexandria, Virginia.. A copy of this notice and the Environmental Assessment can be viewed at <http://www.belvoir.army.mil/envirodocssection2.asp>.

**Response to Comments:** Comments from federal, state, and local agencies and the public received during the public review period will be considered by Fort Belvoir for inclusion into the Final Environmental Assessment. For more information, contact the Fort Belvoir Directorate of Public Works, Environmental and Natural Resources Division at 703-806-3193.

**Conclusion:** Pursuant to the Council on Environmental Quality (CEQ) regulations; Title 40,CFR Section 1500-1508 regarding procedural implementation of the National Environmental Policy Act (NEPA) of 1969; and implemented for the Army by Title 32 CFR 651, Environmental Analysis of Army Actions, it is anticipated that the Proposed Action would not have a significant effect on the environment and that this FNSI is appropriate. An environmental impact statement (EIS) will not be prepared.

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Michelle D. Mitchell  
Colonel, AG  
Commanding

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Date

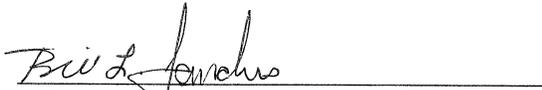
**DAVISON ARMY AIRFIELD HAZARDOUS TREE REMOVAL  
ENVIRONMENTAL ASSESSMENT**

Reviewed by:  
U.S. Army Garrison Fort Belvoir



Felix M. Mariani  
Chief, Environmental and Natural Resources Division

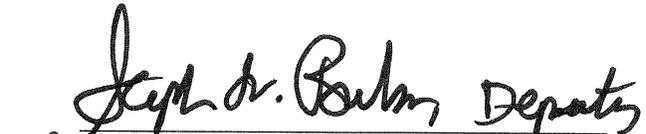
Recommended for Approval:  
U.S. Army Garrison Fort Belvoir



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Bill Sanders  
Director, Public Works

Approved by:  
U.S. Army Garrison Fort Belvoir



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~~for~~ Michelle D. Mitchell  
Colonel, U.S. Army  
Garrison Commander



# ENVIRONMENTAL ASSESSMENT

**Lead Agency:** Department of Army

**Title of Proposed Action:** Environmental Assessment for the Davison Army Airfield Hazardous Tree Removal at Fort Belvoir, Virginia

**Affected Jurisdiction:** Fort Belvoir, Virginia

**Prepared By:** Directorate of Public Works, Fort Belvoir, Virginia

**Approved By:** Colonel Michelle D. Mitchell, Commander, Fort Belvoir, Virginia

**Abstract:** This environmental assessment (EA) analyzes and documents the impacts of the Proposed Action to remove hazardous trees at the Davison Army Airfield (DAAF) at Fort Belvoir. A No Action Alternative is also evaluated to serve as a baseline against which the impacts of the Proposed Action are evaluated. None of the predicted impacts of the Proposed Action would result in significant impacts at Fort Belvoir. Best management practices, however, would be employed to reduce or minimize impacts. Adverse impacts to wetland resources would be minimized through use of deck mats, which are a temporary impact but would prevent compaction and rutting, and permanent impacts would be mitigated through purchase of wetland mitigation credits. As a result, it is anticipated that preparation of an environmental impact statement is not required and a Finding of No Significant Impact (FNSI) will be published in accordance with the National Environmental Policy Act of 1969.

**Review Period:** Interested parties are invited to review and comment on the EA and draft FNSI during a 30 day period. Please submit any comments to Commander, U.S. Army Garrison Fort Belvoir, ATTN: Directorate of Public Works, Building 1442, 9430 Jackson Loop, Fort Belvoir, VA 22060-5116 or email your comments to [imcom.fortbelvoir.dpw.environmental@us.army.mil](mailto:imcom.fortbelvoir.dpw.environmental@us.army.mil). For further information, contact Mr. Felix Mariani, Chief of Environmental and Natural Resources Division at (703) 806-4007. The EA and draft FNSI were available for review on the internet at:

<http://www.belvoir.army.mil/envirodocssection2.asp>.

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

Van Noy Library  
5966 12th St., Building 1024  
Fort Belvoir, VA 22060

Fairfax County Library  
Lorton Branch  
9520 Richmond Highway  
Lorton, VA 22079-2124

Fairfax County Library  
Sherwood Regional Branch  
2501 Sherwood Hall Lane  
Alexandria, VA 22306-2799

Fairfax County Library  
Kingstowne Branch  
6500 Landsdowne Centre  
Alexandria, VA 22315-5011



## EXECUTIVE SUMMARY

### ES. 1 INTRODUCTION

Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, and 32 Code of Federal Regulations (CFR) Part 65, Fort Belvoir has prepared an Environmental Assessment (EA) to evaluate potential environmental and cultural effects associated with the proposed removal or topping of trees and shrubs on the Davison Army Airfield (DAAF) that violate the primary surface, approach-departure clearance surface, transitional surface, taxiway clearance, and apron clearance safety areas to comply with regulatory guidance outlined in the Federal Aviation Administration (FAA) flight safety criteria, Federal Aviation Requirement (FAR) Part 77, and the Unified Facilities Criteria 3-260-01, Airfield and Heliport Planning and Design. This EA has been prepared in accordance with NEPA (Title 42, United States Code [USC] §4321 et seq.), NEPA-implementing regulations of the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] Parts 1500–1508), and the Army's NEPA-implementing regulations (32 CFR Part 651, Environmental Analysis of Army Actions). This EA was prepared concurrently with and integrated with environmental impact analyses and related surveys and studies required by the Fish and Wildlife Coordination Act (16 USC §661 et seq.), the National Historic Preservation Act of 1966 (16 USC 470 et seq.), the Endangered Species Act of 1973 (16 USC §1531 et seq.), and other environmental review laws (and their implementing regulations), and Executive Orders.

The DAAF is located along U.S. Route 1 on the North Post of Fort Belvoir. It is a Class A Army airfield equipped with an adjacent heliport that accommodates fixed and rotary wing aircraft. The mission of the DAAF is to transport passengers and freight for the Army and the Department of Defense (DOD). This facility is also used for training. The airfield contains five repair shops, maintenance aprons, storage areas for fuel and other flammable materials, and fuel dispensing facilities.

### ES. 2 PROPOSED ACTION

The Proposed Action entails the removal of trees on DAAF airfield proper that violate the primary surface, approach-departure clearance surface, transitional surface, taxiway clearance, and apron clearance safety areas to ensure pilot safety and to comply with regulatory guidance outlined in UFC 3-260-01, Airfield and Heliport Planning Design, and FAR Part 77.

In accordance with UFC 3-260-01, trees that project into imaginary surfaces must be removed or lowered to a distance that does not violate airfield and airspace criteria. Fort Belvoir would remove trees that encroach the imaginary surface creating a hazardous condition. Imaginary surfaces are surfaces in space established around airfields in relation to runway(s), helipad(s), or helicopter runway(s) that are designed to define the obstacle free airspace around the airfield. The imaginary surfaces for DOD airfields are the primary surface, the approach-departure clearance surface, the transitional surface, the inner horizontal surface, the conical surface, and the outer horizontal surface.

Trees would be removed from five sections of DAAF by topping or cutting: 24 trees in the Northeast Section, 8 trees in the West Section, 2.5 acres of tree removal in the Northwest Section, 9.2 acres

of tree removal in the Southwest Section, and 4.7 acres of tree removal in the Southeast Section. The stumps would be left in place. In compliance with the Federal Emerald Ash Borer quarantine (7 CFR 301.53), all trees removed for this project would be chipped or taken to landfills within the quarantine zone.

### **ES. 3 PURPOSE AND NEED**

The purpose of the Proposed Action is to create a less hazardous airspace to ensure pilot safety while balancing the needs of sensitive environmental resources and the surrounding human environment. The proposed action is needed to ensure compliance with FAR Part 77 and UFC 3-260-01. During the 2012 Installation Management Command (IMCOM) Quality Assurance Evaluation, 2013 Airfield Certification and Safety Inspection, and 2014 United States Army Aeronautical Service Airfield Waiver Package review, it was determined that DAAF was not in compliance with regulatory guidance due to trees that penetrate the imaginary surfaces and are obstructions that create a hazard to aviation operations around the airfield.

### **ES. 4 ALTERNATIVES**

This Environmental Assessment evaluates the Proposed Action and the No Action Alternatives. Implementation of the No Action Alternative would not meet the safety and compliance requirements of UFC 3-260-01 or FAR Part 77.

An alternative considered but eliminated from further consideration included elements of the Proposed Action as well as clearing additional trees, grading and filling wetlands. This alternative was eliminated as it involves clearing trees and grading topography that does not pose an immediate threat of obstruction to the imaginary surface, and it involved negative environmental impacts.

### **ES. 5 ENVIRONMENTAL CONSEQUENCES**

**Environmental Consequences:** This EA examines the potential effects of the Proposed Action and the No Action Alternative on the following resource areas: air quality, water resources, biological resources, and coastal zone. It was found that there would be no impact or negligible impact on the following resources, which were not further analysed in the EA: land use and zoning; noise; topography, soils and geology; cultural resources; socioeconomics; traffic and transportation; utilities; hazardous materials and waste; and visual and aesthetic resources.

**Summary of Environmental Impacts:** It is anticipated that the Proposed Action would result in no or negligible impacts to land use; noise; geology; topography; cultural resources; socioeconomics; environmental justice; traffic and transportation; utilities; hazardous materials and wastes; visual and aesthetic resources; ground water; floodplains; rare, threatened, and endangered species; and the coastal zone. Minor impacts to air quality would be anticipated from the use of equipment and transportation for the tree cutting. Minor impacts would be anticipated to surface water with regard to potential for erosion due to use of heavy machinery and from the loss of tree land cover that could result in increased stormwater runoff; all appropriate Virginia Stormwater and Erosion and Sediment Control permit requirements would be followed and appropriate temporary erosion and sediment control measures and permanent stormwater best management practices

would be implemented to minimize these impacts. Minor impacts would be anticipated to water resources where tree cutting activities would take place in wetland areas and permanently convert palustrine forested wetlands to palustrine emergent wetlands; this impact would be mitigated through purchase of wetland mitigation credits. Minor temporary impacts from bringing vehicles into wetland areas for tree cutting would be minimized through the use of deck mats that prevent compaction and rutting but are considered temporary fill in the wetlands. Minor impacts to biological resources would be anticipated from the loss of trees, though the adjacent forested habitat would remain intact. Minor impacts are expected to occur from trees being removed in the resource protection area. Wildlife and wildlife habitat from the removal of trees that would convert forested habitat to shrub habitat is also expected to be a minor impact. Tree cutting activities would take place outside of the northern long-eared bat active period to avoid impacts. No significant cumulative impacts are anticipated. No significant impacts on human health or the environment are expected to result from the Proposed Action.

## **ES. 6 CONCLUSIONS**

Pursuant to CEQ regulations, 40 CFR Parts 1500-1508 regarding procedural implementation of the NEPA, and implemented for the Army by 32 CFR Part 651, Environmental Analysis of Army Actions, it is anticipated that the Proposed Action would not have a significant effect on the environment and that a Finding of No Significant Impact (FNSI) is appropriate. An environmental impact statement (EIS) will not be prepared.

**Table ES-1: Summary of Impacts of the Proposed Action and the No Action Alternative**

<b>Resource</b>	<b>Resource Evaluated in Detail in the EA</b>	<b>Proposed Action</b>	<b>No Action Alternative</b>
<b>Air Quality</b>	Yes	Minor temporary impacts from equipment.	No impacts
<b>Ground Water</b>	Yes	No impacts	No impacts
<b>Surface water</b>	Yes	Minor impacts from heavy machinery use during tree cutting activity and from permanent loss of trees. Temporary erosion and sediment control measures would be employed during tree removal activity and stormwater management best management practices would be employed, as appropriate, to address the change in land cover that could result in increased stormwater quantity and water quality concerns.	No impacts
<b>Floodplains</b>	Yes	No impacts	No impacts
<b>Wetlands</b>	Yes	Minor permanent adverse impacts would occur from converting 1.31 acres of forested wetland to emergent wetland and temporary impact to 1.31 acres of palustrine emergent wetland would occur from placing deck mats in the wetlands to prevent compaction and rutting from vehicle access to the trees to be removed. Mitigation would be provided by the purchase of credits from a mitigation bank at a one to one ratio.	No impacts

<b>Resource</b>	<b>Resource Evaluated in Detail in the EA</b>	<b>Proposed Action</b>	<b>No Action Alternative</b>
<b>Vegetation</b>	Yes	Minor adverse impacts due to the removal of trees along the edges of forests.	No impacts
<b>Wildlife and Wildlife Habitat</b>	Yes	Minor adverse impacts through the removal of trees from the project areas and converting forested habitat to shrub habitat.	No impacts
<b>Rare, threatened and endangered species</b>	Yes	No impacts. Tree removal activities would take place outside of the active period for the northern long-eared bat.	No impacts
<b>Coastal Zone</b>	Yes	The Proposed Action would be consistent with the Virginia Coastal Zone Management Policy.	No impacts.
<b>Land Use</b>	No	No impacts	No impacts
<b>Noise</b>	No	Negligible impacts during the tree removal process.	No impacts
<b>Geology and Topography</b>	No	No impacts	No impacts
<b>Cultural Resources</b>	No	No impacts	No Impacts
<b>Socioeconomics</b>	No	Negligible beneficial impacts during tree topping through personnel hired to complete the Proposed Action.	No impacts
<b>Environmental Justice</b>	No	No impacts	No impacts

<b>Resource</b>	<b>Resource Evaluated in Detail in the EA</b>	<b>Proposed Action</b>	<b>No Action Alternative</b>
<b>Traffic and Transportation</b>	No	Negligible impacts due to minimal traffic increases from the Proposed Action. Minor temporary impact to air traffic while trees are being cut and transported, long term beneficial impact for air traffic by removing obstructions.	Long term adverse impacts to air traffic due to airspace obstructions
<b>Utilities</b>	No	No impacts	No impacts
<b>Hazardous Materials and Wastes</b>	No	Negligible impacts generated by the Proposed Action in the form of logs, wood chips and other wood products. In compliance with the Federal Emerald Ash Borer quarantine, all trees removed for this project would be chipped or taken to landfills within the quarantine zone.	No impacts
<b>Visual and Aesthetic Resources</b>	No	Negligible impacts through the removal of trees along the border of the airfield.	No impacts

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## **1.0 PURPOSE AND NEED**

### **1.1 INTRODUCTION**

Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, and 32 Code of Federal Regulations (CFR) Part 65, Fort Belvoir has prepared an Environmental Assessment (EA) to evaluate potential environmental and cultural effects associated with the proposed removal or topping of trees and shrubs on the Davison Army Airfield (DAAF) that violate the primary surface, approach-departure clearance surface, transitional surface, taxiway clearance, and apron clearance safety areas to comply with regulatory guidance outlined in the Federal Aviation Administration (FAA) flight safety criteria, Federal Aviation Requirement (FAR) Part 77, and the Unified Facilities Criteria (UFC) 3-260-01, Airfield and Heliport Planning and Design.

The DAAF is located along U.S. Route 1 on the North Post of Fort Belvoir (Figure 1-1). It is a Class A Army airfield equipped with an adjacent heliport that accommodates fixed and rotary wing aircraft. The mission of DAAF is to transport passengers and freight for the Army and the Department of Defense (DOD). This facility is also used for training. The airfield contains five repair shops, maintenance aprons, storage areas for fuel and other flammable materials, and fuel dispensing facilities.

### **1.2 BACKGROUND**

The DAAF is a 388-acre airfield facility that is comprised of 4,700 linear feet of painted runway, with extensions for overruns on either end bringing the total length to 5,630 feet. The runway is 81 feet wide, made of asphalt, and is located parallel to a 4,900-foot extended taxiway. A smaller concrete runway that is 450 feet long and 40 feet wide is used for the helipad (USAG Fort Belvoir, 2001).

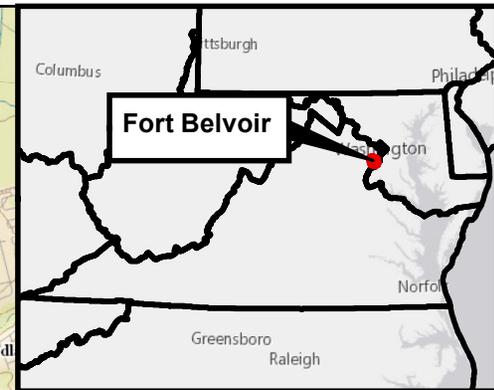
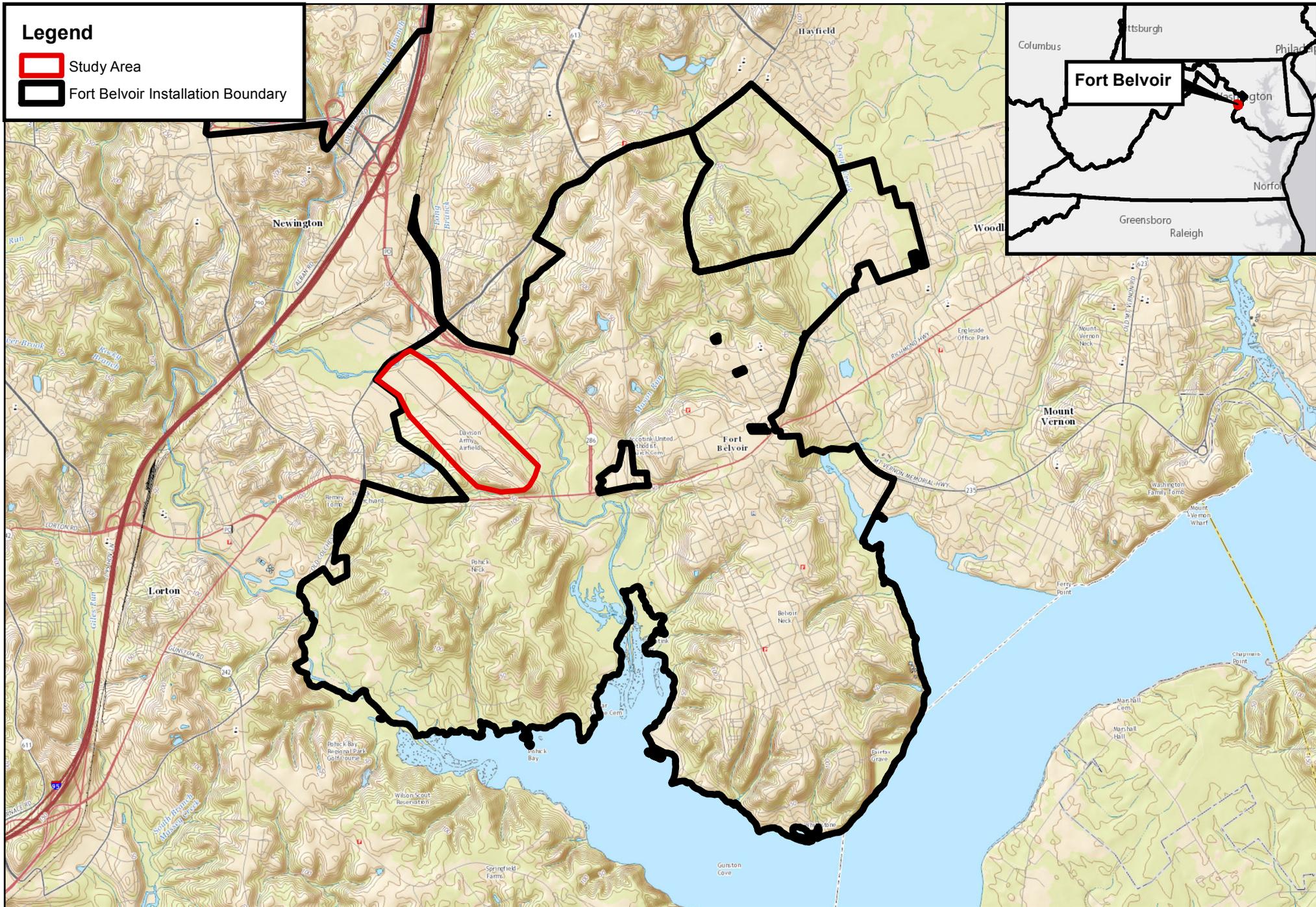
The runways and two helicopter landing pads require adequate clear zones (areas free of trees and other obstructions) to meet safety requirements. Vegetation surrounding the landing areas is maintained in a manner that does not encourage wildlife (e.g., deer, geese, and other birds). Aircraft are restricted to a minimum vectoring altitude of 2,000 feet over the Accotink Bay Wildlife Refuge (USAG Fort Belvoir, 2001).

In accordance with UFC 3-260-01, trees that project into imaginary surfaces must be removed or lowered to a distance that does not violate airfield and airspace criteria. Fort Belvoir would remove trees that encroach the imaginary surface creating a hazardous condition. Imaginary surfaces are surfaces in space established around airfields in relation to runway(s), helipad(s), or helicopter runway(s) that are designed to define the obstacle free airspace around the airfield. The imaginary surfaces for DOD airfields are the primary surface, the approach-departure clearance surface, the transitional surface, the inner horizontal surface, the conical surface, and the outer horizontal surface.

The ground surface within these areas must be clear of fixed or mobile objects, and graded to the requirements of UFC 3-260-01. Fixed obstacles include man-made or natural features such as

**Legend**

-  Study Area
-  Fort Belvoir Installation Boundary



N



1 inch = 4,500 feet



**Project Location Map**  
*Fort Belvoir, Virginia*

Source: Basemap USGS and ESRI 2016, Boundary Fort Belvoir GIS Data 2016

**Figure 1-1**

buildings, trees, rocks, terrain irregularities and any other features constituting possible hazards to moving aircraft.

In addition, the FAA, in the FAR Part 77 *Objects Affecting Navigable Airspace*, has established standards for determining obstructions to navigable airspace, and their effect on the safe and efficient use of airspace. The FAA similarly defines airspace that must be kept free of obstruction. The surface dimensions that are defined in UFC 3-260-01 are equivalent or more restrictive than the FAR Part 77 dimensions, therefore compliance with the UFC will result in compliance with FAR Part 77 and ensure elimination of obstructions to ensure safety.

During the 2012 Installation Management Command (IMCOM) Quality Assurance Evaluation, 2013 Airfield Certification and Safety Inspection, and 2014 United States Army Aeronautical Service Airfield Waiver Package review, it was determined that DAAF was not in compliance with regulatory guidance due to trees that penetrate the imaginary surfaces and are obstructions that create a hazard to aviation operations around the airfield.

### **1.3 PURPOSE AND NEED FOR THE PROPOSED ACTION**

The purpose of the Proposed Action is to create a less hazardous airspace to ensure pilot safety while balancing the needs of sensitive environmental resources and the surrounding human environment. The proposed action is needed to ensure compliance with FAR Part 77 and UFC 3-260-01. During the 2012 Installation Management Command (IMCOM) Quality Assurance Evaluation, 2013 Airfield Certification and Safety Inspection, and 2014 United States Army Aeronautical Service Airfield Waiver Package review, it was determined that DAAF was not in compliance with regulatory guidance due to trees that penetrate the imaginary surfaces and are obstructions that create a hazard to aviation operations around the airfield.

### **1.4 THE NEPA PROCESS**

NEPA established the national policy for the environment and the Council on Environmental Quality (CEQ), and provides for the consideration of environmental issues in federal agency planning and decision-making. To implement the NEPA policies, CEQ promulgated *the Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR Parts 1500-1508, referred to as the CEQ Regulations). Both NEPA and the CEQ Regulations require that federal agencies establish procedures to comply with the intended purpose of NEPA. Both also require federal agencies to encourage and facilitate public involvement as part of the NEPA process.

Army procedures to comply with NEPA are set forth in 32 CFR Part 651, *Environmental Analysis of Army Actions*. As such, these regulations establish the Army policies and responsibilities to integrate environmental considerations early in the decision making process. Instructions on preparing NEPA documentation and carrying out public and agency coordination are provided in the subject regulations.

Under the guidance provided in NEPA and in 32 CFR Part 651, either an Environmental Impact Statement (EIS) or an EA must be prepared for any federal action. Actions that are determined to be exempt by law, emergencies, or categorically excluded do not require the preparation of an EA

or EIS. If an action may significantly affect the environment, an EIS would be prepared. An EA provides sufficient evidence and analysis for determining whether or not to prepare an EIS. The contents of an EA include the need for the proposed action, alternatives to the proposed action, environmental impacts of the proposed action and alternatives; and documentation of agency coordination.

An evaluation of the environmental consequences of the proposed action and alternatives includes direct, indirect, and cumulative effects, as well as qualitative and quantitative (where possible) assessment of the level of significance of these effects. The EA results in either a Finding of No Significant Impact (FNSI) or a Notice of Intent (NOI) to prepare an EIS. If Fort Belvoir determines that this proposed action may have a significant impact on the quality of the human environment, then an EIS will be prepared.

## **1.5 AGENCY AND PUBLIC PARTICIPATION**

### **1.5.1 Scoping**

Fort Belvoir initiated coordination early in the development of the EA by conducting agency scoping in compliance with Section 7 of the Endangered Species Act. Fort Belvoir corresponded with the U.S. Fish and Wildlife Service (USFWS), the Virginia Department of Conservation and Recreation (VDCR), and the Virginia State Historic Preservation Office (SHPO) regarding the potential impacts from the Proposed Action on rare, threatened and endangered species. The correspondence is included in Appendix A.

### **1.5.2 EA Public Review**

A Public Notice was released in May 2016 to appropriate local, state, and federal agencies to provide the opportunity for their review of the Draft EA and draft FNSI. Copies of the Public Notice, coordination letters, mailing list, and response letters are included in Appendix A.

Public participation opportunities with respect to this EA and decision making on the Proposed Action are guided by 32 CFR Part 651. The EA was made available to the public for 30 days, along with a draft FNSI. A Notice of Availability was published on June 22<sup>nd</sup> in the Mount Vernon Voice and on June 23<sup>rd</sup> in the Springfield Connection and the Mount Vernon Gazette with comments due on July 30<sup>th</sup>, 2016. Copies of the draft EA and draft FNSI are available for review at the Van Noy Library, Fort Belvoir, Virginia; the Lorton Branch of the Fairfax County Library in Lorton, Virginia; and the Sherwood Regional Branch, and the Kingstowne Branch of the Fairfax County Library in Alexandria, Virginia.

## **1.6 ENVIRONMENTAL LAWS AND REGULATIONS**

Army decisions that affect environmental resources and conditions occur within the framework of numerous laws, regulations, and Executive Orders (EO). Some of these authorities prescribe standards for compliance while others require specific planning and management actions to protect environmental values potentially affected by Army actions. These include, but are not limited to: the Clean Air Act; Clean Water Act (CWA); Noise Control Act; Farmland Protection Policy Act; Endangered Species Act; Migratory Bird Treaty Act; National Historic Preservation Act (NHPA);

Act; American Indian Religious Freedom Act; Resource Conservation and Recovery Act; EO 11988, *Floodplain Management*; EO 11990, *Protection of Wetlands*; EO 13508, *Chesapeake Bay Protection and Restoration*; EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*; EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. Key provisions of appropriate statutes and EOs are described in more detail throughout the text of this EA.

This EA has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended (Title 42, United States Code [USC] §4321 et seq.), NEPA-implementing regulations of the Council on Environmental Quality (40 Code of Federal Regulations [CFR] Parts 1500–1508), and the Army’s NEPA-implementing regulations (32 CFR Part 651, *Environmental Analysis of Army Actions*). This EA was prepared concurrently with and integrated with environmental impact analyses and related surveys and studies required by the Fish and Wildlife Coordination Act (16 USC §661 et seq.), the National Historic Preservation Act of 1966 (16 USC 470 et seq.), the Endangered Species Act of 1973 (16 USC §1531 et seq.), and other environmental review laws (and their implementing regulations), and Executive Orders.

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## **2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES**

### **2.1 PROPOSED ACTION**

The Proposed Action entails the removal of trees and shrubs on DAAF airfield proper that violate the primary surface, approach-departure clearance surface, transitional surface, taxiway clearance, and apron clearance safety areas to comply with regulatory guidance outlined in UFC 3-260-01. Trees would be removed from five sections of DAAF that are described below and illustrated on Figure 2-1:

#### **1. Southeast Section**

All trees would be cleared within the Southeast Section of the airfield, within upland and wetland areas. The tree removal in this section would result in permanent conversion of 0.072 acres of palustrine forested wetlands to palustrine emergent wetlands. The area will be flagged to distinguish clearing areas and prevent incidental impacts. Tree trunks and crowns would need to be cut with care and caution, and all tree cuttings in the wetland area would need to be removed from the site. No cut trees, including limbs, can be placed or left in the wetland, and no grubbing nor grading are permissible in this area. When using heavy equipment, deck mats would be necessary to prevent equipment from sinking on the site and causing compaction and rutting in the wetland areas. Stumps will be left in place. Following clearing, at an appropriate time of year, wetlands seed mix would be spread. The Southeast Section is approximately 4.7 acres.

#### **2. Northeast Section**

The Northeast Section is approximately 3.5 acres and is within the area along the Accotink Creek, adjacent to the Northeast corner of the runway, the 24 tallest trees would be selectively removed from the upland area. Stumps would be left in place.

#### **3. Northwest Section**

Within the easternmost section of this area, all trees would be removed from a palustrine forested wetland. The tree removal in this section would result in permanent conversion of 1.234 acres of palustrine forested wetlands to palustrine emergent wetlands. The area will be flagged to distinguish clearing areas and prevent incidental impacts. Tree trunks and crowns would need to be cut with care and caution, and all tree cuttings in the wetland area would need to be removed from the site. No cut trees, including limbs, can be placed or left in the wetland, and no grubbing nor grading are permissible in this area. When using heavy equipment, deck mats would be necessary to prevent equipment from sinking on the site and causing compaction and rutting in the wetland areas. Stumps will be left in place. Following clearing, at an appropriate time of year, wetlands seed mix would be spread. The Northwest Section is approximately 2.5 acres.

4. West Section:

Approximately eight trees would be removed that are not shielded by buildings in the developed area west of DAAF runway.

5. Southwest Section:

On the hill located in the southwest section of the runway, all trees would be cleared. The Southwest Section is approximately 9.2 acres.

In compliance with the Federal Emerald Ash Borer quarantine (7 CFR 301.53), all trees removed for this project would be chipped or taken to landfills within the quarantine zone.

## 2.2 ALTERNATIVES

### 2.2.1 No Action Alternative

NEPA regulations refer to the continuation of the present course of action without the implementation of, or in the absence of, the Proposed Action, as the “No Action alternative.” Inclusion of the No Action alternative is the baseline against which Federal actions are evaluated, and is prescribed by the CEQ regulations and 32 CFR 651.

Under the No Action alternative, Fort Belvoir would forego the proposed tree removal and topping, thereby maintaining the current unsafe conditions and intrusions into the imaginary surface established around the airfield runway.

Implementing the No Action alternative would not satisfy the purpose and need to provide safe navigation and compliance with the regulatory guidance outlined in the FAR Part 77 and UFC 3-260-01.

## 2.3 ALTERNATIVE CONSIDERED BUT ELIMINATED

One additional alternative was considered for clearing obstructions from the imaginary surfaces around the airfield, but was eliminated from further consideration in this EA. The eliminated alternative was similar to the proposed action for the Northeast and West sections, but differed for the Southeast, Northwest, and Southwest sections:

### 1. Southeast Section

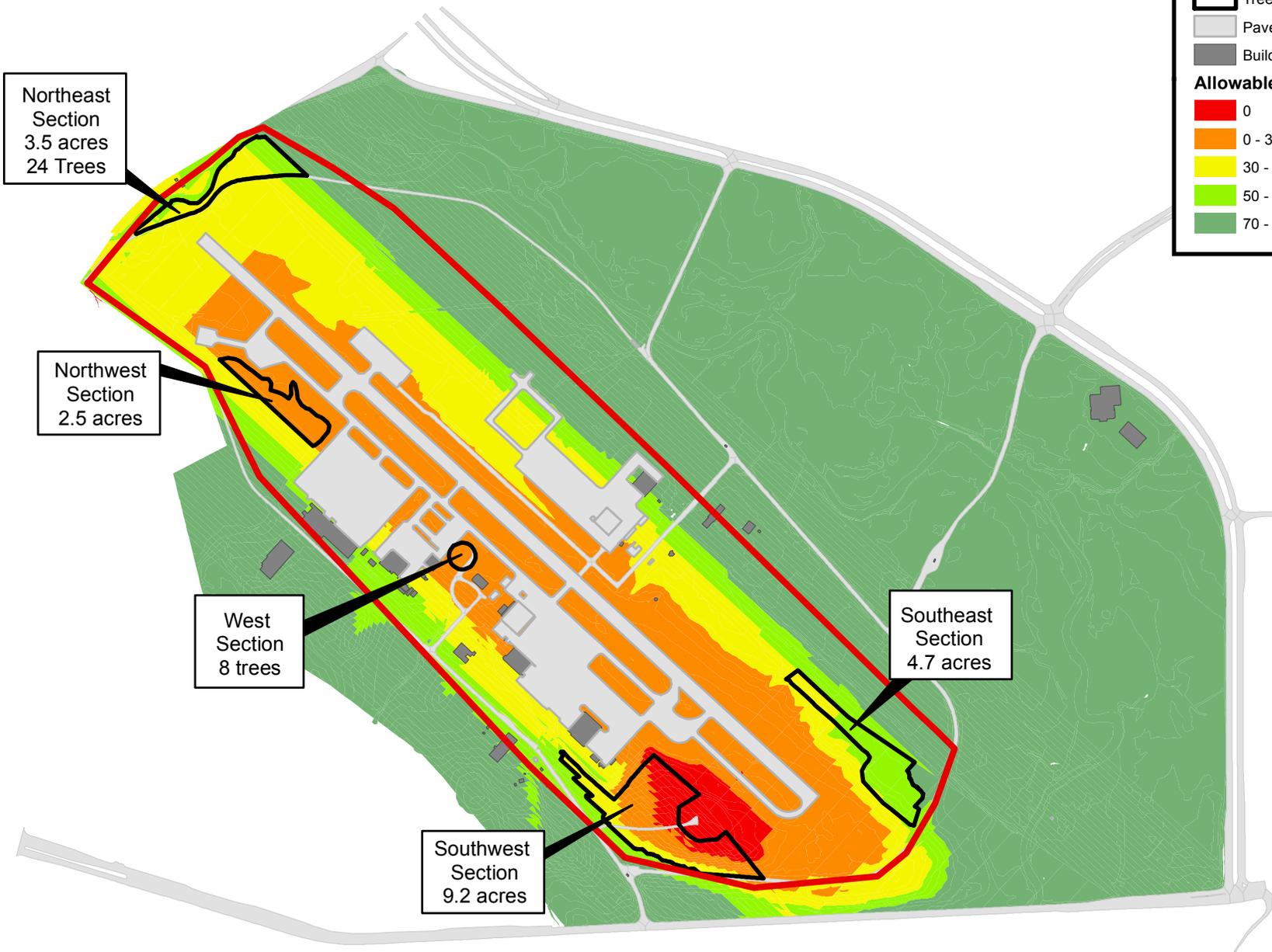
All trees would be cleared and grubbed, including stump removal, within the Southeast Section of the airfield. The entire Southeast Section would be graded and filled, to include the wetland area.

**Legend**

- Study Area
- Tree Removal Areas
- Pavement
- Buildings

**Allowable Tree Height in Feet**

- 0
- 0 - 30
- 30 - 50
- 50 - 70
- 70 - 215



N

1 inch = 1,000 feet

0 







 Feet

1,500

**Tree Removal Areas**  
*Fort Belvoir, Virginia*  
 Source: Fort Belvoir GIS Data, 2016

**Figure 2-1**

## 2. Northwest Section

In addition to the work described in the Proposed Action, an additional 2.7 acres of canopy trees would be removed from a wetland area to the west of the work described in the Proposed Action. Low growing tree and shrub species would be preserved.

## 3. Southwest Section:

All trees on the hill in the Southwest Section of the airfield would be cleared and the hill would be leveled and graded. The soil from the hill would be used for fill and grading at the wetland area in the Southeast Section.

While this alternative would involve clearing additional trees and leveling some topography on the airfield, these trees and topography do not pose an immediate threat of obstruction to the imaginary surface. Furthermore, this removal and grading would result in negative impacts. Permanent impacts to wetlands in the Southeast Section would result from the clearing, grubbing, and filling of a wetland area; permanent impacts to wetlands in the Northwest section would result from removing trees that would convert the palustrine forested wetland to a palustrine emergent wetland; and permanent impacts to topography in the Southwest section would result from leveling and grading a hill. For the purposes of compliance with FAR Part 77 and UFC 3-260-01, these actions are not required at this time and this alternative is not evaluated in this EA.

## 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

### 3.1 INTRODUCTION

The purpose of this chapter is to identify the affected environment and to disclose the potential environmental consequences of the Proposed Action and the No Action Alternative.

The affected environment includes the existing conditions of the environmental resources that may be potentially impacted by the alternatives. The first step in describing the affected environment is to establish the geographic area where potential impacts are expected to take place by identifying a study area. The study area is the geographic area where the potential impacts of the alternatives retained for further study are analyzed. The extent of the study area depends upon the environmental resource being evaluated. For the purposes of this EA, the study area is the DAAF with the five sections of proposed tree removal within the DAAF boundary, as illustrated in Figure 2-1.

The potential effects of the alternatives on the affected environment are assessed within this section of the EA. Several terms are used to describe effects, also referred to as impacts, in this document. The effect may be described as positive or adverse. “Positive” means that the alternative would have a beneficial effect on the subject resource. The level of adverse or negative effect is described relative to the established threshold of significance. Adverse or negative impacts described as minimal or minor would have little effect on the resource and therefore would not exceed the applicable threshold of significance. An impact would be described as “significant” if it were to exceed the applicable threshold of significance. The threshold of significance is resource specific and established by considering context and intensity. Both context and intensity are considered because the level of intensity deemed significant may differ based on context. For instance, the threshold of significance for noise impacts would likely be different in a large city as compared to a remote national park.

### 3.2 RESOURCES NOT EVALUATED IN THIS ENVIRONMENTAL ASSESSMENT

To the extent possible, analyses of the various resources presented in this EA are streamlined based on the anticipated level of potential impact. The focus of this EA is on the potential environmental impacts associated with the proposed project to remove or top trees that are obstructions and violate the primary surface, approach-departure clearance surface, transitional surface, taxiway clearance, and apron clearance safety areas of the DAAF to ensure pilot safety while balancing the needs of sensitive environmental resources and the surrounding human environment in compliance with FAR Part 77 and UFC 3-260-01. The following resource areas are not analyzed in this EA because the Proposed Action either has no potential to affect them or the potential impacts would be negligible:

- **Land Use**— In 2007, in response to the 2005 Base Realignment and Closure actions, the United States (U.S.) Department of the Army (Army) updated and amended the land use plan in Fort Belvoir’s 1993 Real Property Master Plan. The *Final Environmental Impact Statement (FEIS) for Implementation of the 2005 Base Realignment and Closure Recommendations and Related Army Actions at Fort Belvoir, Virginia* addressed the

adoption of the amended land use plan as well as the Base Realignment and Closure realignment actions at Fort Belvoir. In 2015, Fort Belvoir's Real Property Master Plan Final Environmental Impact Statement was completed. Implementation of the Proposed Action would not impact current or future land use because tree removal would not change land use designations within DAAF and Fort Belvoir.

Additionally, the National Capital Planning Commission (NCPC) provides planning guidance for federal land and building in the National Capital Region through its document, *Comprehensive Plan for the National Capital: Federal Elements* (NCPC, 2004). NCPC will be afforded the opportunity to review this EA; assess the Proposed Action's compatibility with federal planning goals, guidelines, and initiatives; and provide comments before a decision is made on the final action. As a result, impacts to land use are not analyzed in this EA.

- **Noise**—The Noise Control Act of 1972 (Public Law 92-574) directs federal agencies to comply with applicable federal, state, interstate, and local noise control regulations. Fairfax County Code prohibits creating sounds louder than 55 decibels (dB) in a residential area and 60 dB in a commercial area. It also prohibits creating any excessive noise on any street adjacent to any school, institution of learning, court, or hospital that interferes with its function (Fairfax County Code Section 108-4-1). Construction and demolition activities are, however, exempt from the Fairfax County ordinance if they occur between 7:00 a.m. and 9:00 p.m. The topping and cutting of trees and removal of tree trunks would require use of chainsaws and vehicles that would generate short-term increases in noise within the DAAF; these activities would be performed during the noted hours and would comply with all noise ordinances and regulations; therefore, impacts would be negligible. In addition, noise created by the Proposed Action would be below current day-night average noise levels experienced by persons on the ground underneath the flight patterns of aircraft approaching or taking off from DAAF. No long-term impacts from the Proposed Alternative are anticipated to the noise environment at Fort Belvoir. Therefore, noise impacts are not analyzed in this EA.
- **Geology and Topography**—The natural geologic character and the general topography of the installation would not be impacted under the Proposed Action. No grading or excavation of land is required under the Proposed Action and no long term effects to geology and topography are anticipated. As a result, impacts to geology and topography are not analyzed in this EA.
- **Cultural Resources**—The Proposed Action is not expected to impact cultural resources as no historic properties or archaeological resources were identified adjacent to or within the direct or indirect Area of Potential Effect (APE), as defined by Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. Fort Belvoir evaluated DAAF for eligibility for listing on the National Register of Historic Places and determined the facility was not eligible for listing (Virginia Department of Historic Resources [VDHR] No. , 029-5623, 2009-0716). Section 106 consultation for the Proposed Action was coordinated with the VDHR, Catawba Indian Nation, Eastern Band of Cherokee-Indians, Pamunkey Indian Tribe, Tuscarora Nation of New York, and United Keetoowah Band of

Cherokee Indians in Oklahoma. VDHR concurred with Fort Belvoir's determination of No Historic Properties Affect from the Proposed Action (VDHR File No. 2016-0188); this letter can be found in Appendix A. As no cultural resources are located adjacent to or within the APE for the Proposed Action, and no earth disturbance will occur, no impacts to cultural resources are expected and no further analysis is included in this EA.

- **Socioeconomics**—The Proposed Action to remove hazardous trees from DAAF would not result in changes to population, demographics, income, community services and facilities, or housing. Personnel hired and required to complete the Proposed Action are not likely to change their place of residence. Additionally, the Proposed Action would result in only temporary and negligible additive impacts to the local economy, no long term effects are anticipated. As a result, socioeconomics are not analyzed in this EA.
- **Environmental Justice** — EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations*, directs agencies to address environmental and human health conditions in minority and low-income communities to avoid the disproportionate placement of any adverse effects from federal policies and actions on these populations. Local residents may include low-income populations, but these populations would not be particularly or disproportionately affected by the Proposed Action, as it would be limited to within DAAF. The proposed removal of hazardous trees would not disproportionately effect minority populations or low income communities and thus environmental justice is not analyzed in this EA.
- **Traffic and Transportation**—Implementation of the Proposed Action would require the use of construction vehicles to remove tree debris. It would also require the use of privately owned vehicles to bring the construction crew onto the installation; however; the removal of trees and shrubs on DAAF airfield would contribute less than ten percent of the total traffic stream during the morning and evening peak hours. The increase in traffic created by the Proposed Action would be a negligible impact to the existing traffic patterns, and as a result, transportation is not analyzed in this EA.

Flight and airfield operations could be temporarily impacted when equipment is actively working on areas in close approximation to the runway. All contractors involved with the Proposed Action would receive flight line training, and would be required to update training and certifications accordingly. Long term beneficial impacts to air traffic would be realized from removal of flight obstructions. Although a minor temporary impact would take place to flight operations, implementing the No Action alternative would have a permanent adverse impact by jeopardizing the ability of air traffic to safely conduct missions within DAAF.

- **Utilities**—Implementation of the Proposed Action would not result in the need for any upgrades in utilities that service Fort Belvoir. The Proposed Action would not increase the long-term demand for public utility services and would not affect regional or local water or energy supplies. Any work involving the trimming or removal of trees near overhead electric conductors would be performed by qualified line-clearance arborists. The Proposed Action would not require any short-term or long term amounts of electricity,

water or other resources supplied by the base or by regional utilities; therefore, utilities are not analyzed in this EA.

- **Hazardous Materials and Wastes**—Fort Belvoir conducts its hazardous waste management program in compliance with the Resource Conservation and Recovery Act. The installation has a Hazardous Waste Management/Waste Minimization Plan and a Master Spill Plan. Fort Belvoir complies with EO 13423, *Strengthening Federal Environmental, Energy and Transportation Management* by promoting the use of products to reduce solid and hazardous waste. In addition, the cleaning and maintenance departments have replaced toxic and hazardous materials with environmentally friendly chemicals and adhere to an Integrated Pest Management Plan. Fort Belvoir, Environmental and Natural Resources Division (ENRD), also files annual hazardous material and toxic chemical reports in compliance with the Emergency Planning and Community Right-to-Know Act. The Proposed Action would not generate hazardous waste, but would generate solid waste in the form of logs, wood chips and other wood products derived from trees. In compliance with the Federal Emerald Ash Borer quarantine (7 CFR 301.53), all trees removed for this project would be chipped or taken to landfills within the quarantine zone. It is anticipated that effects from the Proposed Action would be temporary and minimal and therefore are not be analyzed in this EA.
- **Visual and Aesthetic Resources**—The existing aesthetics of DAAF is an open, maintained lawn with buildings and forests around the outer edge of the field. During the tree removal process, equipment to perform the removal would be present and attribute to minor short term impacts. Long term impacts are not anticipated since the aesthetic effects would be minimal and would be consistent with current land uses. The removal of trees is entirely within the boundary of Fort Belvoir and would not affect areas outside of the base. It is anticipated that effects from the Proposed Action would be temporary and minimal and therefore are not be analyzed in this EA.

### 3.3 AIR QUALITY

Air Quality is protected by the Clean Air Act. In the following sections, air quality in and around DAAF are described, applicable laws and regulations are explained, and potential impacts are disclosed. The study area for this analysis includes Fairfax County as a portion of the Washington, D.C., Maryland-Virginia airshed.

#### 3.3.1 Affected Environment

The U.S. Environmental Protection Agency (USEPA) defines ambient air in 40 CFR Part 50 as: “that portion of the atmosphere, external to buildings, to which the general public has access.” In compliance with the 1970 Clean Air Act (CAA) and the 1977 and 1990 CAA Amendments, the USEPA has promulgated National Ambient Air Quality Standards (NAAQS). The NAAQS were enacted for the protection of the public health and welfare, allowing for an adequate margin of safety. To date, the USEPA has issued NAAQS for the following criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), particulate matter (particles with a diameter less than or

equal to a nominal 10 micrometers [PM<sub>10</sub>] and particles with a diameter less than or equal to nominal 2.5 micrometers [PM<sub>2.5</sub>], ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), and lead (Pb).

### 3.3.1.1 Air Quality General Conformity

Federal regulations designate Air Quality Control Regions (AQCRs) in violation of the NAAQS as nonattainment areas. According to the severity of the pollution problem, nonattainment areas can be categorized as marginal, moderate, serious, severe, or extreme. Severity categories have not yet been applied to PM<sub>2.5</sub> nonattainment areas. The USEPA classifies AQCR 47, which includes Fairfax County, as in marginal nonattainment for O<sub>3</sub> and as in nonattainment for PM<sub>2.5</sub>. Fairfax County is in attainment for all other criteria pollutants. AQCR 47 was previously in nonattainment for CO, however, that portion of the airshed does not include Fairfax County.

AQCR 47 is also in the Ozone Transport Region. The Ozone Transport Region includes states in the northeast United States that must adhere to stricter conformity thresholds for nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOCs), which are precursors for O<sub>3</sub>.

The NAAQS for PM<sub>2.5</sub> and O<sub>3</sub> are listed in Table 3-1.

**Table 3-1: Ambient Air Quality Standards**

Pollutant	Federal Standard	Virginia Standard
PM <sub>2.5</sub> – 24-hour average	35 µg/m <sup>3</sup>	35 µg/m <sup>3</sup>
Ozone – 8-hour average	0.070 ppm	0.075 ppm

Sources: USEPA (2016), Commonwealth of Virginia (2012)

Notes: µg/m<sup>3</sup> – micrograms per cubic meter; ppm – parts per million

To regulate the emission levels resulting from a project, federal actions located in nonattainment or maintenance areas are required to demonstrate compliance with the general conformity guidelines established in 40 CFR Part 93, *Determining Conformity of Federal Actions to State or Federal Implementation Plans* (the Rule).

AQCR 47 is in nonattainment for O<sub>3</sub> and PM<sub>2.5</sub>; therefore, a General Conformity Rule applicability analysis to evaluate any impact to air quality is required. A summary of the analysis results is presented below, while detail of the methodology and calculations can be found in Appendix B. Emissions have been estimated for the O<sub>3</sub> precursor pollutants NO<sub>x</sub> and VOCs, along with PM<sub>2.5</sub>. Annual emissions for these compounds were estimated for the project actions (tree removal) and compared to the *de minimis* levels established in the Rule. The *de minimis* level for marginal O<sub>3</sub> nonattainment areas is 100 tons per year for NO<sub>x</sub> and 50 tons per year for VOCs. Sources of NO<sub>x</sub> and VOCs associated with the proposed project would include emissions from tree topping and clearing equipment and construction worker commuter vehicles.

On July 11, 2006 USEPA established *de minimis* levels for PM<sub>2.5</sub>. The final rule established 100 tons per year as the *de minimis* emission level for directly emitted PM<sub>2.5</sub> and each of the precursors that form it (sulfur dioxide [SO<sub>2</sub>], NO<sub>x</sub>, VOCs, and ammonia). This 100 tons per year threshold applies separately to each precursor, meaning that if an action’s direct or indirect emissions of

PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, VOC, and ammonia cumulatively exceed 100 tons per year, but the emissions of no single precursor exceeds 100 tons per year, a general conformity determination would not be required. Neither the USEPA nor Virginia have found VOCs or ammonia to be a significant precursor of PM<sub>2.5</sub> in AQCR 47; therefore, VOCs and ammonia are not required to be evaluated for PM<sub>2.5</sub> under the Rule. Ammonia is not further addressed in this EA (VOCs are addressed as an O<sub>3</sub> precursor).

### 3.3.1.2 Air Permit Requirements

#### Title V Permit

The Virginia Department of Environmental Quality (Virginia DEQ) administers a program for permitting the construction and operation of new, existing, and modified stationary sources of air emissions in Virginia. Air permitting is required for many industries and facilities that emit regulated pollutants. The Virginia DEQ sets permit rules and standards for emissions sources on the basis of the age and size of the emitting units, attainment status of the region where the source is located, dates of equipment installation and/or modification, and type and quantities of pollutants emitted.

As a major stationary source for emissions, Fort Belvoir operates under a Title V Permit. The current installation-wide Title V Permit had an expiration date of March 21, 2008, but because Fort Belvoir submitted a renewal application by the regulatory deadline, the current permit does not expire until the Virginia DEQ either issues or denies a renewal permit, which it has not done to date. All terms and conditions of the Title V Permit issued on March 21, 2003, remain in effect. The installation is required to submit a comprehensive emission statement annually.

### 3.3.1.3 Air Emissions at Fort Belvoir

As part of its Title V Permit, Fort Belvoir calculates permanent source emissions annually. Construction and vehicle emissions are not included in the calculation of annual emissions because these emission sources are temporary and not regulated by Title V of the CAA. Total emissions from significant sources at Fort Belvoir for 2014 are shown in Table 3-2.

**Table 3-2: Emissions for Permitted Stationary Sources in 2014 (tons)**

SO <sub>2</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>x</sub>	VOC
0.30	23.94	2.23	1.55	40.29	3.06

Source: Virginia DEQ (2014)

Note: Emission totals do not include emissions from stationary sources that are not significant under Title V and/or otherwise subject to permit terms or restrictions.

### 3.3.1.4 Greenhouse Gases

There is broad scientific consensus that humans are changing the chemical composition of the earth's atmosphere. Activities, such as fossil fuel combustion, deforestation, and other changes in land use, are resulting in the accumulation of trace greenhouse gases (GHGs), such as CO<sub>2</sub>, in our

atmosphere. An increase in GHG emissions is said to result in an increase in the earth's average surface temperature, which is commonly referred to as global warming. Global warming is expected, in turn, to affect weather patterns, the average sea level, ocean acidification, chemical reaction rates, and precipitation rates, all of which is commonly referred to as climate change.

GHGs include water vapor, CO<sub>2</sub>, methane, nitrous oxide, O<sub>3</sub>, and several hydrocarbons and chlorofluorocarbons. Each GHG has an estimated global warming potential, which is a function of its atmospheric lifetime and its ability to absorb and radiate infrared energy emitted from the earth's surface. A gas's global warming potential provides a relative basis for calculating its carbon dioxide equivalent (CO<sub>2</sub>e), which is a metric measure used to compare the emissions from various GHGs based upon their global warming potential. CO<sub>2</sub> has a global warming potential of 1 and is therefore the standard to which all other GHGs are measured.

Water vapor is a naturally occurring GHG and accounts for the largest percentage of the greenhouse effect. Next to water vapor, CO<sub>2</sub> is the second-most abundant GHG. Uncontrolled CO<sub>2</sub> emissions from power plants, heating sources, and mobile sources are a function of the power rating of each source, the feedstock (fuel) consumed, and the source's net efficiency at converting the energy in the feedstock into other useful forms of energy (e.g., electricity, heat, and kinetic). Because CO<sub>2</sub> and the other GHGs are relatively stable in the atmosphere and essentially uniformly mixed throughout the troposphere and stratosphere, the climatic impact of these emissions does not depend upon the source location on the earth (i.e., regional climatic impacts/changes will be a function of global emissions).

## **Regulatory Climate**

In April 2007, the U.S. Supreme Court determined that the USEPA has the regulatory authority to list GHGs as pollutants under the federal CAA. Congress has considered numerous proposals and bills to regulate GHGs but has not adopted any legislation.

Currently, federal agencies address emissions of GHGs by reporting and meeting reductions mandated in laws, executive orders, and policies. The most recent of these are EO 13693, *Planning for Federal Sustainability in the Next Decade*, of March 19, 2015.

The Energy Policy Act of 2005, Energy Independence and Security Act of 2007, and EO 13693 require an installation to adhere to specific energy improvements, which address waste reduction and improvements in efficiency. Specifically, the DoD Strategic Sustainability Performance Plan contains strategies to reduce energy waste and improve efficiency (DoD, 2015).

## **Baseline Greenhouse Gas Emissions at Fort Belvoir**

GHG emission sources at Fort Belvoir include vehicle use, boilers, chillers, water heaters, and emergency generators. Current CO<sub>2</sub>e emissions at Fort Belvoir in 2014 were 29,899 metric tons. The emission total is the amount reported annually under the requirements of 40 CFR Part 98 and does not include GHG emissions from mobile sources or emergency generator use.

### 3.3.2 Environmental Consequences

#### 3.3.2.1 Impacts of No Action Alternative

Under the No Action Alternative, there would be no tree removal at DAAF on Fort Belvoir. No additional emissions would be generated from Fort Belvoir, and as a result, there would be no impacts to air quality.

#### 3.3.2.2 Impacts of Proposed Action Alternative

A General Conformity Applicability Analysis was performed for the Proposed Action, which estimated the level of potential air emissions (CO, NO<sub>x</sub>, VOC, SO<sub>2</sub>, and PM<sub>2.5</sub>). Appendix B contains a detailed description of the assumptions and methodology used to estimate the potential emissions for the project.

Emissions related to the hazardous tree removal project would be temporary and only occur during the time it takes to remove the trees. Emissions from the tree removal project activities are shown in Table 3-3. Emissions will occur in a period of less than twelve months but are presented in tons per year for comparison with Conformity thresholds.

**Table 3-3: Total Annual Emissions from the Proposed Action**

Construction Activity	Total Annual Emissions (tons per year)				
	CO	NO <sub>x</sub>	VOC	PM <sub>2.5</sub>	SO <sub>2</sub>
Use of chainsaws	1.03	0.002	0.32	0.02	0.0003
Support equipment	0.41	1.91	0.16	0.14	0.001
<b>Total Emissions from Construction</b>	<b>1.44</b>	<b>1.92</b>	<b>0.47</b>	<b>0.15</b>	<b>0.001</b>

The estimated emissions associated with the tree removal project are very low, a small fraction of what was reported for Fort Belvoir for each pollutant in 2014. The temporary impacts to air quality would be minor temporary impacts that are not regionally or locally significant.

#### **Greenhouse Gases**

Under the Proposed Action Alternative, short-term GHG emissions would be produced as a result of the tree removal activities. The contribution to CO<sub>2</sub> emissions is estimated at 66.0 metric tons, a 0.2 % increase over the GHG level reported for Fort Belvoir for 2014. As such, this increase is short-term and essentially negligible. Long-term GHG emissions would not increase under this alternative; therefore, the Proposed Action Alternative would have no significant, adverse impacts on GHG emissions.

The conclusion is that air quality impacts would not be significant on either a local or regional level from the tree removal activity of the Proposed Action. All emissions would be below *de*

*minimis* levels and would also not be regionally significant for the pollutants of concern. A Record of Non-Applicability is available in Appendix B.

### **3.4 WATER RESOURCES**

Water resources are protected by the Clean Water Act, Executive Orders, and state laws and regulations. In the following sections, the water resources in and around DAAF are described, applicable laws and regulations are explained, and potential impacts are disclosed. The study area for this analysis includes portions of the watershed of Accotink Creek and the streams and wetlands adjacent to or in which tree removal would occur.

#### **3.4.1 Affected Environment**

Fort Belvoir is located in Fairfax County, which lies within the Potomac River Basin of the Chesapeake Bay watershed. Fairfax County is drained by the Potomac River and its five major tributaries; Cameron Run, Hunter Creek, Dogue Creek, Accotink Creek, Pohick Creek, and the Occoquan River. DAAF is located within the Accotink Creek watershed.

##### **3.4.1.1 Groundwater**

Fort Belvoir is underlain by three main aquifers: lower Potomac aquifer, middle Potomac aquifer, and Bacons Castle Formation. The lower Potomac aquifer is the primary aquifer on the installation and in eastern Fairfax County. The lower Potomac aquifer exists between a layer of crystalline bedrock and a thick wedge of clay that contains interbedded layers of sand. Water in this aquifer flows to the southeast; it is recharged in the western section of Fort Belvoir (USAG Fort Belvoir, 2001). Depth to the water table on the installation fluctuates, but it is typically 10 to 35 feet below ground surface. However, the water table may be at or near the surface near streams in the form of shallow, unconfined aquifers or perched water tables (USAG Fort Belvoir, 2001).

##### **3.4.1.2 Surface Water**

Fort Belvoir is located on the Potomac River in the Chesapeake Bay watershed. There are three named tributaries to the Potomac River on the installation: Accotink Creek, Pohick Creek, and Dogue Creek. Accotink Creek and Pohick Creek flow into the Potomac River near each other and form Gunston Cove on the Potomac River. The installation also contains the headwaters to Mason Run, which is a tributary to Accotink Creek, and several other unnamed tributaries. Accotink Creek flows through the center of the installation, and both Dogue Creek and Pohick Creeks form the northeast and southwest boundaries of Fort Belvoir, respectively. A total of 106 miles of streams occur on the installation, including 28 miles of perennial stream, and 32 miles of intermittent streams (USAG Fort Belvoir, 2001). Wetland features are discussed in Section 3.4.1.4.

Laws and regulations have been implemented to protect water quality. The Federal Water Pollution Control Act, as amended by the Clean Water Act (CWA) of 1977, establishes water quality standards for restoring and maintaining the integrity of the nation's water. "Water quality standards define the goals for a water body by designating its uses, setting criteria to measure attainment of those uses, and establishing policies to protect water quality from pollutants."

Section 305(b) of the CWA, requires that states report on the status of water quality of their navigable waters every two years. Section 303(d) requires that states identify impaired waters; waters where the water quality does not meet standards for the designated use. Section 303(d) also requires that the state identify impaired waters for which Total Maximum Daily Loads (TMDLs) will be developed to improve water quality. A TMDL “is a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards.”

Water quality problems in the waterways on the installation relate mostly to urbanization, including issues related to bacteria, changes in stream morphology from increased impervious surface, and sedimentation. Within Fort Belvoir, according to the draft 2014 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report (Virginia DEQ, 2014), Accotink Creek is listed as impaired for recreation because of the presence of *Escherichia coli* (*E. coli*) bacteria because of:

- Urban runoff/storm sewers
- Wastes from Pets
- Waterfowl
- Wildlife other than Waterfowl

Accotink Creek is also listed as impaired for fish consumption due to high levels of polychlorinated biphenyls in fish tissue (Virginia DEQ, 2014). Aquatic life is also impaired, as seen from benthic-macroinvertebrate bioassessments indicators (Virginia DEQ, 2014). In spite of these impairments under the Clean Water Act (33 USC §1251 et seq.), the waterways on the installation still possess significant water resources with high conservation priority (USAG Fort Belvoir, 2001).

For projects with land disturbance of 10,000 square feet or greater, an erosion and sediment control (ESC) plan is required to be prepared and submitted to Virginia Department of Environmental Quality (VADEQ) for review and approval. In addition, for projects with land disturbance one acre or greater, a stormwater management plan is required to be prepared and submitted to VADEQ for review and approval. For projects with land disturbance of one acre or greater, a Construction General Permit must be obtained from VADEQ prior to commencement of construction. A Stormwater Pollution Prevention Plan is required to be developed prior to submittal for the Construction General Permit and is reviewed by Directorate of Public Works, Environmental and Natural Resources Division to ensure that total maximum daily loads (TMDL), pollution prevention, stormwater management and erosion and sediment control requirements are met during construction.

There are three existing Industrial Stormwater Outfalls that are covered under an existing Virginia Pollution Discharge Elimination System (VPDES) General Permit: one located on the northwest corner of DAAF, one located downstream of the northwest section, and one located in the southeast section. Regular monitoring is conducted at these outfalls for TMDLs and metals.

#### 3.4.1.3 Wetlands and Chesapeake Bay Preservation Areas

Construction in jurisdictional wetlands and streams is regulated by the U.S. Army Corps of Engineers (USACE) pursuant to Section 404 of the Clean Water Act as implemented in regulations

contained in 33 CFR, Parts 320–330. Impacts to state waters, including wetlands, are regulated by the Virginia Water Protection Permit Program (9 Virginia Administrative Code [VAC] 25-210-10 et seq.), which serves as Virginia’s 401 Water Quality Certification Program for federal Section 404 Permits. The Virginia Marine Resources Commission regulates activities in submerged lands, marine fisheries, and coastal resources (tidal wetlands and coastal sand dunes/beaches) under the Code of Virginia Title 28.2, Chapters 12, 13, and 14.

Virginia’s Chesapeake Bay Preservation Act (CBPA), Virginia Code 10.1-2100 et seq., and its implementing Chesapeake Bay Preservation Area Designation and Management Regulations, 9 VAC 10-20-120 et seq., protect certain lands, designated as Chesapeake Bay Preservation Areas, which, if improperly developed, could result in substantial damage to the water quality of the Chesapeake Bay and its tributaries. Projects that occur on lands that are protected under the CBPA must be consistent with the Act and may be subject to the performance criteria for Resource Protection Areas (RPAs), as specified in 9 VAC 10-20-130 of the regulations. Under the CBPA, Fairfax County adopted a Chesapeake Bay Preservation Ordinance that designates RPAs and Resource Management Areas (RMAs) within in the county.

RPAs are sensitive lands at or near the shoreline or streambank that have an intrinsic water quality value due to the ecological and biological processes they perform. RPAs include tidal wetlands, tidal shores, nontidal wetlands connected by surface flow and contiguous to tidal wetlands or tributary perennial streams, and a minimum 100-foot buffer landward of the previous RPA components, riparian areas, and major floodplains (USAG Fort Belvoir, 2001). All lands not designated as RPAs in Fairfax County are classified as RMAs. Fort Belvoir recognizes the RPA designation but, being a federal entity, is not subject to the provisions of the Fairfax County ordinance. As a result, Fort Belvoir does not use RPA maps produced by Fairfax County; instead, the Army delineates the RPA on the installation. In addition to RPA areas, Fort Belvoir places a 35-foot buffer around all intermittent streams.

Within the DAAF study area, there are 22 non-tidal wetland areas that are mostly one acre or less in size, with one wetland being approximately three acres in size (Figure 3-1) (WSSI, 2015c, 2015e, 2015g). The wetlands are palustrine emergent (PEM) and palustrine forested (PFO), with some palustrine open water (POW) and palustrine scrub shrub (PSS). The wetland areas are concentrated within the Northwest Section (Figure 3-2) and the Southeast Section (Figure 3-3). The RPA extends from Accotink Creek through much of the northern portion of the DAAF, with a 100-foot buffer on each of the wetlands.

#### 3.4.1.4 Floodplains

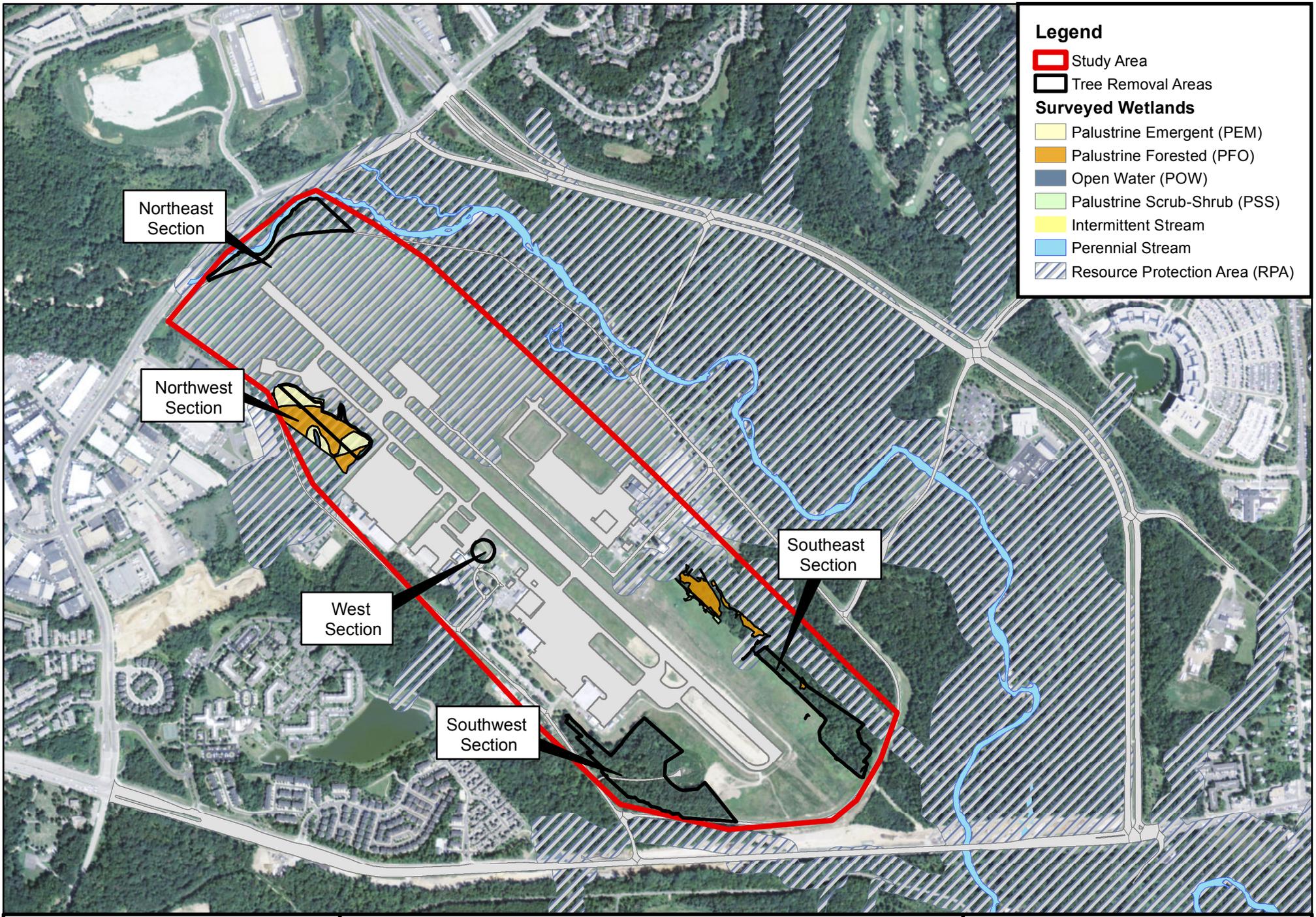
EO 11988, *Floodplain Management*, was issued “... in order to avoid, to the extent possible, the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative...”. The Executive Order was issued in furtherance of NEPA, the National Flood Insurance Act of 1968, and the Flood Disaster Protection Act of 1973. Floodplains were defined as follows in Executive Order 11988,

“The term ‘floodplain’ shall mean the lowland and relatively flat areas adjoining inland and coastal waters including floodprone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year.”

President Obama issued an EO entitled *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input* on January 30, 2015. This new EO was issued “... to improve the resilience of communities and Federal assets against the impact of flooding” and includes amendments to EO 11988. One of the amendments regards the definition of a floodplain. Instead of establishing the floodplain based on the area subjected to a one percent or greater chance in any given year, the floodplain shall be:

- (i) the elevation and flood hazard area that result from using a climate-informed science approach that uses the best-available, actionable hydrologic and hydraulic data and methods that integrate current and future changes in flooding based on climate science. This approach will also include an emphasis on whether the action is a critical action as one of the factors to be considered when conducting the analysis;
- (ii) the elevation and flood hazard area that result from using the freeboard value, reached by adding an additional 2 feet to the base flood elevation for non-critical actions and by adding an additional 3 feet to the base flood elevation for critical actions;
- (iii) the area subject to flooding by the 0.2 percent annual chance flood; or
- (iv) the elevation and flood hazard area that result from using any other method identified in an update to the FFRMS [Federal Flood Risk Management Standard].

The 100-year floodplain, or one percent annual chance flood, for the Accotink Creek, per the Federal Emergency Management Agency Flood Insurance Rate Map, covers much of the DAAF, including three of the areas where trees would be topped or removed. The location of the project in relationship to mapped floodplains are shown in Figure 3-4.



**Legend**

- Study Area
- Tree Removal Areas

**Surveyed Wetlands**

- Palustrine Emergent (PEM)
- Palustrine Forested (PFO)
- Open Water (POW)
- Palustrine Scrub-Shrub (PSS)
- Intermittent Stream
- Perennial Stream
- Resource Protection Area (RPA)

Northeast Section

Northwest Section

West Section

Southwest Section

Southeast Section

N

1 inch = 1,000 feet

0  Feet 2,000

**Wetlands and Resource Protection Areas**  
*Fort Belvoir, Virginia*  
 Source: Fort Belvoir GIS Data, 2016; Wetlands, WSSI, 2015.

**Figure 3-1**



**Legend**

- Study Area
- Tree Removal Area
- Surveyed Wetlands**
- Palustrine Emergent (PEM)
- Palustrine Forested (PFO)
- Open Water (POW)
- Palustrine Scrub-Shrub (PSS)
- Intermittent Stream
- Resource Protection Area (RPA)
- Perennial Stream

N

1 inch = 200 feet

0 














 Feet  
 400

**Wetlands and Resource Protection Area**  
**Northwest Section**  
*Fort Belvoir, Virginia*

Source: Fort Belvoir GIS Data, 2016; Wetlands, WSSI, 2015

**Figure 3-2**



**Legend**

- Study Area
- Tree Removal Area

**Surveyed Wetlands**

- Palustrine Emergent (PEM)
- Palustrine Forested (PFO)
- Open Water (POW)
- Palustrine Scrub-Shrub (PSS)
- Intermittent Stream
- Resource Protection Area (RPA)
- Perennial Stream

N

1 inch = 250 feet

0 











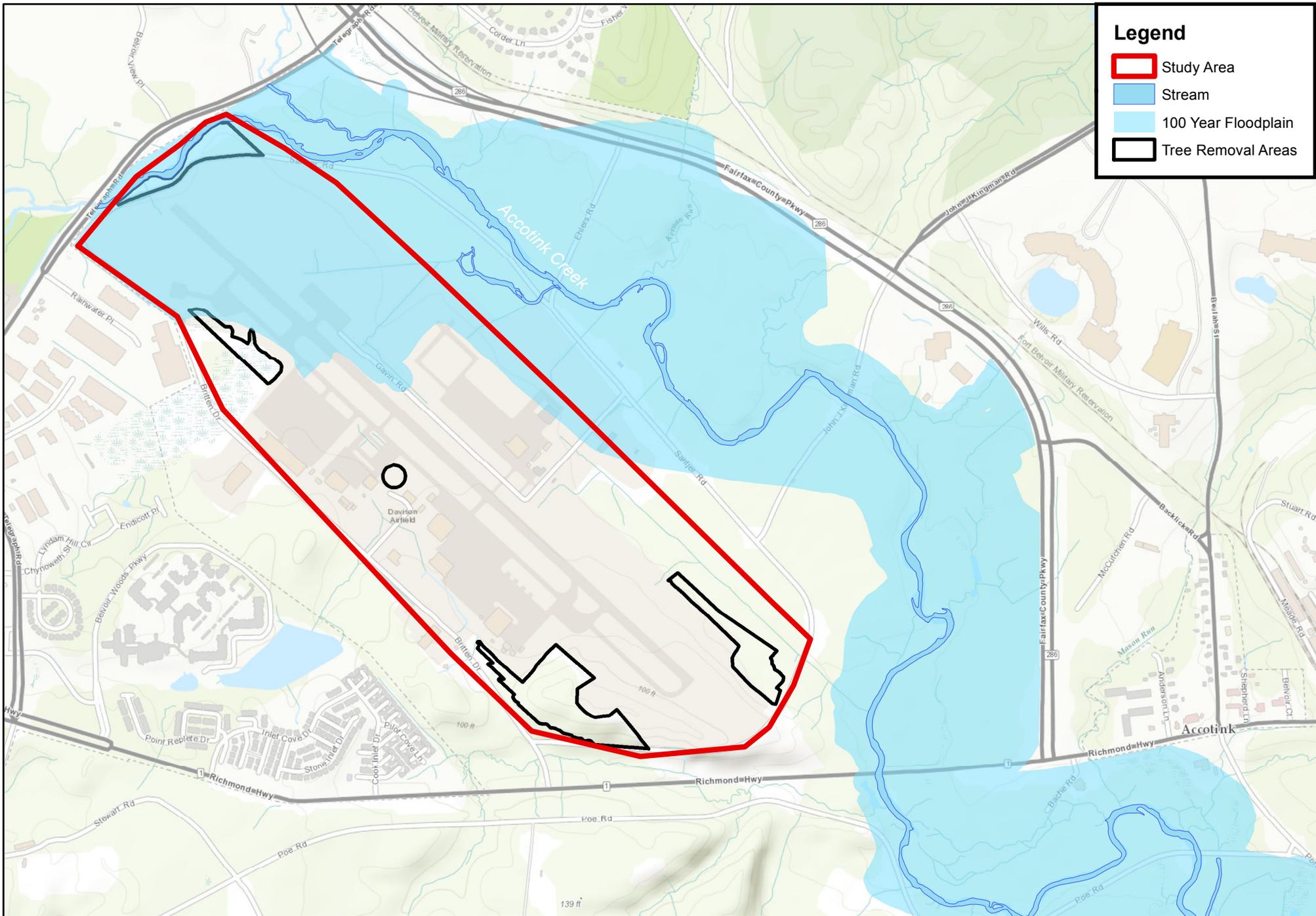


 Feet  
500

**Wetlands and Resource Protection Areas**  
**Southeast Section**  
**Fort Belvoir, Virginia**

*Source: Fort Belvoir GIS Data, 2016; Wetlands, WSSI, 2015*

**Figure 3-3**



**Legend**

- Study Area
- Stream
- 100 Year Floodplain
- Tree Removal Areas

N

1 inch = 1,000 feet

0 
0
2,000
Feet

**Floodplains**  
**Fort Belvoir, Virginia**

Source: Floodplain, FEMA 2016; Baselayar, ESRI 2015;  
 Stream, Fort Belvoir GIS Data, 2016

**Figure 3-4**

## 3.4.2 Environmental Consequences of the Alternatives on Water Resources

### 3.4.2.1 Threshold of Significance

The threshold of significance for water resources impacts would be exceeded if the alternative would result in any of the following:

- Change to regional groundwater patterns or depletion of groundwater;
- Alteration of local surface water;
- Notable adverse impact on natural and beneficial floodplain values; or
- Substantial degradation of wetlands without mitigation.

### 3.4.2.2 Impacts of the No Action Alternative

Under the No Action alternative, no trees would be removed from the project area of DAAF. As a result, no potential adverse impacts to local surface water, groundwater, floodplains, or wetlands would occur.

### 3.4.2.3 Impacts of the Proposed Action - Tree Removal

The Proposed Action is to remove trees that are obstructions and violate the primary surface, approach-departure clearance surface, transitional surface, taxiway clearance, and apron clearance safety areas of the DAAF to ensure aircraft safety.

#### *Groundwater*

Groundwater resources would not be disturbed during tree removal. Stumps would remain in place and there would not be any earth disturbance; therefore, no impacts to ground water are expected from this action.

#### *Surface water*

Streams would not be disturbed from the Proposed Action as there are no proposed activities within the Accotink Creek and appropriate temporary erosion and sediment control measures would be employed for work near streams, particularly in the Northeast Section.

As the Proposed Action is greater than one acre, an ESC plan and a stormwater management plan would be developed. The ESC plan would include temporary erosion and sediment control measures. The ESC plan and stormwater management plan would be prepared utilizing the requirements for water quality and quantity found in the Virginia Technical Criteria Part IIB (9VAC25-870-62 through 9VAC25-870-92). Minor adverse impacts would occur from the Proposed Action on surface water with regard to water quantity and water quality. Appropriate temporary erosion and sediment control measures or permanent stormwater BMPs will be employed to minimize impacts to water quality from disturbance during tree removal and potential increase in stormwater runoff. Monitoring of the outfalls would occur to ensure water quality is maintained during and after the tree removal activity.

### *Wetlands and Chesapeake Bay Preservation Areas*

Minor adverse impacts to non-tidal wetlands would be expected from implementation of the Proposed Action. A total of 1.31 acres of PFO wetlands would be permanently converted to PEM wetlands to include 1.234 acres in the northwest section and 0.072 acres in the southeast section. Minor temporary impacts from placing deck mats in the wetlands, considered fill, would be anticipated, though the use of deck mats would minimize impacts of compaction and rutting from vehicles crossing into wetland areas during tree removal activity. The areas will be flagged to distinguish clearing areas and prevent incidental impacts to wetlands. Tree trunks and crowns would need to be cut with care and caution, and all tree cuttings in the wetland area would need to be removed from the site. No cut trees, including limbs, can be placed or left in the wetland, and no grubbing nor grading are permissible in this area. Stumps will be left in place. Following clearing, at an appropriate time of year, wetlands seed mix would be spread. Fort Belvoir would coordinate with USACE and the Commonwealth of Virginia through the Joint Permit Application process for an Individual Permit from USACE and Virginia to assess the impacts of conversion of palustrine forested wetlands to palustrine emergent wetlands, and for tree removal activities within the RPA in the Northeast, Northwest and Southeast Sections. Mitigation for this permanent impact would be provided by the purchase of credits from a mitigation bank. These impacts have been minimized through adjusting access routes through the wetlands for tree removal to reduce temporary impacts and also through the elimination of the alternative described in Section 2.3, which would result in filling wetlands and maintaining the area in turf. Tree removal within the other sections would not impact wetlands nor the RPA, as there are none present in those areas.

### *Floodplains*

The Northeast, Northwest and Southeast areas of tree removal are all located within the 100-year floodplain. The Proposed Action would not result in an impact to the floodplain with regard to water storage capacity or elevation.

## **3.5 BIOLOGICAL RESOURCES**

Potential impacts to plants, wildlife, and fish are evaluated in accordance with applicable regulations including but not limited to the Endangered Species Act of 1973, the Fish and Wildlife Conservation Act of 1980, the Magnuson-Stevens Fishery Conservation and Management Act, as amended, the Migratory Bird Treaty Act, and EO 13112 on Invasive Species. The study area for biological resources includes the proposed project site, which encompasses the DAAF.

### **3.5.1 Affected Environment**

#### 3.5.1.1 Vegetation

Fort Belvoir is home to multiple plant communities and vegetative species. An installation-wide vegetation study of Fort Belvoir conducted in 1998 identified 17 plant community types, four of which possess species with state conservation rankings of rare or very rare. These 17 types are included in the broader categories of mixed hardwood forests, pine forests, floodplain hardwood forests, wetlands, oldfield, grasslands and urban land, which describes land that has been developed (USAG Fort Belvoir, 2001). A large portion (approximately 70 percent) of Fort Belvoir is undeveloped and supports predominantly forest communities, as well as tidally flooded marsh

and shrub-scrub communities. Within Fort Belvoir's Main Post, areas of native vegetation occur in large tracts, aligned from the northeast to the southwest. Vegetation cover in the remaining 30 percent of Fort Belvoir consists primarily of improved and semi-improved grounds associated with the installation's developed land uses that includes administration, housing and community service facilities, developed training areas, golf courses, and other recreational facilities (USAG Fort Belvoir, 2001).

The tree removal areas within DAAF are mostly forested and some areas are located within the 100-year floodplain of Accotink Creek and non-tidal wetlands. Plant communities in the tree removal areas, listed by prominence, are floodplain hardwood forests, beech mixed oak forest and palustrine forested wetland. None of the vegetative communities in the proposed project area are considered rare by the Commonwealth of Virginia.

### 3.5.1.2 Wildlife and Wildlife Habitat

Fort Belvoir is home to numerous wildlife species. Based on installation-wide surveys, Fort Belvoir contains the potential habitat for 43 species of mammals, 274 species of birds, 32 species of reptiles, 27 species of amphibians and 60 species of fish (USAG Fort Belvoir, 2001). More than 2,500 acres of land have been set aside on Fort Belvoir for wildlife including the Accotink Bay Wildlife Refuge, the Jackson Miles Abbott Wildlife Refuge, and a Forest and Wildlife Corridor. Fort Belvoir also participates in the Partners in Flight Program. Partners in Flight is a partnership between federal and state agencies, industry, non-governmental organizations and others, with the goal of conserving North American birds.

The proposed project area is not within any wildlife corridors, refuges, or Partners in Flight habitat areas, though some exist to the east of DAAF along the Accotink Creek. With the broad variety of habitats and food sources adjacent to DAAF, many of the wildlife species associated with forests on Fort Belvoir can be found on or near the project site.

A number of aquatic species and their habitat exist in the streams, creeks, and wetlands within or near the proposed project. A full listing of species and habitat are found in the installation's Integrated Natural Resources Management Plan (USAG Fort Belvoir, 2001).

### 3.5.1.3 Rare, Threatened and Endangered Species

The Endangered Species Act of 1973 (ESA) requires federal agencies to ensure that their action is not likely to jeopardize the continued existence of any endangered or threatened species (animal and plant species) or result in the destruction or adverse modification of designated critical habitat. Special status species include species listed under the ESA as endangered, threatened, proposed endangered, proposed threatened, candidate, and species of special concern; and species listed by the VDCR as endangered, threatened, or rare.

#### **Federally-listed Species**

The northern long-eared bat (*Myotis septentrionalis*) is listed as a threatened species under the Endangered Species Act, due largely to the impacts of White-nose Syndrome. It roosts singly or in colonies underneath bark or in crevices of live and dead trees during the summer. During the

winter, the bats hibernate in caves and mines. Female northern long-eared bats roost in maternity colonies in the summer months, and typically give birth between late May and late July. The study area is within the Whitenose Syndrome Buffer Zone for the northern long-eared bats. The Whitenose Syndrome Buffer Zone identifies the portion of the range of the northern long-eared bat within 150 miles of the boundaries of U.S. counties or Canadian districts where Whitenose Syndrome or the associated fungus has been detected. Under Section 7 of the Endangered Species Act, federal agencies must consult with the Service to ensure that any action they authorize, fund, permit or carry out does not jeopardize the existence of a listed species. Surveys to date have not located the northern long-eared bat on site at DAAF. Acoustic monitoring recorded a potential call at a location more than one half mile to the east of DAAF. Per USFWS, tree removal is prohibited during the northern long-eared bat active season from April 15 through September 15. Section 7 consultation letters can be found in Appendix A.

The small whorled pogonia (*Isotria medeoloides*) is an orchid found in deciduous woods. It is considered threatened throughout its range by the USFWS, and endangered by the State of Virginia. The habitat at Fort Belvoir has been mapped previously and was characterized by low, medium, and high quality. A field survey was conducted on the airfield in the areas of the proposed tree removal and all areas were considered to be poor quality habitat for the small whorled pogonia. (WSSI, 2015a, 2015b, 2015h). No individuals were observed during the surveys and none are expected to occur within the project areas based on the habitat observed. The small whorled pogonia is known to be present at only one location on Fort Belvoir North Area that is more than a mile from DAAF.

Habitat for the federally threatened Sensitive joint-vetch (*Aeschynomene virginica*) is not present on DAAF; habitat for this species is mudflats that have been surveyed elsewhere on Fort Belvoir and this species was not observed.

### **State-listed Species**

Fort Belvoir has five state-listed animal species that occur on the installation and include the state-listed threatened wood turtle (*Glyptemys insculpta*), the state-listed endangered peregrine falcon (*Falco peregrinus*, during fall migration), the state-listed endangered little brown bat (*Myotis lucifugus*), the state-listed endangered tri-colored bat (*Perimyotis subflavus*), and the state and federally-listed threatened northern long-eared bat (*Myotis septentrionalis*). Potential habitat for the wood turtle is primarily located along Accotink Creek and its tributaries. A 2015 survey was conducted along Accotink Creek, adjacent to Davison Army Airfield, and no turtles or suitable habitat were observed (WSSI, 2015a, 2015b, 2015d). The little brown bat and the tri-colored bat have an active season similar to that of the northern long-eared bat. The conservation measures outlined by the state include time of year restrictions that fall within the bounds of the time of year restrictions already established for the northern long-eared bat. Therefore, the conservation measures required for protection of the northern long-eared bat would also be adequate for protection of the state-listed species.

The bald eagle (*Haliaeetus leucocephalus*) was delisted by the Commonwealth of Virginia in 2013, however, it is still protected by the Bald and Golden Eagle Protection Act. The bald eagle occurs on the installation, but the known nesting sites are found in the eastern portion of Fort

Belvoir, along the shore. No known bald eagle nesting or roosting sites are located in or around the airfield. The nearest eagle nest and eagle concentration area are more than one mile from DAAF.

### **3.5.2 Environmental Consequences**

#### 3.5.2.1 Threshold of Significance

The threshold of significance for biological resources impacts would be exceeded if the alternative would:

- Jeopardize the continued existence of any federally listed threatened or endangered species or result in destruction of critical habitat;
- Decrease the available habitat for commonly found species to the extent that the species could no longer exist in the area; or
- Eliminate a sensitive habitat such as breeding areas, habitats of local significance, or rare or state-designated significant natural communities needed for the survival of a species.
- Substantially degrade or minimize habitat.

#### 3.5.2.2 Impacts of No Action Alternative

Under the No Action alternative, no trees would be removed from the project area of DAAF. As a result, no potential adverse impacts to biological resources, including vegetation, wildlife, and aquatic species would occur. Based on the characteristics of species of special concern and the location of the potential areas impacted, it is expected that the No Action alternative would not result in any impacts to species of special concern. All biological resources would continue to be managed in accordance with the Fort Belvoir Integrated Natural Resources Management Plan.

#### 3.5.2.3 Impacts of the Proposed Action – Tree Removal

The Proposed Action is to remove trees that are obstructions and violate the primary surface, approach-departure clearance surface, transitional surface, taxiway clearance, and apron clearance safety areas of the DAAF to ensure aircraft safety.

##### *Vegetation*

Minor adverse vegetation impacts would be expected from the removal of trees within the project areas. Small patches of forest, within the suburban landscape of northern Virginia, would be converted to shrub or grassland which would abut the grassland of the existing airfield. These minor impacts are necessary due to federal and state aviation regulations which ensure the safety of aircraft at DAAF.

##### *Wildlife and Wildlife Habitat*

Minor adverse impacts are expected to wildlife habitat due to the tree removal. Removal of trees from the project areas surrounding DAAF would convert small patches of forested land, on the edges of existing forests, to open forest or shrub habitat. The tree removal would not create fragments of unsuitable habitat because all areas of tree removal abut the open mowed grass of the

airfield. Tree cutting and removal would be avoided from April 1 to July 15 to avoid disturbance, removal, damage or destruction to birds and their nests, eggs, and hatchlings per the Migratory Bird Treaty Act.

#### *Rare, Threatened and Endangered Species*

There is a potential to impact the northern long-eared bat habitat with the proposed tree removal. To avoid impacts, tree removal would only be performed outside of the closure period, from April 15 to September 15, per the chapter 7 consultation (Appendix A). Therefore, impacts to the northern long-eared bat would be avoided. The little brown bat and the tri-colored bat have an active season similar to that of the northern long-eared bat. Therefore, the conservation measures required for protection of the northern long-eared bat would also be adequate for protection of the state-listed species. No other rare, threatened or endangered species are known to exist within the project areas around DAAF, therefore; no impacts are anticipated to rare, threatened or endangered species.

### **3.6 COASTAL ZONE**

The Coastal Zone Management Act of 1972 (16 USC §1451 et seq., as amended) provides assistance to the states, in cooperation with federal and local agencies, for developing land and water use programs in coastal zones. Section 307 (c)(1) of the Coastal Zone Management Act Reauthorization Amendment stipulates that federal projects that affect land uses, water uses, or coastal resources of a state's coastal zone must be consistent to the maximum extent practicable with the enforceable policies of that state's federally approved coastal management plan. The Commonwealth of Virginia has developed and implemented a federally approved Coastal Resources Management Program describing current coastal legislation and enforceable policies. There are enforceable policies for:

- Fisheries management
- Subaqueous lands management
- Wetlands management
- Dune management
- Non-point source pollution control
- Point source pollution control
- Shoreline sanitation
- Air pollution control
- Coastal lands management

#### **3.6.1 Affected Environment**

Virginia's coastal zone includes all of Fairfax County, including Fort Belvoir; therefore, federal actions at Fort Belvoir are subject to federal consistency requirements. The Virginia DEQ serves as the lead agency for consistency reviews. The project area is characterized as an airfield with some areas of forest, wetlands, and previously disturbed land with Accotink Creek at the northern border of the project area. While there is streambank adjacent to the project area, there is no coastline present, nor dunes.

## **3.6.2 Environmental Consequences**

### *3.6.2.1 Impacts of the No Action Alternative*

The No Action Alternative would have no impacts on the Virginia coastal zone or future implementation of the Coastal Resources Management Plan.

### *3.6.2.2 Impacts of the Proposed Action Alternative*

The proposed hazardous tree removal at DAAF would be consistent with Virginia's Coastal Resources Management Policies. As described above in Section 3.4.3.2, impacts to wetlands would be to non-tidal wetlands and would be mitigated through purchase of wetland mitigation credits. Non-point source pollution would be managed through the use of temporary erosion and sediment control measures defined in the approved Erosion and Sediment Control plan or permanent stormwater management BMPs, as appropriate. Minory temporary impacts to air quality are anticipated for the duration of the tree removal activity. The Coastal Zone Consistency determination will be submitted to the Commonwealth of Virginia as an appendix in the Final EA/Draft FNSI. Complete results of this coordination, including recommendations from Virginia DEQ, when received, will be presented in Appendix C.

## **3.7 CUMULATIVE EFFECTS**

In addition to identifying the direct and indirect environmental impacts of their actions, the CEQ's NEPA regulations require federal agencies to address cumulative impacts related to their proposals. A cumulative impact is defined in the CEQ regulations (40 CFR Part 1508.7) 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. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." This section describes the process used to identify potential cumulative impacts related to the Proposed Action at Fort Belvoir and discusses those impacts for each of the resources analyzed in this EA.

The process outlined by CEQ includes identifying significant cumulative impacts issues, establishing the relevant geographic and temporal (time frame) extent of the cumulative effects analysis, identifying other actions affecting the resources of concern, establishing the cause-and-effect relationship between the Proposed Action and the cumulative impacts, determining the magnitude and significance of the cumulative impacts, and identifying ways in which the agency's proposal might be modified to avoid, minimize, or mitigate significant cumulative impacts.

CEQ regulations specify that cumulative impacts analyses encompass past, present, and reasonably foreseeable future actions. As a practical matter, the impacts of past actions on Fort Belvoir are already reflected in the conditions that currently exist, as described earlier in this chapter, in the Affected Environment section of each resource topic. For example, past actions on Fort Belvoir that involve the clearing of trees.

Present and reasonably foreseeable future actions on Fort Belvoir that may have a cumulative impact in combination with the Proposed Action are listed in Table 3-4. In general, this EA considered present and reasonably foreseeable future actions as those that currently exist or are under construction, are the subject of an existing plan or proposal, or have identified funding. Actions beyond that become increasingly speculative and difficult to assess.

**Table 3-4: Projects Near DAAF**

<b>Project</b>	<b>Description</b>	<b>Project Type</b>	<b>NEPA Action</b>
Expansion of DAAF Fire Station	Expand existing fire station to accommodate a third fire company.	Construction	Categorical Exclusion/Record of Environmental Consideration completed and signed. Project currently under construction.
OSEG Training Compound	Construct a permanent compound for OSEG training and operations.	Construction	Environmental Assessment prepared, and FNSI signed. Construction projected for 2017.
National Museum of the US Army (NMUSA)	Construct a national museum to showcase the history and artifacts of the US Army.	Construction	Environmental Assessment prepared, and FNSI signed. Construction started February 2016 to continue into 2019.
911 <sup>th</sup> Engineering Company Operations Complex	Construct a medium-duty tactical equipment maintenance complex with integrated company operations and administrative space.	Construction	Environmental Documentation has yet to be prepared.
Fairfax County Parkway/John J. Kingman Road Intersections & NMUSA Entrance	Grade separate intersections along Fairfax County Parkway at John J Kingman Road and the NMUSA entrance.	Transportation	Environmental Assessment prepared, and FNSI signed.

<b>Project</b>	<b>Description</b>	<b>Project Type</b>	<b>NEPA Action</b>
US Route 1 intersections with Fairfax County Parkway, Pohick Road and Belvoir Road	Monitor intersections along US Route 1 at Fairfax County Parkway, Pohick Road, and Belvoir Road to determine need for future improvements.	Transportation	Environmental Documentation has yet to be prepared.

Source: Final Environmental Impact Statement for Short-Term Projects & Real Property Master Plan Update. Volume 1 June 2015.

## **Air Quality**

Tree removal activities associated with the Proposed Action would result in minimal adverse cumulative impacts related to air quality. Short term impacts are expected through the operation of tree removal machinery, but would be minor and therefore no long-term cumulative impacts are anticipated.

## **Water Resources**

### *Ground Water*

Cumulative impacts to groundwater are also not anticipated because the Proposed Action and other associated planned activities would not involve the disturbance, storage or appreciable use of materials that could degrade groundwater quality.

### *Surface Water*

Cumulative impacts to surface water from the Proposed Action would be minor from the tree cutting activities and the loss of tree land cover. Appropriate temporary erosion and sediment control measures would be employed and permanent stormwater management BMPs necessary to mitigate for the loss of tree land cover would be determined and in compliance with the MS4 permit requirements. Projects at Fort Belvoir with a land disturbance of greater than 2,500 square feet are required to have ESC and stormwater management plans in compliance with Section 438 of the Energy Independence and Security Act, the Fort Belvoir MS4 permit, Virginia ESC, Stormwater Management and Chesapeake Bay laws and regulations.

### *Wetlands*

Throughout the project, impacts to wetlands would be avoided where possible, and mitigated in circumstances in which avoidance is not possible. Minor adverse impacts due to the Proposed Action are anticipated, including the permanent conversion of a total of 1.31 acres of palustrine forested wetland to palustrine emergent wetlands, and 1.18 acres of palustrine emergent wetlands would be impacted as vehicles cross through to access the trees to be removed. Though there would be a direct impact to wetlands, proper mitigation in accordance with Section 404 of the Clean Water Act would mitigate these impacts, as well as temporary erosion and sediment control measures, and the use of deck mats to prevent compaction and rutting, during the tree removal activity to account for no net loss of wetlands. Mitigation would be provided through the purchase

of credits from a mitigation bank. Tree removal in areas that are not within a wetland are expected to have no impact to wetlands. Other projects at Fort Belvoir that impact wetlands have also minimized impacts to wetlands and completed wetland mitigation to address wetland losses. Thus, minor cumulative impacts are anticipated to wetlands as impacts from this project and all projects on Fort Belvoir are mitigated.

### **Biological Resources**

DAAF is characterized by mostly open land, impervious surface, and associated buildings surrounded by forested land along the perimeter of the DAAF boundary. Past development of the airfield has changed the natural environment by reducing the amount of habitat, fragmenting remaining habitat, and consequently changing the number and types of wildlife that depend on that habitat. Minor adverse effects would occur to vegetation due to the removal of the trees within patches of forest, but removal of trees would be limited to the edges of forest land and would not disrupt forest interior habitat, therefore, no further fragmentation is expected to result from the Proposed Action. Although the permanent removal of trees for the Proposed Action would result in a minor adverse effect to vegetation, proposed cumulative projects would follow the Fort Belvoir two for one tree replacement policy and cumulative impacts would therefore be minor.

Minor adverse impacts are expected to wildlife and migratory birds as a result of the Proposed Action from the removal of habitat. Most of the projects identified in Table 3-8 would occur in developed areas and would have minimal impacts to wildlife and wildlife habitat. Many of the proposed cumulative projects would occur on previously disturbed areas and impacts to wildlife and migratory birds in these areas would be minor. The removal of trees would not create fragmented unsuitable habitat, and would therefore result in minor cumulative impacts to wildlife and migratory birds.

No cumulative effects are anticipated to the federally listed northern long-eared bat as tree removal and other construction projects on Fort Belvoir would be performed outside the active period from April 15 to September 15.

### **Coastal Zone**

The Proposed Action is consistent with the Coastal Zone Management Program, and would abide by current appropriate permits and mitigation requirements. Therefore, there are no anticipated cumulative effects as future projects would also be consistent with the Coastal Zone Management Program.

### **No Action Alternative**

Implementation of the No Action Alternative would avoid new impacts for all resource areas and would not result in any cumulative impacts to Air Quality, Water Resources, Biological Resources, or the Coastal Zone.

## **4.0 FINDINGS AND CONCLUSIONS**

### **4.1 UNAVOIDABLE ADVERSE IMPACTS**

Unavoidable impacts are those impacts that the USAG Fort Belvoir would experience if the proposed hazardous tree removal at DAAF were implemented under the Proposed Action Alternative. The Proposed Action is required, however, for pilot safety and compliance requirements. Potential minor temporary impacts that would occur from implementation of the Proposed Action include minor adverse impacts to air quality from equipment use; minor impacts to surface water from heavy machinery during tree cutting that could cause erosion that would be minimized or avoided through the use of temporary erosion and sediment control measures; and minor temporary impacts from bringing vehicles into wetland areas for tree cutting would be minimized through the use of deck mats that prevent compaction and rutting but are considered temporary fill in the wetlands. Potential minor permanent impacts that would occur from implementation of the Proposed Action include minor adverse impacts from the loss of trees along the edges of the forested area on DAAF, that could result in an increase in stormwater runoff; minor impacts from trees removed in the RPA; and minor adverse impacts to wildlife and wildlife habitat from the removal of trees that would convert forested habitat to shrub habitat. Minor permanent adverse impacts from the conversion of 1.31 acres of palustrine forested wetland to palustrine emergent would be mitigated through the purchase of wetland mitigation bank credits. The Proposed Action would result in no or negligible impacts to land use; noise; geology; topography; cultural resources; socioeconomic; environmental justice; traffic and transportation; utilities; hazardous materials and wastes; visual and aesthetic resources; ground water; floodplains; rare, threatened, and endangered species; and the coastal zone. Tree cutting activities would take place outside of the northern long-eared bat active period to avoid impacts. No significant cumulative impacts are anticipated. No significant impacts on human health or the environment are expected to result from the Proposed Action.

Under the No Action Alternative, the DAAF would continue to be non-compliant with safety requirements, which would impact the mission at DAAF. The No Action Alternative would not remove the obstructions from the airfield and DAAF would continue to be an unsafe environment for operating aircrafts.

### **4.2 BEST MANAGEMENT PRACTICES AND MITIGATION MEASURES**

Mitigation for the impacts from converting palustrine forested wetlands to palustrine emergent wetlands would be accomplished through the purchase of wetland mitigation credits. During tree removal activity, temporary impacts to wetlands would be minimized through the use of deck mats for access to the trees to be removed. Other than wetland mitigation, there are no expected impacts that would require mitigation to avoid being considered significant. Temporary erosion and sediment control measures and permanent stormwater management BMPs would be employed where appropriate to reduce or minimize impacts. The actions discussed below would be employed to minimize potential adverse impacts:

- In compliance with the Federal Emerald Ash Borer quarantine (7 CFR 301.53), all trees removed for this project would be chipped or taken to landfills within the quarantine zone.
- Temporary erosion and sediment control measures, such as the use of deck mats for work in wetlands, would be employed during tree removal activities.
- Permanent stormwater BMPs would also be employed, as appropriate, in compliance with all applicable local, state, and federal regulations.
- Seasonal restrictions would be followed for tree removal activities to avoid impacts to the northern long-eared bat.

In addition to these BMPs and mitigation measures, all activities would be in compliance with the Federal Consistency Determination and the recommendations from Virginia Department of Environmental Quality; and Occupational Safety and Health Administration regulations and standard operating procedures to ensure the safety of all installation and construction personnel.

### **4.3 PERMITS AND OTHER REQUIREMENTS**

USAG Fort Belvoir is responsible for preparing and submitting permit applications and other information needed for the hazardous tree removal at DAAF. Permits or other requirements that could be required include, but are not limited to:

- Virginia Stormwater Management Program, General Permit for Discharges of Stormwater and Construction Activities and associated Stormwater Pollution Prevention
- Virginia Pollutant Discharge Elimination System (VPDES) Industrial Stormwater General Permit and Individual Major Permit
- VADEQ approved Erosion and Sediment Control Plan
- VADEQ approved Stormwater Management Plan
- Section 404 Individual Permit
- Section 401 Water Quality Certification
- Virginia Wetlands Program Individual Permit
- State Historic Preservation Office concurrence
- Coastal Zone Federal Consistency Determination concurrence

### **4.4 CONCLUSION**

The implementation of the hazardous tree removal at DAAF, as proposed under the Proposed Action Alternative, is not expected to result in significant impacts on the environment; therefore, an environmental impact statement is not required.

Table 4-1 provides a brief comparison of the environmental impacts associated with the Proposed Action and No Action alternatives.

**Table 4-1: Summary of Impacts of the Proposed Action and the No Action Alternative**

<b>Resource</b>	<b>Resource Evaluated in Detail in the EA</b>	<b>Proposed Action</b>	<b>No Action Alternative</b>
<b>Air Quality</b>	Yes	Minor temporary impacts from equipment.	No impacts
<b>Ground Water</b>	Yes	No impacts	No impacts
<b>Surface water</b>	Yes	Minor impacts from heavy machinery use during tree cutting activity and from permanent loss of trees. Temporary erosion and sediment control measures would be employed during tree removal activity and stormwater management best management practices would be employed, as appropriate, to address the change in land cover that could result in increased stormwater quantity and water quality concerns.	No impacts
<b>Floodplains</b>	Yes	No impacts	No impacts
<b>Wetlands</b>	Yes	Minor permanent adverse impacts would occur from converting 1.31 acres of forested wetland to emergent wetland and temporary impact to 1.31 acres of palustrine emergent wetland would occur from placing deck mats in the wetlands to prevent compaction and rutting from vehicle access to the trees to be removed. Mitigation would be provided by the purchase of credits from a mitigation bank at a one to one ratio.	No impacts

<b>Resource</b>	<b>Resource Evaluated in Detail in the EA</b>	<b>Proposed Action</b>	<b>No Action Alternative</b>
<b>Vegetation</b>	Yes	Minor adverse impacts due to the removal of trees along the edges of forests.	No impacts
<b>Wildlife and Wildlife Habitat</b>	Yes	Minor adverse impacts through the removal of trees from the project areas and converting forested habitat to shrub habitat.	No impacts
<b>Rare, threatened and endangered species</b>	Yes	No impacts. Tree removal activities would take place outside of the active period for the northern long-eared bat.	No impacts
<b>Coastal Zone</b>	Yes	The Proposed Action would be consistent with the Virginia Coastal Zone Management Policy.	No impacts.
<b>Land Use</b>	No	No impacts	No impacts
<b>Noise</b>	No	Negligible impacts during the tree removal process.	No impacts
<b>Geology and Topography</b>	No	No impacts	No impacts
<b>Cultural Resources</b>	No	No impacts	No Impacts
<b>Socioeconomics</b>	No	Negligible beneficial impacts during tree topping through personnel hired to complete the Proposed Action.	No impacts
<b>Environmental Justice</b>	No	No impacts	No impacts

<b>Resource</b>	<b>Resource Evaluated in Detail in the EA</b>	<b>Proposed Action</b>	<b>No Action Alternative</b>
<b>Traffic and Transportation</b>	No	Negligible impacts due to minimal traffic increases from the Proposed Action. Minor temporary impact to air traffic while trees are being cut and transported, long term beneficial impact for air traffic by removing obstructions.	Long term adverse impacts to air traffic due to airspace obstructions
<b>Utilities</b>	No	No impacts	No impacts
<b>Hazardous Materials and Wastes</b>	No	Negligible impacts generated by the Proposed Action in the form of logs, wood chips and other wood products. In compliance with the Federal Emerald Ash Borer quarantine, all trees removed for this project would be chipped or taken to landfills within the quarantine zone.	No impacts
<b>Visual and Aesthetic Resources</b>	No	Negligible impacts through the removal of trees along the border of the airfield.	No impacts

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## 5.0 REFERENCES

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WSSI. 2015b. Endangered and Threatened Species (ETS) Habitat Evaluation Fort Belvoir Davison Army Airfield – Southeast Section. Fort Belvoir, Virginia.

WSSI. 2015c. Fort Belvoir Davison Army Airfield; Northeast Section, Waters of the U.S. (Including Wetlands) Delineation and Resource Protection Area Evaluation. Fort Belvoir, Virginia.

WSSI. 2015d. Fort Belvoir Davison Army Airfield; Northeast Section, Wood Turtle (*Glyptemys insculpta*) Survey and Habitat Evaluation. Fort Belvoir, Virginia.

WSSI. 2015e. Fort Belvoir Davison Army Airfield; Northwest Section, Waters of the U.S. (Including Wetlands) Delineation and Resource Protection Area Evaluation. Fort Belvoir, Virginia.

WSSI. 2015f. Fort Belvoir Davison Army Airfield Northwest Tree Assessment Map. Fort Belvoir, Virginia.

WSSI. 2015g. Fort Belvoir Davison Army Airfield; Southeast Section, Waters of the U.S. (Including Wetlands) Delineation and Resource Protection Area Evaluation. Fort Belvoir, Virginia.

WSSI. 2015h. Small Whorled Pogonia (*Isotria medeoloides*) Habitat Evaluation Fort Belvoir Davison Army Airfield – Northeast Section. Fort Belvoir, Virginia.

## 6.0 ACRONYMS AND ABBREVIATIONS

µg	Micrograms
AQCR	Air-quality Control Region
AQI	Air Quality Index
BMP	Best Management Practice
°C	Degrees Celsius
CAA	Clean Air Act
CBPA	Chesapeake Bay Preservation Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2e</sub>	Carbon Dioxide Equivalent
CWA	Clean Water Act
DAAF	Davison Army Airfield
dB	Decibel
DCR	Department of Conservation and Recreation
DEQ	Department of Environmental Quality
DOD	Department of Defense
EA	Environmental Assessment
EIS	Environmental Impact Statement
ENRD	Environmental and Natural Resources Division
EO	Executive Order
ESA	Endangered Species Act
ESC	Erosion and Sediment Control
°F	Degrees Fahrenheit
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FEIS	Final Environmental Impact Statement
FFRMS	Federal Flood Risk Management Standard
FNSI	Finding of No Significant Impact
GHG	Greenhouse Gas
IMCOM	Installation Management Command
MS4	Municipal Separate Storm Sewer System
NAAQS	National Ambient Air Quality Standards
NCPC	National Capital Planning Commission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
NOA	Notice of Availability
NOI	Notice of Intent
O <sub>3</sub>	Ozone
Pb	Lead

PEM	Palustrine Emergent
PFO	Palustrine Forested
PM	Particulate Matter
POW	Palustrine Open Water
ppm	Parts Per Million
PSD	Prevention of Significant Deterioration
PSS	Palustrine Scrub Shrub
RMA	Resource Management Area
RPA	Resource Protection Area
SHPO	State Historic Preservation Office
SO <sub>2</sub>	Sulfur Dioxide
TMDL	Total Maximum Daily Load
UFC	Unified Facilities Criteria
U.S.	United States
USC	United States Code
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VOC	Volatile Organic Compound

**APPENDIX A – AGENCY COORDINATION**





# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Ecological Services  
6669 Short Lane  
Gloucester, Virginia 23061

Date: 30 September 2015

## Online Project Review Certification Letter

Project Name: US Army Fort Belvoir Davison Army Airfield Hazard Tree Removal

Dear Applicant:

Thank you for using the U.S. Fish and Wildlife Service (Service) Virginia Field Office online project review process. By printing this letter in conjunction with your project review package, you are certifying that you have completed the online project review process for the referenced project in accordance with all instructions provided, using the best available information to reach your conclusions. This letter, and the enclosed project review package, completes the review of your project in accordance with the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (ESA), and the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c, 54 Stat. 250), as amended (Eagle Act). This letter also provides information for your project review under the National Environmental Policy Act of 1969 (P.L. 91-190, 42 U.S.C. 4321-4347, 83 Stat. 852), as amended. A copy of this letter and the project review package must be submitted to this office for this certification to be valid. This letter and the project review package will be maintained in our records.

The species conclusions table in the enclosed project review package summarizes your ESA and Eagle Act conclusions. These conclusions resulted in “no effect” and/or “not likely to adversely affect” determinations for listed species and critical habitat and/or “no Eagle Act permit required” determinations for eagles regarding potential effects of your proposed project. We certify that the use of the online project review process in strict accordance with the instructions provided as documented in the enclosed project review package results in reaching the appropriate determinations. Therefore, we concur with the “no effect” and “not likely to adversely affect” determinations for listed species and critical habitat and “no Eagle Act permit required” determinations for eagles. Additional coordination with this office is not needed.

Candidate species are not legally protected pursuant to the ESA. However, the Service encourages consideration of these species by avoiding adverse impacts to them. Please contact this office for additional coordination if your project action area contains candidate species.

Should project plans change or if additional information on the distribution of listed species, critical habitat, or bald eagles becomes available, this determination may be reconsidered. This certification letter is valid for one year.

Applicant

Page 2

Information about the online project review process including instructions and use, species information, and other information regarding project reviews within Virginia is available at our website [http://www.fws.gov/northeast/virginiafield/endspecies/project\\_reviews.html](http://www.fws.gov/northeast/virginiafield/endspecies/project_reviews.html). If you have any questions, please contact Kimberly Smith of this office at (804) 693-6694, extension 124.

Sincerely,

/s/ Cynthia A. Schulz

Cindy Schulz  
Supervisor  
Virginia Field Office

Enclosures - project review package

## Species Conclusions Table

Project Name: US Army Fort Belvoir Davison Army Airfield Hazard Tree Removal

Date: 30 September 2015

Species / Resource Name	Conclusion	ESA Section 7 / Eagle Act Determination	Notes / Documentation
Small whorled pogonia	No suitable habitat present on project site (Davison Army Airfield).	No effect.	A small whorled pogonia survey done in March 2015 did not identify any suitable habitat for this species at the project site.  This species is known to be present at only one location on Fort Belvoir North Area, which is more than a mile from Davison Army Airfield.
Northern long-eared bat	Suitable habitat present on project site (Davison Army Airfield).	Not likely to adversely affect.	Surveys to date have not located species on site (Davison Army Airfield). Acoustic monitoring recorded a potential call at a location more than ½ mile to the east of the Airfield.  Tree removal will be prohibited during the active season (i.e., trees will not be removed from April 15 through September 15).
Sensitive joint vetch	Suitable habitat is not present on project site (Davison Army Airfield)	No effect.	Surveys of mudflats elsewhere on Fort Belvoir in 2012 and 2013 did not identify this species.
Critical habitat	No critical habitat is present on Fort Belvoir.	No effect.	
Bald eagle	Unlikely to disturb bald eagles.  No eagle nests are on project site (Davison Army Airfield).	No eagle permit required.	Nearest eagle nest is more than one mile from project site (Davison Army Airfield).
Bald eagle	Unlikely to disturb Eagle Concentration Area.  Project site is not within designated Eagle Concentration Area.	No eagle permit required.	Nearest Eagle Concentration Area is more than one mile from the project site (Davison Army Airfield).



**From:** [mary\\_morrison@fws.gov](mailto:mary_morrison@fws.gov) on behalf of [Virginia Field Office, FW5](#)  
**To:** [Pilcicki, John L CIV USARMY IMCOM \(US\)](#)  
**Cc:** [Keough, Dorothy E CIV USARMY IMCOM ATLANTIC \(US\)](#); [Sumalee Hoskin](#)  
**Subject:** [Non-DoD Source] Fort Belvoir Davison Army Airfield Hazardous Tree Removal  
**Date:** Wednesday, December 09, 2015 3:48:02 PM

---

Good afternoon John,

We have reviewed the project package received on October 23, 2015 for the referenced project. The following comments are provided under provisions of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended, and Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c, 54 Stat. 250), as amended.

We concur with the determinations provided in the Species Conclusion Table dated September 30, 2015 and have no further comments. Should project plans change or if additional information on the distribution of listed species or critical habitat becomes available, this determination may be reconsidered. If you have any questions, please contact me.

Best,

Mary Anne





**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

FEB 09 2016

Directorate of Public Works

SUBJECT: Section 106 Consultation, Davison Army Airfield Tree Removal, Fort Belvoir, Virginia

Mr. Marc Holma  
Architectural Historian  
Department of Historic Resources  
2801 Kensington Avenue  
Richmond, Virginia 23221

Dear Mr. Holma:

Fort Belvoir proposes to remove trees and shrubs on Davison Army Airfield (DAAF) proper that violate the primary surface, approach-departure clearance surface, transitional surface, taxiway clearance, and apron clearance safety areas to comply with regulatory guidance outlined in UFC 3-260-01. The Area of Potential Effect (APE) for this undertaking is defined as the disturbance for the tree removal activities (map enclosed).

Fort Belvoir has undertaken historic property identification efforts within and adjacent to the APE. No historic properties or archaeological resources were identified adjacent to or within the APE. Fort Belvoir evaluated DAAF for National Register eligibility and determined the facility was ineligible (Virginia Department of Historic Resources No. 029-5623).

Fort Belvoir has determined that no historic properties will be affected by the proposed DAAF tree removal [36 CFR § 800.4]. Please provide comment on our determination of no historic properties affected in accordance with 36 CFR § 800.4(d). If we do not receive your comments within the required 30 days, we will assume no comment and proceed with the project as planned. A letter concerning the DAAF tree removal has been sent to the Catawba Indian Nation, Eastern Band of Cherokee-Indians, Pamunkey Indian Tribe, Tuscarora Nation of New York, and United Keetoowah Band of Cherokee Indians in Oklahoma.

Fort Belvoir's points of contact are Bill Sanders, Director of Public Works, at 703-806-3017 and Ms. Alison Talbot, Cultural Resources Manager, at 703-806-3759 or [alison.s.talbot.civ@mail.mil](mailto:alison.s.talbot.civ@mail.mil).

Sincerely,

*for*   
Michelle D. Mitchell  
Colonel, U.S. Army  
Commanding

Enclosures

**“LEADERS IN EXCELLENCE”**

US Army Garrison Fort Belvoir

Section 106 Consultation, Davison Army Airfield Tree Removal, Fort Belvoir, Virginia

VDHR File #: 2016-0188

VDHR has reviewed the above referenced project and concurs with the Army's determination of No Historic Properties Affected.

  
\_\_\_\_\_  
Marc Holma, Architectural Historian  
Office of Review and Compliance  
Virginia Department of Historic Resources

4 MARCH 16  
Date



**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

FEB 09 2016

Directorate of Public Works

SUBJECT: Section 106 Consultation, Davison Army Airfield Tree Removal, Fort Belvoir, Virginia

Chief William Harris  
Catawba Indian Nation  
996 Avenue of the Nations  
Rock Hill, South Carolina 29730

Dear Chief Harris:

Fort Belvoir proposes to remove trees and shrubs on Davison Army Airfield (DAAF) proper that violate the primary surface, approach-departure clearance surface, transitional surface, taxiway clearance, and apron clearance safety areas to comply with regulatory guidance outlined in UFC 3-260-01. The Area of Potential Effect (APE) for this undertaking is defined as the disturbance for the tree removal activities (map enclosed).

Fort Belvoir has undertaken historic property identification efforts within and adjacent to the APE. No historic properties or archaeological resources were identified adjacent to or within the APE. Fort Belvoir evaluated DAAF for National Register eligibility and determined the facility was ineligible (Virginia Department of Historic Resources No. 029-5623).

Fort Belvoir has determined that no historic properties will be affected by the proposed DAAF tree removal [36 CFR § 800.4]. Please provide comment on our determination of no historic properties affected in accordance with 36 CFR § 800.4(d). If we do not receive your comments within the required 30 days, we will assume no comment and proceed with the project as planned. A letter concerning the DAAF tree removal has been sent to the Virginia Department of Historic Resources, Eastern Band of Cherokee Indians, Pamunkey Indian Tribe, Tuscarora Nation of New York, and United Keetoowah Band of Cherokee Indians of Oklahoma.

Fort Belvoir's points of contact are Bill Sanders, Director of Public Works, at 703-806-3017 and Ms. Alison Talbot, Cultural Resources Manager, at 703-806-3759 or [alison.s.talbot.civ@mail.mil](mailto:alison.s.talbot.civ@mail.mil).

Sincerely,

  
Michelle D. Mitchell  
Colonel, U.S. Army  
Commanding

Enclosures

**“LEADERS IN EXCELLENCE”**



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

FEB 09 2016

Directorate of Public Works

SUBJECT: Section 106 Consultation, Davison Army Airfield Tree Clearing, Fort Belvoir, Virginia

Principal Chief Michell Hicks  
Eastern Band of Cherokee Indians  
P.O. Box 455  
Cherokee, North Carolina 28719

Dear Principal Chief Hicks:

Fort Belvoir proposes to remove trees and shrubs on Davison Army Airfield (DAAF) proper that violate the primary surface, approach-departure clearance surface, transitional surface, taxiway clearance, and apron clearance safety areas to comply with regulatory guidance outlined in UFC 3-260-01. The Area of Potential Effect (APE) for this undertaking is defined as the disturbance for the tree removal activities (map enclosed).

Fort Belvoir has undertaken historic property identification efforts within and adjacent to the APE. No historic properties or archaeological resources were identified adjacent to or within the APE. Fort Belvoir evaluated DAAF for National Register eligibility and determined the facility was ineligible (Virginia Department of Historic Resources No. 029-5623).

Fort Belvoir has determined that no historic properties will be affected by the proposed DAAF tree removal [36 CFR § 800.4]. Please provide comment on our determination of no historic properties affected in accordance with 36 CFR § 800.4(d). If we do not receive your comments within the required 30 days, we will assume no comment and proceed with the project as planned. A letter concerning the DAAF tree removal has been sent to the Virginia Department of Historic Resources, Catawba Indian Nation, Pamunkey Indian Tribe, Tuscarora Nation of New York, and United Keetoowah Band of Cherokee Indians in Oklahoma.

Fort Belvoir's points of contact are Bill Sanders, Director of Public Works, at 703-806-3017 and Ms. Alison Talbot, Cultural Resources Manager, at 703-806-3759 or [alison.s.talbot.civ@mail.mil](mailto:alison.s.talbot.civ@mail.mil).

Sincerely,

  
Michelle D. Mitchell  
Colonel, U.S. Army  
Commanding

Enclosures

“LEADERS IN EXCELLENCE”



**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

FEB 09 2016

Directorate of Public Works

SUBJECT: Section 106 Consultation, Davison Army Airfield Tree Clearing, Fort Belvoir, Virginia

Chief Robert Gray  
Pamunkey Indian Tribe  
64 Lay Landing Road  
King William, Virginia 23086

Dear Chief Gray:

Fort Belvoir proposes to remove trees and shrubs on Davison Army Airfield (DAAF) proper that violate the primary surface, approach-departure clearance surface, transitional surface, taxiway clearance, and apron clearance safety areas to comply with regulatory guidance outlined in UFC 3-260-01. The Area of Potential Effect (APE) for this undertaking is defined as the disturbance for the tree removal activities (map enclosed).

Fort Belvoir has undertaken historic property identification efforts within and adjacent to the APE. No historic properties or archaeological resources were identified adjacent to or within the APE. Fort Belvoir evaluated DAAF for National Register eligibility and determined the facility was ineligible (Virginia Department of Historic Resources No. 029-5623).

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9820 FLAGLER ROAD, SUITE 213  
FORT BELVOIR, VIRGINIA 22060-5928

REPLY TO  
ATTENTION OF

FEB 09 2016

Directorate of Public Works

SUBJECT: Section 106 Consultation, Davison Army Airfield Tree Clearing, Fort Belvoir, Virginia

Chief Leo R. Henry  
Tuscarora Nation of New York  
2006 Mt. Hope Road  
Lewistown, New York 14092

Dear Chief Henry:

Fort Belvoir proposes to remove trees and shrubs on Davison Army Airfield (DAAF) proper that violate the primary surface, approach-departure clearance surface, transitional surface, taxiway clearance, and apron clearance safety areas to comply with regulatory guidance outlined in UFC 3-260-01. The Area of Potential Effect (APE) for this undertaking is defined as the disturbance for the tree removal activities (map enclosed).

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9820 FLAGLER ROAD, SUITE 213  
FORT BELVOIR, VIRGINIA 22060-5928

REPLY TO  
ATTENTION OF

FEB 09 2016

Directorate of Public Works

SUBJECT: Section 106 Consultation, Davison Army Airfield Tree Clearing, Fort Belvoir, Virginia

Chief George Wickliffe  
United Keetoowah Band of Cherokee Indians  
in Oklahoma  
P.O. Box 746  
Tahlequah, Oklahoma 74465

Dear Chief Wickliffe:

Fort Belvoir proposes to remove trees and shrubs on Davison Army Airfield (DAAF) proper that violate the primary surface, approach-departure clearance surface, transitional surface, taxiway clearance, and apron clearance safety areas to comply with regulatory guidance outlined in UFC 3-260-01. The Area of Potential Effect (APE) for this undertaking is defined as the disturbance for the tree removal activities (map enclosed).

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Sincerely,

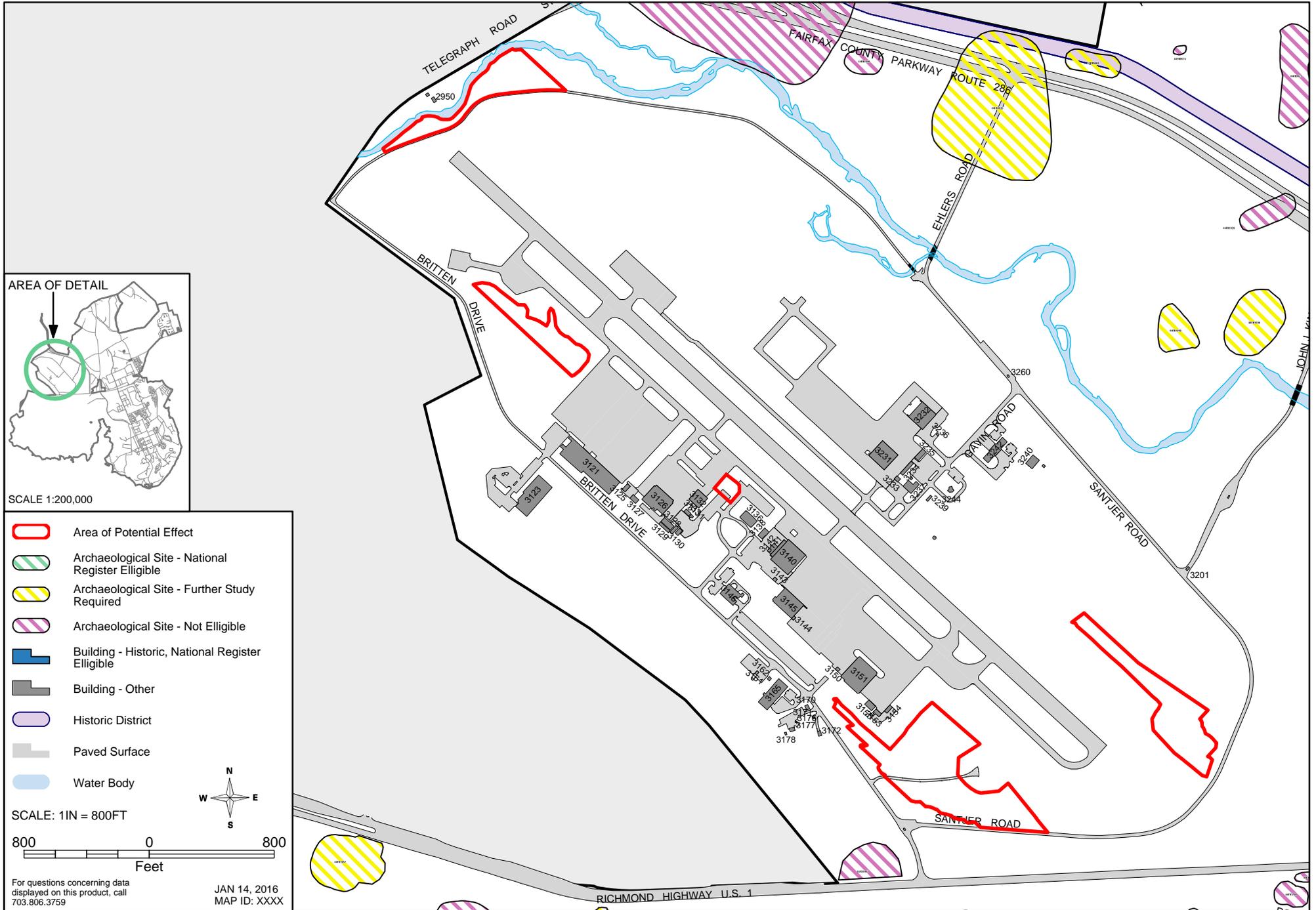
  
Michelle D. Mitchell  
Colonel, U.S. Army  
Commanding

Enclosures

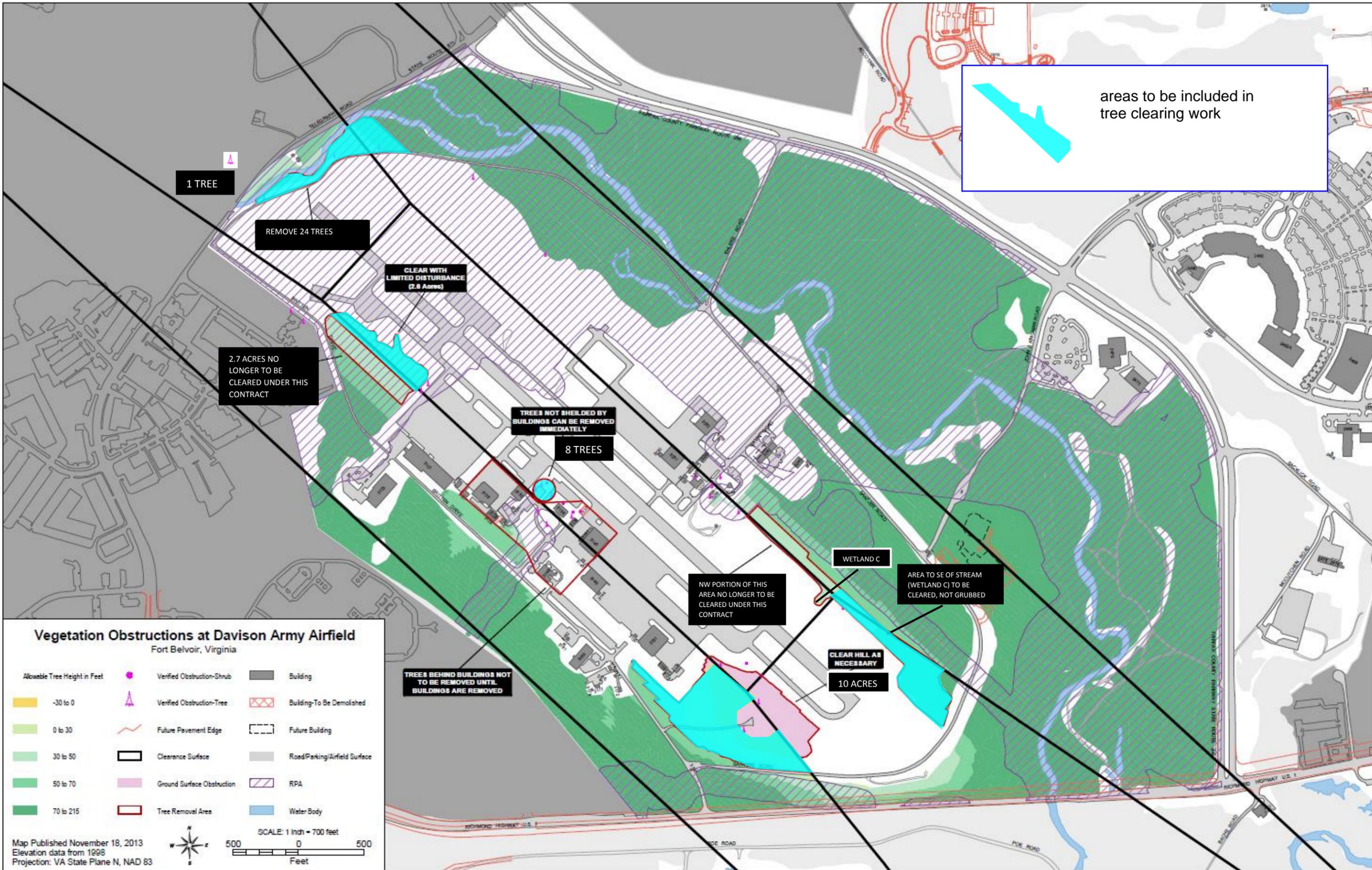
**“LEADERS IN EXCELLENCE”**



# Area of Potential Effect for DAAF Tree Work







areas to be included in tree clearing work

1 TREE

REMOVE 24 TREES

CLEAR WITH LIMITED DISTURBANCE (2.8 Acres)

2.7 ACRES NO LONGER TO BE CLEARED UNDER THIS CONTRACT

TREES NOT SHIELDED BY BUILDINGS CAN BE REMOVED IMMEDIATELY

8 TREES

NW PORTION OF THIS AREA NO LONGER TO BE CLEARED UNDER THIS CONTRACT

WETLAND C

AREA TO SE OF STREAM (WETLAND C) TO BE CLEARED, NOT GRUBBED

TREES BEHIND BUILDINGS NOT TO BE REMOVED UNTIL BUILDINGS ARE REMOVED

CLEAR HILL AS NECESSARY

10 ACRES



**APPENDIX B – AIR QUALITY RECORD OF NON-APPLICABILITY**



# GENERAL CONFORMITY – RECORD OF NON-APPLICABILITY

**Project/Action Name:** Davison Army Airfield Hazardous Tree Removal

**Project/Action Point of Contact:** Jay Stotzky, Fort Belvoir

**Begin Date (Anticipated):** 2016 **End Date (Anticipated):** Five weeks after commencement

General Conformity under the Clean Air Act, Section 176 has been evaluated for the project described above according to the requirements of 40 CFR 93, Subpart B. The requirements of this rule are not applicable to this project/action because the total project emissions (presented as tons per year) which occur in less than a year have been estimated to be:

## Total Project Emissions

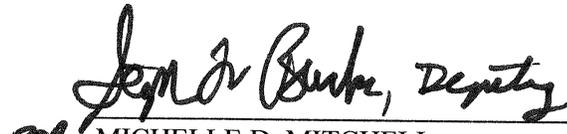
Volatile Organic Compounds (VOC)	0.47 tons per year (tpy)
Nitrogen Oxides (NO <sub>x</sub> )	1.92 tpy
Sulfur Oxides (SO <sub>x</sub> )	0.001 tpy
Carbon Monoxide (CO)	1.44 tpy
Particulate Matter Less than 2.5 μm (PM <sub>2.5</sub> )	0.15 tpy

These emission rates, including any combination of PM<sub>2.5</sub> and its potential precursors (i.e., NO<sub>x</sub>, SO<sub>x</sub>, and VOC), are below the conformity threshold values established at 40 CFR 93.153(b):

## Conformity Threshold Rate

VOC	50 tpy
NO <sub>x</sub>	100 tpy
SO <sub>x</sub>	100 tpy
CO	100 tpy
PM <sub>2.5</sub>	100 tpy

Supporting documentation and emissions estimates are attached.

  
MICHELLE D. MITCHELL  
Colonel, AG  
Commanding

## SUPPORTING DOCUMENTATION

### Description of Project/Action:

The Proposed Action entails the removal of trees on DAAF airfield proper that violate the primary surface, approach-departure clearance surface, transitional surface, taxiway clearance, and apron clearance safety areas to ensure pilot safety and to comply with regulatory guidance outlined in Unified Facilities Criteria (UFC) 3-260-01, Airfield and Heliport Planning Design, and Federal Aviation Regulation (FAR) Part 77.

In accordance with UFC 3-260-01, Airfield and Heliport Planning Design, trees that project into imaginary surfaces must be removed or lowered to a distance that does not violate airfield and airspace criteria. Imaginary surfaces are surfaces in space established around airfields in relation to runway(s), helipad(s), or helicopter runway(s) that are designed to define the obstacle free airspace around the airfield. The imaginary surfaces for Department of Defense (DOD) airfields are the primary surface, the approach-departure clearance surface, the transitional surface, the inner horizontal surface, the conical surface, and the outer horizontal surface. Under the Proposed Action, Fort Belvoir would remove trees that encroach the imaginary surface creating a hazardous condition.

The Proposed Action is needed for safety and compliance purposes. During the 2012 Installation Management Command (IMCOM) Quality Assurance Evaluation, 2013 Airfield Certification and Safety Inspection, and 2014 United States Army Aeronautical Service Airfield Waiver Package review, it was determined that DAAF was not in compliance with regulatory guidance due to trees that penetrate the imaginary surfaces and create hazardous obstructions to aviation operations around the airfield.

Trees would be removed from five sections of DAAF by topping or cutting. The stumps would be left in place. In compliance with the Federal Emerald Ash Borer quarantine (7 Code of Federal Regulations [CFR] 301.53), all trees removed for this project would be chipped or taken to landfills within the quarantine zone.

### Analysis Methodology:

Analysis was performed of expected air emissions associated with equipment to be used in planned tree removal activities. Published emission rates for representative equipment were obtained from EPA sources and incorporated into an Excel spreadsheet developed for this analysis. Emission estimation methodology and information was obtained from the following three sources: (1) *Exhaust Emission Factors for Nonroad Engine Modeling – Spark Ignition*, US EPA, Report Number EPA-420-R-10-019, NR-010f, July 2010; (2) *Nonroad Evaporative Emission Rates*, US EPA, Report Number EPA-420-R-10-021, NR-012d, July 2010, and (3) *AP-*

42, *Compilation of Air Pollutant Emission Factors, Section 3-3 Gasoline and Diesel Industrial Engines (10/96)*. The spreadsheet quantifies emissions from the operation of the equipment used for cutting and removal of the trees from the site. The emissions were then compared to the applicable regulatory thresholds.

### **Input Parameters and Assumptions:**

Below are the project-specific parameters entered for the proposed project, which includes the following related activities:

#### Project Duration and Equipment on Site

- Tree removal crew on site for an estimated 10 weeks, five days per week
- Chainsaw operations are expected to operate the equivalent of one chainsaw operating five hours per day
- Wood chipper expected to operate on average five hours per day
- Material Handler/Loader will be used to move logs, load heavy truck also operating five hours per day
- Heavy Truck will remove logs from site; they will be onsite with engine running up to five hours per day
- Equipment sizes were estimated based on typical sizes used for tree removal operations and communications with the removal contractor

#### Air Emissions from Site Activities

- Chainsaws use – emissions estimated for evaporative gasoline use and fuel combustion
- Wood chipper, Material Handler, and Heavy Truck support units with diesel engines – emissions limited to fuel combustion
- Fugitive dust emissions due to land disturbance will be negligible and were not quantified.

The following assumptions were made for this project:

- Trees will be selectively harvested based on height requirements for Davison Army Air Field. This will minimize the extent the terrain is disturbed which otherwise might cause soil and ground materials to become airborne particulate matter. On this basis the analysis concluded there will be negligible fugitive emissions leaving the site.
- PM<sub>2.5</sub> will be a fraction of the PM<sub>10</sub> emissions; to be conservative, it was assumed that PM<sub>10</sub> is equal to PM<sub>2.5</sub>. Therefore, through if application of the emission factors available for PM<sub>10</sub> indicates the predicted PM<sub>10</sub> emissions do not exceed regulatory thresholds, then neither will PM<sub>2.5</sub> emissions.

## Results

### Estimated Calculations

The below emission estimates are from the Excel spreadsheet developed for this project.

<b>Emissions Summary</b>	VOC	NO <sub>x</sub>	SO <sub>x</sub>	CO	PM <sub>10</sub> /PM <sub>2.5</sub>
<b>TOTAL Tons</b>	<b>0.47</b>	<b>1.92</b>	<b>0.001</b>	<b>1.44</b>	<b>0.15</b>

ESTIMATED AIR EMISSIONS FOR DAVISON ARMY AIR FIELD TREE REMOVAL PROJECT

<b>Pollutant - Lbs</b>	<b>CO</b>	<b>NOx</b>	<b>PM10/PM2.5</b>	<b>SO2</b>	<b>VOC</b>	<b>CO2</b>
<b>Chainsaws</b>	2,059.6	3.8	30.6	0.7	635.0	3,268
<b>Support Equipment</b>	825.0	3,828.5	271.7	1.5	310.1	142,025
<b>TOTAL, Lbs for project</b>	<b>2,884.6</b>	<b>3,832.3</b>	<b>302.3</b>	<b>2.2</b>	<b>945.1</b>	<b>145,293.3</b>

<b>Pollutant - Tons</b>	<b>CO</b>	<b>NOx</b>	<b>PM10/PM2.5</b>	<b>SO2</b>	<b>VOC</b>	<b>CO2</b>
<b>Chainsaws</b>	1.03	0.002	0.02	0.0003	0.32	1.63
<b>Support Equipment</b>	0.41	1.91	0.14	0.001	0.16	71.01
<b>TOTAL, tons for project</b>	<b>1.44</b>	<b>1.92</b>	<b>0.15</b>	<b>0.001</b>	<b>0.47</b>	<b>72.6</b>

Metric Tons      66.0

## Diesel Engine Exhaust Emissions

Equipment supporting the tree removal process:

1. Wood chipper - estimated at 150 hp diesel engine, operating 5 hours per day
2. Material Loader - Caterpillar 279 Loader (or similar) for moving logs and loading truck; 74 hp diesel engine operating 5 hours per day
3. Heavy Truck - Ford 750 diesel power truck (or similar) for receipt and transfer of logs from site; assumed 270 hp diesel engine operating onsite 5 hours per day

### Emission Factors

Emission estimates based on EPA's AP-42 Compilation of Air Pollutant Emission Factors, Chapter 3.3 Gasoline and Diesel Industrial Engines (10/1996).

Unit		Pollutants	CO	NOx	PM10/PM2.5	SO2	VOC	CO2
	HP	Emission Rate lb/hp-hr	0.01	0.03	0.0022	0.00001	0.0025	1.15
Chipper	150		1.00	4.65	0.33	0.002	0.38	172.5
Loader	74	Emissions lbs/hour	0.49	2.29	0.16	0.0009	0.19	85.1
Truck	270		1.80	8.37	0.59	0.003	0.68	310.5
	Hours/day							
Chipper	5		5.0	23.3	1.7	0.009	1.9	862.5
Loader	5	Emissions lbs/day	2.5	11.5	0.8	0.004	0.9	425.5
Truck	5		9.0	41.9	3.0	0.02	3.4	1552.5
TOTAL			16.5	76.6	5.4	0.03	6.2	2840.5
		Days						
Project Support Equipment TOTAL		50	825.0	3,828.5	271.7	1.5	310.1	142,025.0

## Emission Estimates for Chain Saws

### Exhaust Emissions

0

#### References:

(1) *Exhaust Emission Factors for Nonroad Engine Modeling - Spark-Ignition* ; EPA Report No. EPA-420-R-10-019, NR-010f, July 2010

(2) *Nonroad Evaporative Emission Rates* ; EPA Report No. EPA-420-R-10-021, NR-012d, July 2010

#### Source

Chainsaw      Size      91.1 cc      bHp      7.2      Tank Size      oz.      27.9      equiv. gal      0.22  
 SCC      226007005      Chain Saws > 6 Hp

### Operating Scenario

Tree removal crew onsite operating three saws intermittently during daily 8 hour shift over ten week period, five days per week. Equivalent operation estimated to be equivalent to 5 hours per day for single saw for a total of 250 hours of individual saw operation.

Saw Operating Days      50      Chainsaw onsite days (3/day)      150  
 Saw Operating Hours      250      Chainsaw onsite hours (3/day, 8 hr/day each)      1,200

### Exhaust Emissions

Emission Factors	HC	CO	NOx	PM	BSFC (lbs/hp-hr)	CO2	SO2	Source
gm/hp-hr	159.58	519.02	0.97	7.7	0.921	823.6	0.167	Ref 1, Table 3 (page 6) and CO2 and SO2 calculations on pages 16 - 17
gm/hour	1149	3737	7	55		5930	1.20	
lbs/hour	2.53	8.24	0.02	0.12	6.63	13.07	0.003	
Lbs Total	633.3	2,059.6	3.8	30.6	1,657.8	3,268.3	0.7	

$CO_2 = [BSFC \times 453.6 \text{ gm/lb} - HC \text{ (gm/hp-hr)}] \times 0.87 \text{ CMF} \times 44 \text{ lbs } CO_2 / 12 \text{ lb carbon}$   
 $SO_2 = [BSFC \times 453.6 \text{ gm/lb} \times (1 - SOXCNF) - HC] \times 0.01 \times SOXBAS \times 2$   
 BSFC = Brake-specific fuel consumption rate  
 CMF = carbon mass fraction for gasoline and diesel fuels of 0.87  
 SOXCNF = fraction of sulfur converted to particulate matter, 0.03 for gasoline  
 SOXBAS = sulfur content in the fuel, 0.0339 for gasoline

## Evaporative Emissions

Evaporative emissions are associated with hydrocarbons released by evaporation from equipment. EPA has developed methodologies to estimate emissions that result from the diurnal changes in temperature during equipment use, the permeation through the tank and hose in the fuel system, running losses from the heating due to equipment operation, and hot soak conditions after the equipment is shutdown. These conditions are considered applicable to chainsaw use and would apply to all the saws on site.

### Emission Factors

#### Diurnal Emissions

From daily temperature changes causing in expansion and contraction of fuel volumes (i.e., breathing losses).  
Calculated based on application of Wade Equations from Reference 2 (Appendix B).

$\text{Vapor space (ft}^3\text{)} = [(1.15 - \text{tank fill}) \times \text{tank size}] / 7.481 \text{ gal/ft.}^3$ <p>where:</p> <p>Tank fill: 0.5 (assume 50%)</p> <p>Tank size: 0.22 gallons</p> <p>Vapor space = 0.019 ft.<sup>3</sup></p>	Equation B-1
$T1(^{\circ}\text{F}) = (T_{\text{max}} - T_{\text{min}}) \times 0.922 + T_{\text{min}}$ <p>where:</p> <p>T<sub>max</sub>: maximum expected diurnal temperature (°F) assume 95</p> <p>T<sub>min</sub>: minimum expected diurnal temperature (°F) assume 65</p> <p>T1(°F) = 92.7 (°F)</p>	Equation B-2
$V_{100} \text{ (psi)} = 1.0223 \times \text{RVP} + [(0.0357 \times \text{RVP}) / (1 - 0.0368 \times \text{RVP})]$ <p>where:</p> <p>V<sub>100</sub> (psi) calculated vapor pressure at 100°F</p> <p>RVP Reid Vapor Pressure of the fuel for gasoline, assume 7.8</p> <p>V<sub>100</sub> = 8.365 psi</p>	Equation B-3
$E_{100} \text{ (\%)} = 66.401 - 12.718 \times V_{100} + 1.3067 \times V_{100}^2 - 0.077934 \times V_{100}^3 + 0.0018407 \times V_{100}^4$ <p>where:</p> <p>E<sub>100</sub> (%) = percent fuel evaporated at 100°F</p> <p>E<sub>100</sub> (%) = 14.8</p>	Equation B-4

$D_{\min} (\%) = E_{100} + [(262 / (0.1667 \times E_{100} + 560) - 0.113) \times (100 - T_{\min})]$		Equation B-5a
$D_{\max} (\%) = E_{100} + [(262 / (0.1667 \times E_{100} + 560) - 0.113) \times (100 - T_1)]$		Equation B-5b
<p>where:</p> <p><math>D_{\min/\max}</math> = distillation percent at the maximum and minimum temperatures in the fuel tank</p> <p>Dmin = 26.5</p> <p>Dmax = 17.3</p>		
$P_i (\text{psi}) = 14.697 - 0.53089 \times D_{\min} + 0.0077215 \times D_{\min}^2 - 0.000055631 \times D_{\min}^3 + 0.0000001769 \times D_{\min}^4$		Equations B-6a & B-6b
$P_f (\text{psi}) = 14.697 - 0.53089 \times D_{\max} + 0.0077215 \times D_{\max}^2 - 0.000055631 \times D_{\max}^3 + 0.0000001769 \times D_{\max}^4$		
<p>where:</p> <p><math>P_{i/f}</math> (psi) = initial and final pressures</p> <p><math>P_i</math> = 5.10 psi</p> <p><math>P_f</math> = 7.55 psi</p>		
<p>Density (lbs/gallon) = 6.386 - 0.0186 x RVP</p> <p>RVP = 7.8</p> <p>Density = 6.241 lbs/gallon</p>		
$\text{MW (lb/lb mole)} = (73.23 - 1.274 \times \text{RVP}) + [0.5 \times (T_{\min} + T_1) - 60] \times 0.059$		Equation B-8
<p>where:</p> <p>MW = calculated molecular weight based on RVP</p> <p>MW = 64.4 lb/lb mole</p>		
$\text{Diurnal Emissions (grams)} = \frac{\text{vapor space} \times 454 \times \text{density} \times [520 / (690 - 4 \times \text{MW})] \times 0.5 \times [P_i / (14.7 - P_i) + P_f / (14.7 - P_f)]}{[(14.7 - P_i) / (T_{\min} + 460) - (14.7 - P_f) / (T_1 + 460)]}$		Equation B-9
<p>Diurnal Emissions = 0.27 grams/day</p>		
<p>Total Diurnal Emissions = 0.0006 lbs/day saw days 150</p>		0.09 lbs Diurnal Emissions
Permeation Emissions	<p>Emissions estimated for vapor released as a result of permeation through tank and hose.</p> <p>Tank permeation rate from Reference 2, Table 2 (page 12) for nylon tanks used by chainsaws</p> <p>Gms/m<sup>2</sup>/day 1.25</p> <p>Tank Surface Area, m<sup>2</sup> 0.1 based on Reference 2, Table E1 for 0.22 gallon tank</p> <p>Tank Perm. Emissions 0.125 gms/day</p>	

	Hose permeation rate from Reference 2, Table 7 (page 17) and temperature adjustment (page 16)					
	Rate, Gms/m <sup>2</sup> /day	140				
	Temperature Correction Factor (TCF)	TCF = 0.06014 x EXP (0.0385 x T <sub>ave</sub> )				
	T <sub>ave</sub> °F	Ave temp.	assume	80	TCF	1.31
	Hose Dimensions, m.	0.061	length	0.006354	diameter	Ref. (2), Table A3 (page A30)
	Hose Surface Area, m <sup>2</sup>	π x Length x Diam.		0.001218	m <sup>2</sup>	
	Hose Perm. Emissions = rate x TCF x Area					
	Hose Perm. Emissions	0.22	gms/day			
	Tank and Hose Permeation Emissions	0.35	gms/day			
	Total Permeation Emissions =	0.0008	lbs/day	saw days	150	0.12 lbs Permeation Emissions
Running Emissions	Emissions estimated for vapor released as a result of heating caused by the running of the engine. Running emission rate from Reference 2, Table 11 (page 25) for Trimmer/Edger. Factor for Trimmer/Edger recommended for applicability to Chainsaws in Appendix G, Table G6 (page G7)					
	Rate, gm/hour	0.58				
	Running Emissions	4.64	gms/day			
	Total Running Emissions =	0.010	lbs/day	saw days	150	1.53 lbs Running Emissions
Hot Soak Emissions	Hot soak emissions occur when the engines are shutdown for sufficient time and allowed to cool Hot soak emissions rate from Reference 2, Table 13 (page 27)					
	Rate, gms per start	0.27				
	Starts hour of Use	0.25	From Reference 2, Table H5 (H6)			
	Hot Soak Emissions	0.0675	gms/operating hour			
	Total Hot Soak Emissions =	0.00015	lbs/op. hour	saw op. hour	250	0.04 lbs Hot Soak Emissions

**Total Evaporative Emissions**

1.78	Lbs Evaporative VOC Emissions
------	-------------------------------

<b>Total Chain Saw Emissions</b>	HC	CO	NOx	PM	CO2	SO2
<b>Exhaust, lbs</b>	633.3	2,059.6	3.8	30.6	3,268.3	0.7
<b>Evaporative, Lbs</b>	1.8	-	-	-	-	-
<b>TOTAL, lbs</b>	635.0	2,059.6	3.8	30.6	3,268.3	0.7

**APPENDIX C – COASTAL ZONE FEDERAL CONSISTENCY DETERMINATION**



## **APPENDIX C**

### **Determination of Consistency with Virginia's Coastal Resources Management Program**

This document provides the Commonwealth of Virginia with the Fort Belvoir Consistency Determination under the Coastal Zone Management Act Section 307(c)(1) and 15 CFR Part 930, Subpart C, for the Davison Army Airfield (DAAF) Hazardous Tree Removal. The information in this Consistency Determination is provided pursuant to 15 CFR §930.39.

This document represents an analysis of project activities in light of established Virginia Coastal Resources Management Program (CRMP) Enforceable Policies and Programs. Furthermore, submission of this consistency determination reflects the commitment of the U.S. Department of the Army (Army) to comply with those Enforceable Policies and Programs. The proposed action would be implemented in a manner that is consistent with the Virginia CRMP. The Army has determined that the removal of trees which pose an immediate hazard to safety of flight for aircraft in the vicinity of DAAF would have a negligible impact on any land and water uses or natural resources of the Commonwealth of Virginia's coastal zone.

#### **C1 Description of Proposed Action**

The Proposed Action takes place entirely within the boundaries of Fort Belvoir (Figure 1-1). The Proposed Action entails the removal of trees and shrubs on DAAF airfield proper that violate the primary surface, approach-departure clearance surface, transitional surface, taxiway clearance, and apron clearance safety areas to comply with regulatory guidance outlined in UFC 3-260-01 (Figure 2-1). Trees would be removed from five sections of DAAF that are described below:

##### **1. Southeast Section**

All trees would be cleared within the Southeast Section of the airfield, within upland and wetland areas. The tree removal in this section would result in permanent conversion of 0.072 acres of palustrine forested wetlands to palustrine emergent wetlands. The area will be flagged to distinguish clearing areas and prevent incidental impacts. Tree trunks and crowns would need to be cut with care and caution, and all tree cuttings in the wetland area would need to be removed from the site. No cut trees, including limbs, can be placed or left in the wetland, and no grubbing nor grading are permissible in this area. When using heavy equipment, deck mats would be necessary to prevent equipment from sinking on the site and causing compaction and rutting in the wetland areas. Stumps will be left in place. Following clearing, at an appropriate time of year, wetlands seed mix would be spread. The Southeast Section is approximately 4.7 acres.

## 2. Northeast Section

The Northeast Section is approximately 3.5 acres and is within the area along the Accotink Creek, adjacent to the Northeast corner of the runway, the 24 tallest trees would be selectively removed from the upland area. Stumps would be left in place.

## 3. Northwest Section

Within the easternmost section of this area, all trees would be removed from a palustrine forested wetland. The tree removal in this section would result in permanent conversion of 1.234 acres of palustrine forested wetlands to palustrine emergent wetlands. The area will be flagged to distinguish clearing areas and prevent incidental impacts. Tree trunks and crowns would need to be cut with care and caution, and all tree cuttings in the wetland area would need to be removed from the site. No cut trees, including limbs, can be placed or left in the wetland, and no grubbing nor grading are permissible in this area. When using heavy equipment, deck mats would be necessary to prevent equipment from sinking on the site and causing compaction and rutting in the wetland areas. Stumps will be left in place. Following clearing, at an appropriate time of year, wetlands seed mix would be spread. The Northwest Section is approximately 2.5 acres.

## 4. West Section:

Approximately eight trees would be removed that are not shielded by buildings in the developed area west of DAAF runway.

## 5. Southwest Section:

On the hill located in the southwest section of the runway, all trees would be cleared. The Southwest Section is approximately 9.2 acres.

In compliance with the Federal Emerald Ash Borer quarantine (7 CFR 301.53), all trees removed for this project would be chipped or taken to landfills within the quarantine zone.

## **C2 Assessment of Probable Effects**

Fort Belvoir has prepared a Draft Environmental Assessment (EA) to evaluate the potential environmental impacts from the DAAF Hazardous Tree Removal in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code 4321-4347), and 32 Code of Federal Regulations (CFR) Part 651, Environmental Analysis of Army Actions.

The Army intends to obtain all applicable permits required for implementation of the Proposed Action alternative. A review of the permits and/or approvals required under the enforceable policies is being conducted. The Army has evaluated the removal of trees which pose an immediate hazard to safety of flight for aircraft in the vicinity of DAAF for its foreseeable effects on the following enforceable policies:

**Fisheries** – The Proposed Action alternative has no foreseeable impacts on fish or shellfish resources and would not affect the promotion of, or access to, commercial or recreational fisheries. The proposed site is located approximately 3.3 miles northwest of the Potomac River and 1.5 miles from Accotink Bay. The closest water features are on-site non-tidal wetlands located in the northern and southern portions of the site. These wetlands drain to Accotink Creek, which flows around the northern and eastern boundary of the site, and drains to the Potomac River. Compliance with the installation’s Municipal Separate Storm Sewer System (MS4) Permit and the Virginia Erosion and Sediment Control regulations would minimize the risk of sediment being transported off the site to the Potomac River Fishery. Best management practices recommended by the Virginia Departments of Conservation and Recreation (DCR) and Forestry (DOF) would be employed, such as the use of marsh mats or timber mats when using heavy equipment in wetland areas.

**Subaqueous Lands Management** – The Virginia Marine Resources Commission (VMRC), 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 project would have no foreseeable impact on subaqueous resources.

**Tidal and Non-tidal Wetlands Management** – The Proposed Action alternative would involve minor effects on non-tidal wetlands. The Army anticipates that the Proposed Action alternative would permanently impact 1.31 acres of palustrine forested wetlands and temporarily impact 1.31 acres of palustrine emergent wetlands. The permanent wetland impacts result from permanent conversion of PFO wetlands to PEM, while the temporary impacts result from the placement of deck mats in the wetlands to prevent compaction and rutting from accessing the trees to be cleared through the PEM wetland. The Army would obtain permits from the U.S. Army Corps of Engineers (USACE) and the Virginia Department of Environmental Quality (DEQ) prior to work. The Army would provide compensation as required by the USACE and the DEQ for unavoidable impacts through the purchase of wetland mitigation bank credits. Following clearing, wetland seed mix will be spread, at the appropriate time of year, to stabilize soils.

**Dunes Management** – The Proposed Action alternative would not affect any coastal primary sand dunes.

**Non-Point Source Water Pollution Control** – As the Proposed Action is greater than one acre, an Erosion Sediment Control (ESC) plan and a stormwater management plan would be developed. The ESC plan would include temporary erosion and sediment control measures. The ESC plan and stormwater management plan would be prepared utilizing the requirements for water quality and quantity found in 9VAC25-870. Minor adverse impacts would occur from the Proposed Action on surface water with regard to water quantity and water quality. Appropriate temporary erosion and sediment control measures or permanent stormwater Best Management Practices (BMP) will be employed to minimize impacts to water quality from disturbance during tree removal and potential increase in stormwater runoff. Monitoring of the outfalls would occur to ensure water quality is maintained during and after the tree removal activity.

**Point Source Water Pollution Control** – The Proposed Action would not result in point source water discharge.

**Shoreline Sanitation** – The Proposed Action is not located on or near a shoreline. The Proposed Action alternative would therefore have no impact on shoreline sanitation.

**Air Pollution Control** – The proposed site is located within an ozone and PM<sub>2.5</sub> non-attainment area, triggering the need to analyze emissions and determine the applicability of General Conformity Rule under the Clean Air Act (CAA). A construction emissions estimate indicates that the tree removal activity would not generate sufficient emissions to trigger a need for a full General Conformity Analysis. No changes to the Fort Belvoir's Title V air permit would be required.

The estimated emissions associated with the tree removal project are very low, a small fraction of what was reported for Fort Belvoir for each pollutant in 2014. The temporary impacts to air quality would be minor temporary impacts that are not regionally or locally significant.

**Coastal Lands Management** – There are designated Chesapeake Bay Resource Protection Areas (RPA's) located within the proposed project area. The RPA's are associated with Accotink Creek and its unnamed tributaries and wetlands. The tree removal would have no direct impacts to Accotink Creek or its unnamed tributaries (Figure 3-1). However, minor impacts to wetlands associated with Accotink Creek and within the RPA will occur. Within the Northwest Section of tree removal, one area of wetland will be converted from a palustrine forested to a palustrine emergent. All trees would be removed from the palustrine forested wetland. Tree trunks and crowns will be cut and all parts of the trees, excluding the stumps, will be removed from the site. No cut trees, including limbs, will be placed or left in the wetland, and grubbing is not permissible in this area. Marsh or timber mats will be used to prevent equipment from compacting soils or becoming embedded. Following clearing, at an appropriate time of year, wetlands seed mix would be spread. Fort Belvoir would coordinate with USACE and the State of Virginia through the Joint Permit Application process for an Individual Permit from USACE and Virginia to assess the impacts of conversion of palustrine forested wetlands to palustrine emergent wetlands, and for tree removal activities within the RPA in the Northeast, Northwest and Southeast Sections. Mitigation for this permanent impact would be provided by the purchase of credits from a mitigation bank. Tree removal within the other sections would not impact wetlands nor the RPA, as there are none present in those areas.

### **C3 Summary of Findings**

Based on the above analysis, which is elaborated on in the EA, Fort Belvoir personnel would: (1) ensure that the construction contractor uses and maintains appropriate temporary erosion and sediment controls and permanent stormwater BMPs; and (2) obtain the requisite permits and approvals. Fort Belvoir finds that the proposed DAAF Hazardous Tree Removal is fully 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.

Pursuant to 15 CFR Part 930.41, the Virginia Coastal Resources Management Program has 60 days from receipt of this letter in which to concur with or object to this Consistency Determination, or to request an extension, in writing, under 15 CFR Part 930.41(b). Virginia's concurrence will be presumed if its response is not received by Fort Belvoir on the 60<sup>th</sup> day from receipt of this determination. The state's response should be sent to U.S. Army Garrison Fort Belvoir, 9430 Jackson Loop, Suite 200, Fort Belvoir, VA 22060-5116.

  
For MICHELLE D. MITCHELL  
Colonel, AG  
Commanding

