

Environmental Assessment for Selected Capital Improvement Plan (CIP) Projects



Langley Air Force Base, Virginia

**U.S. Air Force
Air Combat Command
1st Fighter Wing**

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ACRONYMS AND ABBREVIATIONS

1 CES	1st Civil Engineering Squadron	IICEP	Intergovernmental and Interagency Coordination for Environmental Planning
1 CES/CEVR	1st Civil Engineering Squadron, Environmental Restoration Branch	kV	kilovolt
1 FW	1st Fighter Wing	LBP	Lead-Based Paint
ACAM	Air Conformity Applicability Model	LO/CRF	Low-Observable/Composite Repair Facility
ACC	Air Combat Command	LTA	Light Than Air
ACHP	Advisory Council on Historic Preservation	MGD	Million Gallons per Day
ACM	Asbestos-Containing Materials	MSL	Mean Sea Level
ADA	Americans with Disabilities Act	NAAQS	National Ambient Air Quality Standards
ADP	Area Development Plan	NASA	National Aeronautics and Space Administration
AFB	Air Force Base	NEI	National Emissions Inventory
AFI	Air Force Instruction	NEPA	National Environmental Policy Act
AFOSH	Air Force Occupational Safety and Health	NFPA	National Fire Protection Agency
AICUZ	Air Installation Compatible Use Zone	NHPA	National Historic Preservation Act
Air Force	United States Air Force	NLR	Noise Level Reduction
ANG	Air National Guard	NNW	Newport News Waterworks
APZ	Accident Potential Zone	NO ₂	nitrogen dioxide
AQCR	Air Quality Control Region	NPDES	National Pollution Discharge Elimination System
AST	Above-ground Storage Tank	NRHP	National Register of Historic Places
AT/FP	Anti-Terrorism / Force Protection	O ₃	ozone
BMP	Best-Management Practice	OSHA	Occupational Safety and Health Administration
CAA	Clean Air Act	OSI	Office of Special Investigations
CDC	Child Development Center	P.L.	Public Law
CEQ	Council on Environmental Quality	Pb	lead
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	PCB	polychlorinated biphenyl
CFR	Code of Federal Regulations	PCT	polychlorinated terphenyl
CIP	Capital Improvements Plan	PM ₁₀	particulate matter equal to or less than 10 micrometers in diameter
CO	carbon monoxide	PM _{2.5}	particulate matter equal to or less than 2.5 micrometers in diameter
CRMP	Cultural Resource Management Plan	psi	Pounds per square Inch
CWA	Clean Water Act	PVC	polyvinyl chloride
CZMA	Coastal Zone Management Act	Q-D	Quantity-Distance
db	decibel	RCRA	Resource Conservation and Recovery Act
dba	A-weighted decibel	ROD	Record of Decision
DCR	Department of Conservation and Recreation	ROI	Region of Influence
DDESB	Defense Department Explosives Safety Board	RUL	Remaining Useful Life
DNL	Day-Night Average Sound Level	RV	recreational vehicle
DoD	Department of Defense	SF	Square Feet
EA	Environmental Assessment	SHPO	State Historic Preservation Office
EIAP	Environmental Impact Analysis Process	SIP	State Implementation Plan
EO	Executive Order	SO ₂	sulfur dioxide
EPCRA	Emergency Planning and Community Right-to-Know Act	SR	State Route
ERP	Environmental Restoration Program	TACAN	Tactical Air Navigation
ESA	Endangered Species Act	TERPS	Terminal En-Route Procedures
FONSI	Finding of No Significant Impact	TES	threatened, endangered, and special status
FY	Fiscal Year	U.S.	United States
HAZMART	Hazardous Materials Pharmacy	UFC	Unified Facilities Criteria
HRSD	Hampton Roads Sanitation District	USACE	United States Army Corps of Engineers
HTA	Heavier Than Air	USC	United States Code
HVAC	Heating, Ventilation, and Air Conditioning	USEPA	U.S. Environmental Protection Agency
I-64	Interstate 64	USFWS	United States Fish and Wildlife Service

**FINDING OF NO SIGNIFICANT IMPACT/
FINDING OF NO PRACTICABLE ALTERNATIVE**

NAME OF THE PROPOSED ACTION

Selected Capital Improvement Plan (CIP) Projects at Langley Air Force Base (AFB), Virginia.

DESCRIPTION OF THE PROPOSED ACTIONS AND ALTERNATIVES

1st Fighter Wing (1 FW), located at Langley AFB, proposes to construct, renovate, or demolish several facilities located on Langley AFB, the Landings at Langley Housing Area, and at the Big Bethel Reservoir. Buildings to be constructed would include a new Fuels System Maintenance Hangar, a replacement for Hangar 753, an Airman Family Readiness Center, a replacement Security Forces Operations Center, two additional dorms, a Fuels Automated System Complex, an expansion and storage shed for the Low-Observable Composite Repair Facility (LO/CRF), a replacement Landings at Langley Child Development Center, a conference center/bait shop, an recreational vehicle (RV) parking area, and a ropes course. Buildings to be added to or renovated include the Landings at Langley Chapel. In total, 371,968 square feet (SF) would be constructed. Twenty-two buildings, totaling 263,225 SF would be demolished in conjunction with the new construction. Implementation of the Proposed Action would ensure that properly sized and configured facilities exist to support the critically important mission at Langley AFB.

Alternative One would be the same as the Proposed Action except that the Security Forces Operations Center, the Airman Family Readiness Center, and the Fuels System Maintenance Hangar would be sited at different locations. In addition, Hangar 753 would undergo interior/exterior renovations instead of demolition and re-construction. Implementation of Alternative One would require demolition of 28 buildings (total of 268,453 SF).

Under Alternative Two, all actions would be the same as under the Proposed Action except that the Security Forces Operations Center and the Family Readiness Center would be sited at different locations and Hangar 753 would undergo interior renovations only. A total of 22 buildings would be demolished (total of 198,344 SF).

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Proposed Action and Alternatives: This Environmental Analysis (EA) provides an analysis of the potential environmental consequences associated with the Proposed Action, two action alternatives, and the No Action Alternative. Twelve resource categories received thorough evaluation to identify potential environmental consequences. As indicated in Chapter 4.0, none of the alternatives would result in significant environmental impacts to any area.

Land Use and Planning: This action is being carried out in accordance with the installation CIP and is compatible with installation land use planning goals and objectives. Replacement facilities would be designed and landscaped in accordance with Langley AFB standards and no negative impacts to visual resources are expected. As noted in Appendix B, none of the proposed actions would affect enforceable regulatory programs of the Virginia Coastal

Resources Management Program. Construction-related traffic, which is normal at Langley, is expected to be distributed over a period of greater than five years and should not be severe at any given time. No significant impacts to land use, transportation, or visual resources are expected.

Infrastructure: Existing electrical, natural gas, potable water, sewage, and solid waste infrastructure at Langley AFB, Landings at Langley Family Housing Area, and Big Bethel Reservoir is expected to have capacity to handle demands imposed by the proposed new facilities. The proposed facilities are at early stages of design and precise utilities usage rates have not yet been derived. However, currently only three new permanent employee positions have been identified as being associated with the proposed new facilities. Furthermore, while implementation of the Proposed Action would result in a net increase of 371,968 SF of built structure, the new facilities would be more efficient than the facilities that they are replacing and several existing facilities would be demolished. Net increases in utilities usage rates are expected to be minor. Electrical service on Langley AFB is in the process of being upgraded to provide a total capacity of 36 Megavolt Amperes. Construction of the Fuels Automated System Complex would improve efficiency of the jet fuels-related infrastructure at Langley AFB.

Socioeconomics: The Proposed Action and action alternatives would have a short-term positive impact on the local economy as a result of estimated total construction expenditures of \$98.6 million. In the long-term, addition of three new jobs for the operation of the Conference Center/Bait Shop and ropes course at the Big Bethel Reservoir would have negligible impacts on the local economy.

Cultural Resources: Demolition of Hangar 753 would constitute an adverse effect to a National Register of Historic places (NRHP)-eligible building that is a contributing element of the Langley Field Historic District. Detailed recordation of the facility and/or some other special measures may be required, as per Section 106 of the National Historic Preservation Act (NHPA) prior to demolition. Consultation with the State Historic Preservation Office (SHPO) regarding proposed demolition projects would be carried out to determine the exact nature of any required special measures. The replacement for Hangar 753 would conform to standards as stated in the Langley AFB Cultural Resources Management Plan. The Big Bethel Reservoir Wastewater Treatment Plant has not been evaluated for NRHP eligibility. This facility would require a determination of eligibility. If this facility is NRHP-eligible, special measures may be required prior to its demolition. None of the other buildings proposed to be demolished as part of the Proposed Action or action alternatives are eligible for the NRHP and demolition could proceed after consultation with the SHPO.

Under Alternative One, interior and exterior renovations to Hangar 753 would not constitute an adverse effect so long as consultations are held with the Virginia State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation (ACHP) prior to the action and any mitigation actions specified during the consultations are carried out.

Alternative Two would limit renovations of Hangar 753 to the interior of the structure and would not be expected to have an effect on the NRHP-eligibility of the structure. If SHPO

consultation is carried out in accordance with the NHPA, no significant effects to cultural resources are expected under the proposed action or either action alternative.

Biological Resources: With the exception of the proposed ropes course, all construction associated with the Proposed Action and action alternatives would take place in previously disturbed areas and/or maintained grassy areas. No threatened, endangered, or special status (TES) species are known to exist in the affected area. Individuals displaced by the proposed construction are individuals of common and locally abundant species. No impacts to wetlands or aquatic communities are anticipated so long as standard erosion control measures are taken. If any of the proposed projects were to be modified to include impacts to wetlands, additional analysis would be required. No significant impacts to biological resources are expected.

Water Resources: Soil disturbance associated with the Proposed Action or two action alternatives would not be expected to significantly affect the water quality of the Back River and Chesapeake Bay. Sediment control practices would be in accordance with the requirements of the Virginia Department of Conservation and Recreation (DCR), and a general permit for Discharges of Stormwater from Construction Activities would be required from the agency. Impervious surfaces at the base would increase by 35,147 SF. Because the majority of Langley AFB lies within the 100 year floodplain, no practicable alternative exists to siting facilities to be located on Langley AFB within the floodplain. No significant impacts to this resource are expected.

Air Quality: Air emissions related to implementation of the Proposed Action or action alternatives would be generated due to use of construction equipment for grading of the sites, construction of the facilities, and hauling of demolition and construction debris materials. Total emissions associated with the Proposed Action and action alternatives would be less than 1 percent of the emissions of the Hampton Air Quality Control Region (AQCR). The proposed projects are located within a maintenance area for ozone; however, neither the Proposed Action nor the two action alternatives would contribute to ozone-related emissions above the United States Environmental Protection Agency (USEPA) established *de minimis* levels for ozone. A formal air quality determination is not required.

Hazardous Materials and Waste Management: For the Proposed Action and two action alternatives, existing waste management practices would continue to be used to comply with Virginia regulations. All waste asbestos-containing materials (ACMs) and materials containing lead-based paint (LBP) collected during demolition would be handled in accordance with applicable laws and regulations. No significant impacts to hazardous materials and waste management are expected.

Environmental Restoration Program: Several of the proposed project areas either contain portions of Environmental Restoration Program (ERP) sites or are located adjacent to ERP sites. As project design progresses, every effort would be taken to avoid disturbances of the ERP sites. Where avoidance is not possible, precautions would be taken to avoid exposures of construction workers and/or future users of the proposed facility to any risks associated with ERP sites.

Storage Tanks: Aboveground storage tanks (ASTs) associated with buildings proposed for demolition would be removed prior to demolition. 1st Civil Engineering Squadron (1 CES) would examine any underground storage tanks (USTs) located in the construction sites and assess the level of risk associated with leaving the tank in place. 1 CES would then make a determination as to whether or not removal of the tanks would be appropriate. No impacts related to storage tanks are expected.

Safety: In order to make use of existing fuels infrastructure, the replacement Fuels Automated System Complex would need to be built within the runway Clear Zone. The proposed facility would replace facilities which are located in the Clear Zone, so changes in airfield safety would be minimal. Under the Proposed Action, the LO/CRF expansion, Hangar 753 replacement, and Fuels System Maintenance Hangar would be located within explosives quantity-distance (Q-D) safety arcs slightly increasing risk. Under Alternative One, the Fuels System Maintenance Hangar would not be located within a Q-D arc. Safety risks would be increased during construction and demolition; however, these risks would be reduced with implementation of standard construction and demolition safety practices. Operation of the ropes course would involve some inherent safety risk. It is assumed that anyone using the ropes course would be required to sign a liability waiver prior to use.


Noise: Construction noise would be expected to be limited to normal working hours and would last only for the duration of the construction project. Several of the proposed facilities are located within high noise areas and would require noise attenuation in order to be compatible with Air Force land use guidelines as presented in Air Force Handbook 32-7084. Even if noise attenuation were not installed in accordance with guideline, impacts would be limited to potential for annoyance and activity interruption and would be insignificant in nature.

No Action Alternative: Under the No Action Alternative, none of the proposed construction, renovation, or demolition would occur and there would be no impacts to any of the resource areas. Current facilities would continue to provide substandard support to the mission and development goals, as established in the CIP, would not be met.

CONCLUSION

Based on the analysis in the EA which is hereby incorporated by reference, no significant impact is anticipated from the implementation of the Proposed Action, either of the action alternatives, or the No Action Alternative. Therefore, issuance of a Finding of No Significant impact (FONSI) is warranted, and an environmental impact statement is not required. As funding becomes available, each project would be reviewed by the 1 CES/CEV (Environmental Flight) prior to implementation to ensure that there has not been a substantial change in the base mission or project scope, nor significant new circumstances or information relevant to environmental conditions or environmental regulations warranting re-evaluation of potential environmental consequences. Should there be a substantive change in scope, conditions, or regulations, the base will pursue additional EIAP using an interdisciplinary approach. 1 CES/CEV will document the completion of this review. Pursuant to Executive Order 11988, the authority delegated in the Secretary of the Air Force Order 791.1, and taking the above

information into account, I find that there is no practicable alternative to this action and that the proposed action includes all practicable alternatives to minimize harm to the environment.



TIMOTHY A. BYERS
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Director of Installations and Mission Support (A7)

30 Jan 09

DATE

TABLE OF CONTENTS

1.0	PURPOSE AND NEED FOR ACTION.....	1-1
1.1	Introduction.....	1-1
1.2	Background.....	1-2
1.3	Purpose and Need	1-2
2.0	DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES	2-1
2.1	Proposed Action.....	2-1
2.1.1	Replace Fuels System Maintenance Hangar	2-1
2.1.2	Replace Hangar 753	2-1
2.1.3	Add/Alter Landings at Langley Chapel	2-1
2.1.4	Construct Airman Family Readiness Center	2-4
2.1.5	Construct Security Forces Operations Center.....	2-4
2.1.6	Dormitory Campus (Construct Two New Dormitories and Demolish Three Dormitories)	2-4
2.1.7	Replace Fuels Automated System Complex	2-4
2.1.8	Expand Low-Observable/Composite Repair Facility (LO/CRF).....	2-6
2.1.9	Construct Landings at Langley Child Development Center	2-6
2.1.10	Big Bethel Reservoir Improvement Projects.....	2-6
2.2	Methodology for Alternative Identification.....	2-7
2.3	Alternatives to the Proposed Action	2-8
2.3.1	Replace Fuel System Maintenance Hangar	2-8
2.3.1.1	Alternative One.....	2-8
2.3.1.2	Alternative Two	2-9
2.3.2	Hangar 753 Renovation/Rebuild	2-9
2.3.2.1	Alternative One.....	2-9
2.3.2.2	Alternative Two	2-9
2.3.3	Airman Family Readiness Center.....	2-9
2.3.3.1	Alternative One.....	2-9
2.3.3.2	Alternative Two	2-9
2.3.4	Security Forces Operations Center	2-9
2.3.4.1	Alternative One.....	2-9
2.3.4.2	Alternative Two	2-9
2.4	No Action Alternative	2-10
2.5	Alternatives Considered But Not Carried Forward.....	2-10
2.6	Environmental Impact Analysis Process	2-10
2.6.1	Public and Agency Involvement	2-11
2.6.2	Regulatory Compliance	2-11
2.6.3	Permit Requirements.....	2-12
2.7	Comparison of Alternatives	2-13
3.0	AFFECTED ENVIRONMENT	3-1
3.1	Land Use and Planning.....	3-1
3.1.1	Transportation.....	3-2
3.1.2	Visual Resources	3-2
3.1.3	Land Use	3-2
3.2	Infrastructure.....	3-4

3.2.1	Electric Power and Natural Gas.....	3-4
3.2.2	Potable Water	3-4
3.2.3	Sewage.....	3-5
3.2.4	Solid Waste	3-5
3.2.5	Jet Fuel.....	3-6
3.3	Socioeconomics	3-6
3.3.1	Local Economy	3-6
3.3.2	Labor Force and Employment.....	3-7
3.3.3	Income	3-10
3.3.4	Housing.....	3-10
3.4	Cultural Resources.....	3-13
3.4.1	Identified Cultural Resources	3-14
3.4.2	Traditional Resources.....	3-15
3.5	Biological Resources	3-17
3.5.1	Terrestrial Communities.....	3-17
3.5.2	Wetland and Freshwater Aquatic Communities.....	3-17
3.5.3	Threatened, Endangered, and Special Status Species.....	3-18
3.6	Water Resources.....	3-23
3.7	Air Quality	3-25
3.8	Hazardous Materials and Waste Management	3-25
3.8.1	Hazardous Materials	3-26
3.8.2	Hazardous Waste.....	3-26
3.8.3	Asbestos Waste/Lead-Based Paint Management	3-26
3.9	Environmental Restoration Program	3-27
3.10	Storage Tanks	3-30
3.11	Safety	3-31
3.11.1	Ground Safety.....	3-32
3.11.2	Explosives Safety.....	3-33
3.11.3	Flight Safety	3-34
3.11.4	Facility Operation Safety.....	3-34
3.12	Noise.....	3-34
4.0	ENVIRONMENTAL CONSEQUENCES	4-1
4.1	Land Use and Planning.....	4-1
4.1.1	Transportation.....	4-1
4.1.2	Visual Resources	4-1
4.1.3	Land Use	4-2
4.1.4	Alternatives.....	4-2
4.2	Infrastructure.....	4-3
4.2.1	Electrical/Natural Gas Distribution.....	4-3
4.2.2	Potable Water	4-3
4.2.3	Sewage.....	4-3
4.2.4	Solid Waste	4-4
4.2.5	Jet Fuel.....	4-4
4.2.6	Alternatives.....	4-4
4.3	Socioeconomics	4-5
4.3.1	Alternatives.....	4-6

4.4	Cultural Resources.....	4-6
4.4.1	Proposed Actions	4-7
4.4.2	Alternatives.....	4-9
4.5	Biological Resources	4-11
4.5.1	Terrestrial Communities	4-11
4.5.2	Wetland and Aquatic Communities.....	4-13
4.5.3	Threatened, Endangered, and Special Status Species.....	4-13
4.5.4	Alternatives.....	4-13
4.6	Water Resources.....	4-14
4.6.1	Surface Water/Groundwater	4-14
4.6.2	Floodplains	4-15
4.6.3	Alternatives.....	4-15
4.7	Air Quality	4-16
4.7.1	Construction-Related Emissions.....	4-16
4.7.2	Emissions Related to Daily Operations	4-17
4.7.3	Alternatives.....	4-17
4.8	Hazardous Materials and Waste Management	4-18
4.8.1	Hazardous Materials	4-18
4.8.2	Hazardous Waste.....	4-18
4.8.3	Asbestos/Lead-Containing Waste	4-19
4.8.4	Alternatives.....	4-19
4.9	Environmental Restoration Program	4-20
4.9.1	Alternatives.....	4-21
4.10	Storage Tanks	4-22
4.10.1	Alternatives.....	4-22
4.11	Safety	4-22
4.11.1	Alternatives.....	4-23
4.12	Noise	4-24
4.12.1	Alternatives.....	4-25
5.0	CUMULATIVE EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES	5-1
5.1	Cumulative Effects.....	5-1
5.1.1	Definition of Cumulative Effects	5-1
5.1.2	Past, Present, and Reasonably Foreseeable Actions.....	5-2
5.1.3	Past and Present Actions.....	5-2
5.1.4	Reasonably Foreseeable Future Actions.....	5-2
5.1.5	Analysis of Cumulative Impacts.....	5-3
5.2	Irreversible and Irretrievable Commitment of Resources.....	5-4
6.0	REFERENCES	6-1
7.0	LIST OF PREPARERS	7-1
APPENDIX A	CONSULTATION LETTERS	
APPENDIX B	FEDERAL AGENCY COASTAL ZONE MANAGEMENT ACT (CZMA) CONSISTENCY DETERMINATION	
APPENDIX C	STANDARD AIR FORCE LAND-USE COMPATIBILITY MATRIX	
APPENDIX D	AIR QUALITY	

LIST OF TABLES

2.1-1	Proposed Improvements at Big Bethel Reservoir Water Treatment Plant.....	2-7
2.6-1	Environmental Related Regulatory Requirements	2-12
2.7-1	Summary of Potential Environmental Impacts	2-13
3.2-1	Waste Disposal Facilities in Hampton Roads	3-5
3.3-1	Population Change Between 2000 and 2006 (estimated).....	3-7
3.3-2	Labor Force, ROI, 2000-2006	3-7
3.3-3	Total Employment Growth, ROI, 2001-2005	3-8
3.3-4	Employment by Industry, ROI, 2005.....	3-9
3.3-5	Per Capita Income, ROI, 2001-2005	3-10
3.3-6	Earnings (In Thousands) by Industry, ROI, 2005	3-11
3.3-7	Housing, ROI, 2000 & 2005	3-12
3.3-8	Langley Personnel and Payroll, 2005	3-12
3.3-9	Total Economic Impact of Langley AFB, 2005	3-13
3.4-1	Facilities Proposed for Demolition, Relocation, or Rehabilitation under the Proposed Action or the Two Action Alternatives.....	3-16
3.5-1	Threatened, Endangered, and Special-Status Species/Communities that Potentially Occur on Langley AFB	3-21
3.7-1	Baseline Emissions for Langley AFB Affected Environment.....	3-25
3.8-1	ACM and LBP at Facilities to be Demolished under the Proposed Action	3-27
3.10-1	Existing Storage Tanks At or Near CIP Project Sites under the Proposed Action.....	3-31
3.10-2	ASTs and USTs Located at or Near Project Sites under Alternative Two	3-31
4.4-1	Facilities Proposed for Demolition, Addition, Alteration under the Proposed Action.....	4-8
4.4-2	Facilities Proposed for Demolition, Addition, and Alteration under Alternative One	4-10
4.4-3	Facilities Proposed for Demolition, Addition, and Alteration under Alternative Two	4-12
4.5-1	Impacts to Terrestrial Communities for the Proposed Projects at the Big Bethel Reservoir	4-13
4.6-1	Square Footage of Impermeable Surfaces for Facilities to be Constructed or Demolished under the Proposed Action	4-14
4.7-1	Proposed Action Construction and Demolition Emissions	4-17
4.9-1	ERP Sites Located On or Near CIP Project Sites under the Proposed Action	4-20
4.9-2	ERP Sites Located On or Near CIP Project Sites under Alternative One	4-21
4.9-3	ERP Sites Located On or Near CIP Project Sites under Alternative Two	4-21
4.12-1	Noise Levels Associated with Construction Equipment Expected to be Used During Proposed Construction and Demolition Projects	4-24
4.12-2	Land Use Compatibility with Aircraft Noise under the Proposed Action	4-25
4.12-3	Land Use Compatibility with Aircraft Noise under Alternative One.....	4-26
4.12-4	Land Use Compatibility with Aircraft Noise under Alternative Two	4-26
5.1-1	Planned Facility Upgrades at Langley AFB	5-3

LIST OF FIGURES

1.2-1	Langley AFB and the Big Bethel Reservoir	1-3
1.2-2	Areas in Which CIP Projects Would Occur	1-4
2.1-1	Project Locations in the Southern Portion of Langley AFB.....	2-2
2.1-2	CIP Project Location in the Vicinity of the Big Bethel Reservoir.....	2-3
2.1-3	Proposed Fuel Automated System Site.....	2-5
3.3-1	Unemployment Rates, ROI, 1997-2006.....	3-8
3.5-1	Wetland Areas at Langley AFB.....	3-19
3.5-2	Big Bethel Reservoir Wetland Inventory	3-20
3.6-1	Floodplains on Langley AFB	3-24

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1.0 PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

The United States Air Force (Air Force), 1st Fighter Wing (1 FW) proposes to implement selected projects from the Capital Improvements Plan (CIP) for Langley Air Force Base (AFB), Virginia. The CIP is the executable component of the installation General Plan, which serves as the single, integrated, authoritative reference for facilities development and land use on the installation. The CIP translates general assessments of current and future conditions and requirements, as discussed in other sections of the General Plan, into specific, executable projects. The proposed CIP projects would improve the physical infrastructure and functionality of Langley AFB through construction and renovation of facilities to meet current Air Force standards. The CIP is built on information regarding development constraints and opportunities, existing infrastructure, land use, and transportation.

Given current military budget limitations, it is expected that some projects analyzed in this Environmental Assessment (EA) may not occur for several years. All projects should be examined prior to execution to ensure that project scope and/or local environmental conditions have not changed such that environmental impacts would differ substantially from those found in the EA.

This EA has been prepared to analyze the potential environmental consequences associated with the Proposed Action and alternatives in accordance with the requirements of the National Environmental Policy Act (NEPA). This document was prepared in accordance with the following:

- Regulations established by the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] 1500-1508);
- Requirements of the NEPA of 1969, (42 United States Code [USC] 4321-4347) CEQ Regulations for Implementing the Procedural Provisions of NEPA;
- 32 CFR Part 989, et seq., Environmental Impact Analysis Process (formerly known as Air Force Instruction [AFI] 32-7061);

This EA also provides an evaluation of potential coastal zone impacts pursuant to National Oceanic and Atmospheric Administration Coastal Zone Management regulations (15 CFR Part 930). Consequently, this EA serves as coastal consistency determination documentation with respect to implementation of the Proposed Actions or the alternatives.

Section 1.2 provides background information that briefly describes Langley AFB. The purpose and need for the Proposed Action are described in Section 1.3. A detailed description of the Proposed Action, alternatives, and No Action Alternative are provided in Chapter 2.0. Chapter 3.0 describes the existing conditions of various environmental resources that could be affected if the proposals were implemented. Chapter 4.0 describes how those resources would be affected by implementation of the Proposed Actions and alternatives. Chapter 5.0 addresses the cumulative effects of the Proposed Actions, as well as other recent past, current, and future actions that may be implemented in the ROI for the Proposed Actions.

1.2 BACKGROUND

Langley AFB is located approximately 175 miles south of Washington, D.C., near the south end of the lower Virginia Peninsula on the Back River, a tributary of the Chesapeake Bay. Langley AFB is situated in the Hampton Roads Standard Metropolitan Statistical Area, in the City of Hampton, Virginia. Other cities in the area include Newport News, Poquoson, Norfolk, and Portsmouth. As shown in Figure 1.2-1, the main base occupies 2,883 acres between the Northwest and Southwest Branches of the Back River. The Big Bethel Reservoir and the Landings at Langley Housing Area lie adjacent to one another approximately 2 miles to the west of the Langley AFB. The Big Bethel Reservoir property is made up of 447 acres, 266 acres of which are water. The Landings at Langley Housing Area is made up of 284 acres.

Langley AFB is headquarters for Air Combat Command (ACC) and home of the 1 FW. ACC is one of nine major commands in the Air Force and is responsible for organizing, equipping, training, and maintaining combat-ready forces at the highest level of readiness. The primary mission of Langley AFB is to provide air operational support to a broad spectrum of aircraft in both peacetime and combat environments. General goals of the base are to sustain the resources and relationships deemed appropriate to pursue national interests, and provide for the command, control, and communications necessary to execute the missions of the Air Force, ACC, and the 1 FW.

Several of the CIP projects would not occur on Langley AFB itself, but rather in the Landings at Langley Family Housing Area or at the Big Bethel Water Treatment Plant, both of which are located near the Big Bethel Reservoir. Areas in which CIP projects are proposed to occur are depicted in Figure 1.2-2.

1.3 PURPOSE AND NEED

Langley AFB proposes construction, demolition, and renovation associated with ten CIP projects. The projects are intended to address various deficiencies as identified in the installation General Plan:

Replace Fuels System Maintenance Hangar. Replacement of the existing fuel system maintenance hangar is necessary to meet current maintenance facility requirements for F-22A fuel cell maintenance and comply with safety and health standards. The new hangar would be 50,000 square feet (SF) while the existing Building 373 is 16,900 SF. The existing facility and the nearby Building 374, which is also 16,900 SF, would be demolished as part of the Proposed Action.



Figure 1.2-1. Langley AFB and the Big Bethel Reservoir

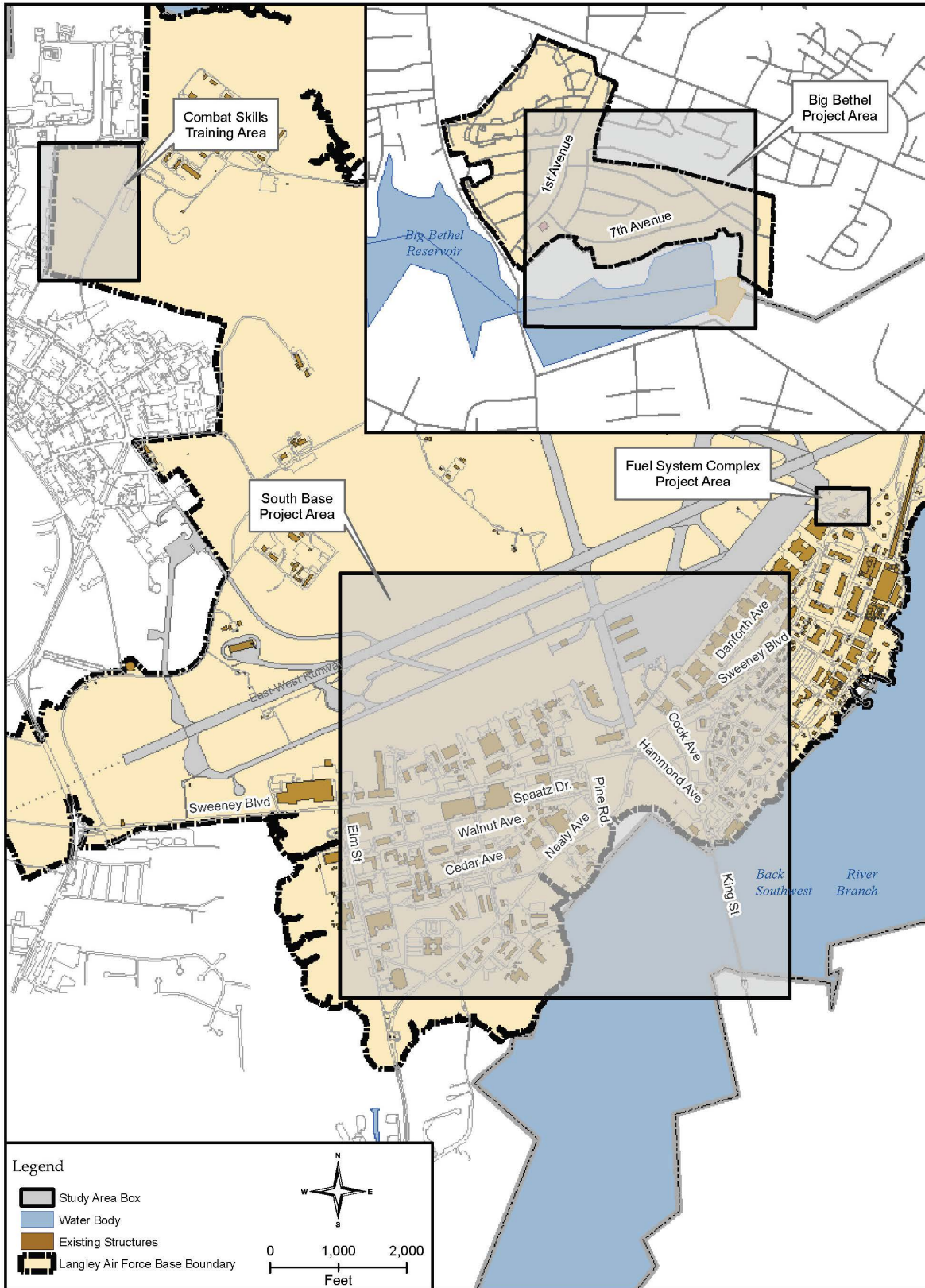


Figure 1.2-2. Areas in Which CIP Projects Would Occur

Hangar 753 Renovation/Rebuild. The base does not have adequate facilities to conduct squadron level maintenance operations for the F-22A fighter. Currently, squadron operations and maintenance facilities are geographically separated, undersized, in poor condition, and not configured to support high operations tempo fighter squadrons. The existing hangar is 74 years old. Hangar doors do not operate properly, roofs leak, lead paint and asbestos are present, lighting is substandard, mechanical, electrical, fire protection, and security systems are inadequate and exterior masonry walls are deteriorating. In addition, the hangar is inadequately sized and configured to accommodate the wider F-22A aircraft without violating safety criteria.

Add/Alter Landings at Langley Chapel. The Landings at Langley Chapel is too small to accommodate its congregations. The current 353 seat Sanctuary would be expanded to accommodate the more than 600 patrons now attending services there. The religious education program also suffers from a severe lack of space, forcing the Air Force to relocate classes to nearby Bethel Elementary school, at significant cost.

Construct Airman Family Readiness Center. The current Family Readiness Center is not large enough to accommodate the staff and programs mandated by Air Force guidance/requirements. As a result, required programs are geographically dispersed and are often forced to change location to accommodate host facility requirements, making coordination and control difficult. In addition, under newly promulgated regulations, the center will take on several additional operational responsibilities. Also, with the integration of the 192nd Fighter Wing at Langley AFB, the Virginia Air National Guard (ANG) will require office space for three of their personnel. The center must relocate from its present home in the Mission Support Group facility to a larger facility that can accommodate this expanded mission.

Security Forces Operations Center. Construction of a consolidated facility to accommodate all Security Forces and investigative activities functions will allow improved communication and more efficient and effective day-to-day operation. The current Security Forces Operations facility is substandard in several respects, incurs high maintenance costs, and is not large enough to accommodate co-located ANG personnel in accordance with the Air Force's Total Integration Policy.

Dorm Campus (2 additional dorms). Several of the currently available dorms on Langley AFB do not meet Air Force standard design criteria and are in such poor condition that their replacement is required. The dormitories to be replaced are plagued with inadequate lighting, poor insulation, insufficient sound attenuation, and obsolete electrical and mechanical systems. The dormitory living facilities do not conform to current fire protection standards, are inadequately sized, and do not provide private baths.

Fuels Automated System Complex. The proposed fuel system complex would accommodate modern fuel technologies and would be sized to meet current mission requirements.

Expand Low-Observable and Composite Repair Facility (LO/CRF). Adding a new maintenance bay and hazardous materials storage area to the existing LO/CRF facility would allow completion of all required F-22A LO/CRF maintenance in a timely manner. LO/CRF

workload is higher than was expected when the facility was initially designed, in part, because of recent modifications to paint application procedures. The purpose of the hazardous waste storage area would be to accommodate deployable assets associated with the LO/CRF.

Landings at Langley Child Development Center (CDC). The existing CDC is too small to accommodate the demand for child care at Langley AFB. Currently, there is only capacity to accommodate 60 percent of total required child care at Langley AFB CDCs, as compared to the 85 percent fulfillment capacity required by Air Force standards. This shortfall results in child enrollment waiting times as long as one year. Furthermore, the existing CDC does not meet anti-terrorism/force protection (AT/FP), Americans with Disabilities Act (ADA), or fire protection standards.

Big Bethel Reservoir Development Projects. The proposed projects include demolishing the Water Treatment Plant and constructing a new conference center/bait shop, recreational vehicle (RV) parking area, and ropes course. The new facilities would be built on and around the site of the existing Water Treatment Plant. These developments would maximize utility of this waterfront property to meet official and recreational needs of Langley AFB. Siting these functions in this area, which was recently acquired by the Air Force from the Army, would slightly reduce demands for land on the increasingly-crowded Langley AFB.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The 1 FW proposes to carry out construction, demolition, and renovation in order to accomplish ten CIP projects. Specific start and end dates for these projects are not known at this time. However, all ten projects are expected to have been initiated, if not completed, prior to 2013. In addition to the Proposed Action, this EA evaluates two alternatives, and the No Action Alternative.

2.1 PROPOSED ACTION

2.1.1 Replace Fuels System Maintenance Hangar

The Proposed Action is to demolish the existing Fuel System Maintenance Hangar, located at Building 373 and build a new Fuels System Maintenance Hangar to the east of the existing LO/CRF (Figure 2.1-1). The current facility is approximately 16,900 SF while its replacement would be approximately 50,000 SF.

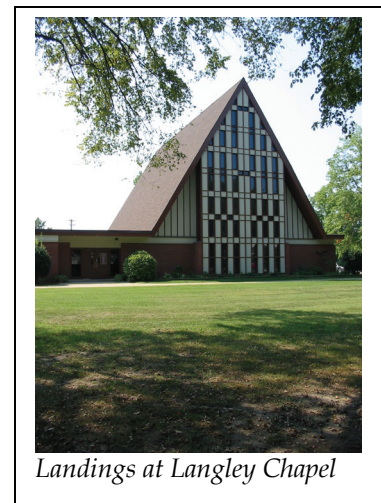
2.1.2 Replace Hangar 753

The Proposed Action is to replace Hangar 753 with a new hangar at the same location (Figure 2.1-1). The new hangar would incorporate special foundation pilings, masonry block walls, standing seam metal roof, secure work areas, fire suppression/detection, and heating, ventilation, and air conditioning (HVAC). In addition, the new hangar would be slightly larger than the current hangar (70,900 SF versus 66,000 SF) and would be configured to accommodate F-22A maintenance operations in accordance with all applicable current Air Force standards.



2.1.3 Add/Alter Landings at Langley Chapel

Under the Proposed Action, the Landings at Langley Chapel sanctuary and social hall (Figure 2.1-2) would be expanded by 8,500 SF and alterations would be made to 11,000 SF of the existing facility. The Landings at Langley Chapel is located in the Landings at Langley Family Housing Area (Figure 2.1-2). Electrical, plumbing, structural, and mechanical systems would be upgraded to support the expansion. In addition, new parking spots, new vehicular access roads, sidewalks, storm drainage, exterior lighting, and landscaping would be added to the site.



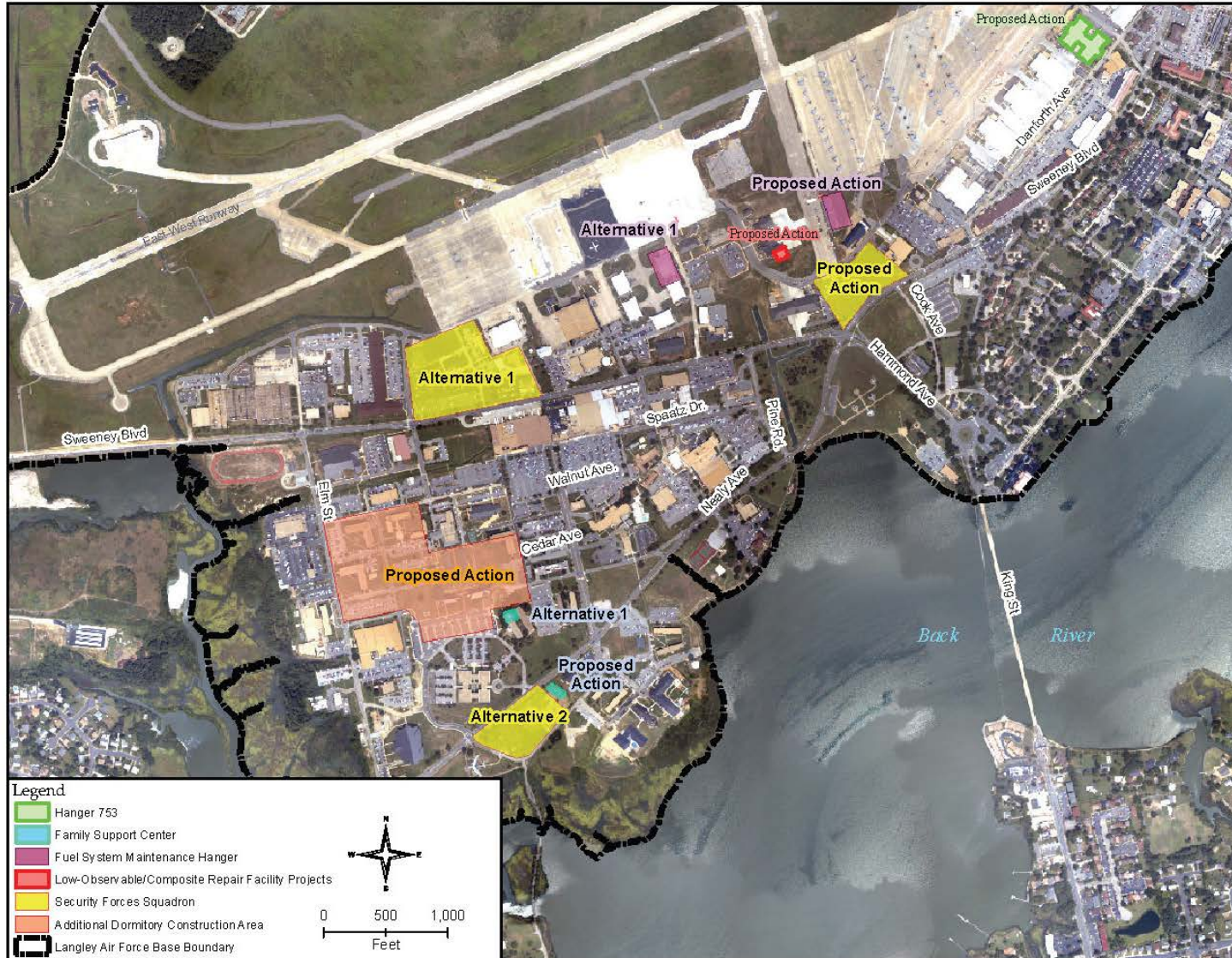


Figure 2.1-1. Project Locations in the Southern Portion of Langley AFB

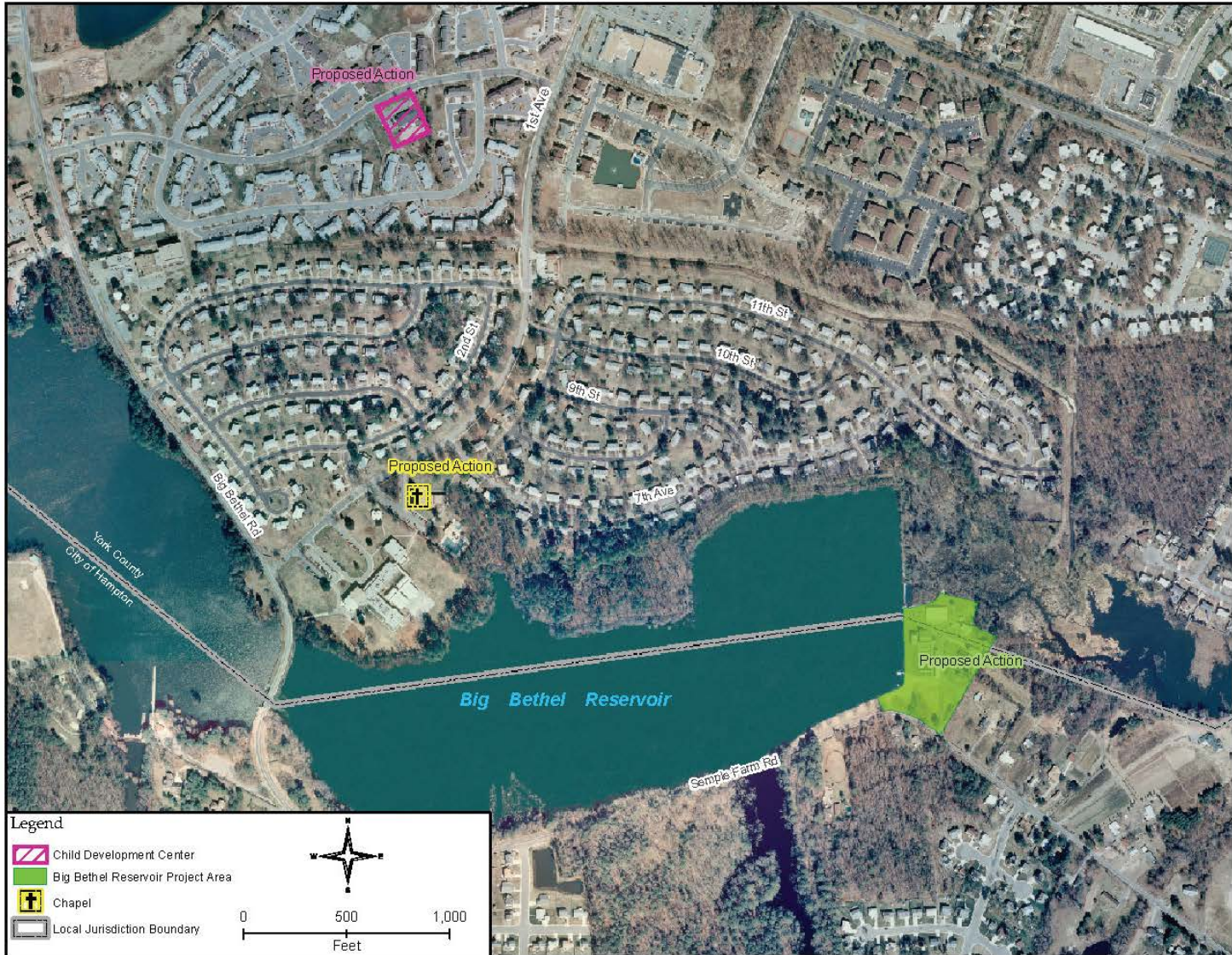


Figure 2.1-2. CIP Project Location in the Vicinity of the Big Bethel Reservoir

2.1.4 Construct Airman Family Readiness Center

The proposed Airman Family Readiness Center would be approximately 18,000 SF and would be located immediately southwest of the Langley AFB Housing Office, near two temporary Living Facilities (TLF) (Figure 2.1-1).

2.1.5 Construct Security Forces Operations Center

The proposed Security Forces Operations Center would be 75,000 SF and would be located north of the intersection of Sweeney Boulevard and Nealy Avenue (Figure 2.1-1). The facility would operate 24 hours a day and would contain all Security Forces and Office of Special Investigations (OSI) functions except for the canine facilities, which would remain at their current location. If the operations center were built on this land, Environmental Restoration Program (ERP) site ST-27 would be disturbed. Special precautions would be taken to minimize risk to human health and the environment related to this disturbance. The current 36,562 SF Security Forces Operations Center at Herron Hall (Building 355) would be demolished as part of the Proposed Action.

2.1.6 Dormitory Campus (Construct Two New Dormitories and Demolish Three Dormitories)

The construction of two additional dorms would take place in the area immediately to the south of Ash Avenue and east of Elm Street (Figure 2.1-1). This project includes demolition of existing Buildings 123, 37, and 38, as well as removal of the southern portion of Willow Street, several concrete walkways, and underground utilities servicing the existing dormitories. Demolition of Building 123 would be accomplished to make room for the two new dormitories, while demolition of Buildings 37 and 38 would be accomplished to make room for parking as per the Base General Plan (Air Force 2007a). Nearby Boots Hall would be used to house airmen that would otherwise reside in Building 123 while the new dormitories are being constructed. The two new dorms would be 3-stories tall. One of the dorms would accommodate 96 persons and would be 34,087 square feet in size. The other would accommodate 72 persons and be 31,484 square feet in size.

2.1.7 Replace Fuels Automated System Complex

The Proposed Action is to replace the existing Fuels Automated System Complex (Facility #741 and 744) with a single structure of 4,500 SF and 14 feet in height. The new facility would be located at the same location as the old facility to take advantage of existing fuels-related infrastructure (Figure 2.1-3). The replacement facility would be located within the graded surface of the runway Clear Zone and would require a waiver. The existing facility is also located within the Graded Clear Zone. A description of the various subdivisions of a runway Clear Zone is provided in Section 3.11, *Safety*. The two facilities to be demolished contain a combined total square footage of 4,800 SF. Depending on the exact siting of the new facility within area designated for the Fuel Automated System Complex, existing fuel pumps, fuel tanks, and parking areas may need to be relocated. ERP sites ST-27 and SS-03 are located within the area designated for this facility. If final siting of the Fuels Automated System Complex would require disturbance of ERP sites, special construction procedures and/or site cleanup may be required as part of the project.

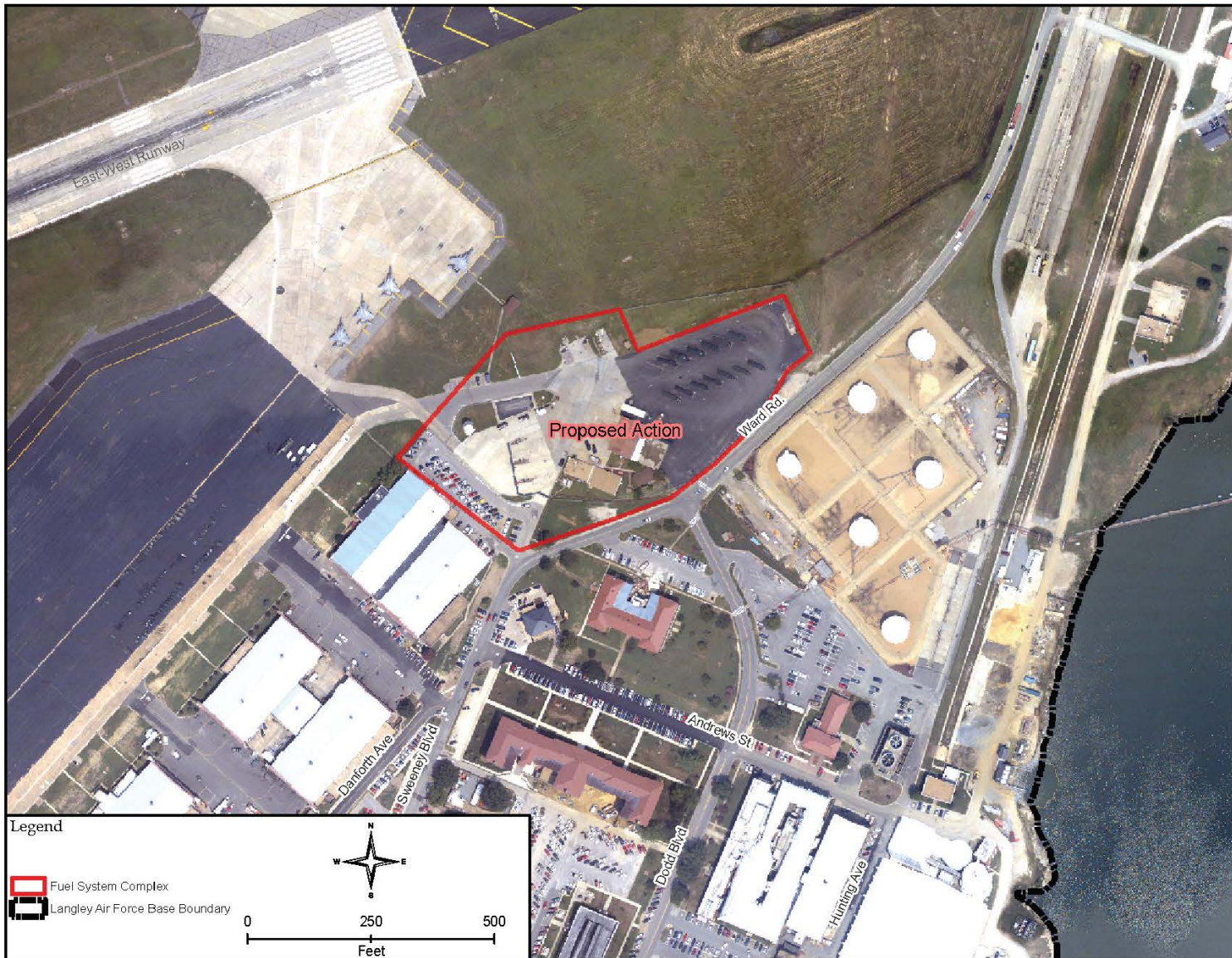


Figure 2.1-3. Proposed Fuel Automated System Site

2.1.8 Expand Low-Observable/Composite Repair Facility (LO/CRF)

The Proposed Action is to construct an additional LO/CRF bay as an addition to the existing LO/CRF (Building 361). In addition, a hazardous materials storage area would be constructed to accommodate deployable assets associated with the new bay. Both the new bay and the hazardous materials storage area would be located to the south of the existing LO/CRF (Figure 2.1-1). The maintenance bay would be approximately 13,100 SF while the hazardous materials storage area would be approximately 2,000 SF.

2.1.9 Construct Landings at Langley Child Development Center

Under the Proposed Action, the existing 4,600 SF CDC (Building 1994), would be replaced with a larger facility (24,000 SF). The existing CDC would be torn down and the new facility would be built on the same location (Figure 2.1-2). The new CDC would include activity rooms for each age group, administrative offices, a reception area, a kitchen, a laundry area, an employee breakroom, bathrooms, a conference room, a resource room, a communications room, storage closets, and a janitor's room. Closed circuit television surveillance would be provided throughout the facility for security purposes. The housing area surrounding the CDC site has been privatized and will be re-developed in the near future. The final CDC facility plan may require use of lands currently privatized, in which case additional negotiations with the privatization developer would be required.



2.1.10 Big Bethel Reservoir Improvement Projects

The Proposed Action is to re-develop the area surrounding the Big Bethel Reservoir Water Treatment Plant. The area proposed to be re-developed is depicted in Figure 2.1-2. Proposed improvements are listed in Table 2.1-1. It is expected that three full-time jobs would be created to service these new facilities.

Table 2.1-1. Proposed Improvements at Big Bethel Reservoir Water Treatment Plant

<i>Improvement</i>	<i>Size (SF)</i>	<i>Description</i>
Demolish Water Treatment Plant	57,700	Several structures and associated above- and below-ground utilities infrastructure would be demolished and debris would be removed from the property.
Construct Conference Center/Bait Shop	5,400	Facility would include fishing pier and boat ramp.
Construct RV Parking Lot	75,000	Paved parking lot for storage of RV's would require water management actions to prevent pollution through runoff.
Construct Ropes Course	n/a	The ropes course would occupy a 13-acre forested area near the current location of the water treatment plant.

The existing water treatment plant facilities (totaling 57,700 SF) would be demolished as part of the Proposed Action.



The Big Bethel Reservoir Water Treatment Plant Site

2.2 METHODOLOGY FOR ALTERNATIVE IDENTIFICATION

When construction of a new facility is proposed, alternatives to new construction must be considered by the installation planning and programming staff. All available existing structures must be considered as potential locations for the function, and these considerations must be documented on a DD Form 1391, *Military Construction Project Data*. In addition, the DD Form 1391 must justify why the project requirement is valid and important to the 1 FW mission. The purpose and need for accomplishing each of the proposed CIP projects is presented in Chapter 1.0 of this document.

Once the need for a new facility has been verified, the base planning office conducts a siting alternatives analysis. The siting analysis takes into consideration several factors, some of which are briefly described below.

Exclusionary Criteria:

Operational Viability. The first criteria considered in siting facilities is operational viability. Sites that would not meet mission requirements were discarded.

Airfield Restrictions. To maintain safe operations, several restrictions have been enacted. The UFC 3-260-01, *Airfield and Heliport Planning and Design*, limits locations and heights of objects and facilities in the immediate vicinity of an airfield, thereby minimizing hazards to airfield and flight operations. Objects or facilities not meeting these requirements require an approved waiver, a permissible deviation, or an exemption. Similar restrictions exist to minimize explosives safety risks.

Evaluative Criteria:

Compatibility with the Installation General Plan. The General Plan provides guidance on the overall layout of the base and identifies developmental opportunities and constraints. Projects were evaluated with respect to their compatibility with land use planning goals as laid out in the General Plan.

User Preference. The unit that would use the facility is invited to weigh in with regards to facility location.

Space Availability. Many areas on Langley AFB are heavily developed. Therefore, space availability is an important consideration. In some cases, existing structures would need to be demolished to make way for structures that would be built under the Proposed Action or alternatives.

Infrastructure Availability. Costs and any other challenges associated with accessing the proposed facility location with utilities and other supporting infrastructure were taken into consideration.

Environmental Factors. Environmental factors considered as part of the alternative selection process included location of wetlands/floodplain, presence of ERP sites, and possible impacts to cultural resources. Alternatives were selected that had relatively minor impacts to the environment.

2.3 ALTERNATIVES TO THE PROPOSED ACTION

Viable action alternatives to the Proposed Action are listed below. These alternatives were formulated based on the process described in Section 2.2. Projects for which the No Action Alternative is the only viable alternative are not listed.

2.3.1 Replace Fuel System Maintenance Hangar

2.3.1.1 ALTERNATIVE ONE

Alternative One would re-build the Fuels System Maintenance Hangar at its current location (Figure 2.1-1). Selection of this alternative would require less construction of infrastructure in order to connect the new structure to the existing infrastructure network. However, if this alternative were to be selected, an interim location for the performance of fuels system hangar

functions would need to be selected. In addition, siting of the larger replacement hangar would require demolition of both the current Fuels System Maintenance Hangar (Building #373) and the adjacent hangar (Building #374), each of which are 16,900 SF.

2.3.1.2 ALTERNATIVE TWO

Actions taken under Alternative Two would be the same as described for the Proposed Action.

2.3.2 Hangar 753 Renovation/Rebuild

2.3.2.1 ALTERNATIVE ONE

Alternative One would re-habilitate the interior and exterior of the existing Hangar 753 (Figure 2.1-1) rather than demolishing and re-building it. While renovation of the hangar would be less of an impact to cultural resources at Langley AFB than demolition, modifications to the exterior of the structure would still require close coordination with the State Historic Preservation Office (SHPO). Selection of this alternative would allow for repairs to the exterior walls of the structure, thus improving long-term safety.

2.3.2.2 ALTERNATIVE TWO

Alternative Two would rehabilitate only the interior of the existing Hangar 753. This alternative would require less in-depth scrutiny from the SHPO. However, repairs to the exterior walls of the structure could not be carried out in the manner desired.

2.3.3 Airman Family Readiness Center

2.3.3.1 ALTERNATIVE ONE

Under Alternative One, the Airman Family Readiness Center would be constructed in the area between Tuskegee Airmen Boulevard and Building 15 (Figure 2.1-1). If this alternative were to be selected, construction would need to wait until after the demolition of two dormitories (Buildings 37 and 38), which is scheduled to occur in Fiscal Year (FY) 2011 and which would occur regardless of the location chosen for the Airman Family Readiness Center. All other aspects of the project would be the same as under the Proposed Action.

2.3.3.2 ALTERNATIVE TWO

Actions taken under Alternative Two would be the same as described for the Proposed Action.

2.3.4 Security Forces Operations Center

2.3.4.1 ALTERNATIVE ONE

Under Alternative One, the proposed Operations Center would be constructed in the area west of Birch Street (Figure 2.1-1). If this alternative were to be selected, Buildings 339, 337, 333, 329, and 326 would need to be demolished to make room for the new facility.

2.3.4.2 ALTERNATIVE TWO

Under Alternative Two, the proposed Operations Center would be constructed immediately east of the intersection of Nealy Avenue and Burrell Street (Figure 2.1-1). If the operations center were to be built in this area, an ERP site OT-06 would be disturbed. No statutory land use

controls exist for this site. Nevertheless, special precautions would be taken to minimize risk to human health and the environment associated with this disturbance. All other aspects of the project would be the same as under the Proposed Action.

2.4 NO ACTION ALTERNATIVE

Under the No Action Alternative, the construction and demolition projects listed above would not be implemented. Selection of the No Action Alternative would result in continued use of existing facilities. Without implementation of the Proposed Action, Langley AFB would not adequately meet development goals specified in the installation General Plan.

- Safety and Force Protection standards would not be met;
- Quality of life for base personnel would decrease as aging facilities would continue to deteriorate;
- Support functions would continue to operate ineffectively due to undersized or geographically dispersed facilities;
- Newly acquired land at Big Bethel Reservoir would not be developed to its fullest potential as a first-class recreational facility.

2.5 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

In addition to the Proposed Action and alternatives discussed above, other alternatives were considered and found to not meet exclusionary criteria.

- A proposed site for the new Fuels System Maintenance Hangar west of the North Ramp was considered but then disregarded. Among other reasons, this site was disregarded because it would have required frequent towing of aircraft across the active runway, it was incompatible with quantity-distance (Q-D) arcs associated with a proposed hot cargo pad, and because it had potential to disrupt Tactical Air Navigation (TACAN).
- A proposed site for the Airman Family Readiness Center east of Elm Street was considered but then disregarded. The site would not be available until the current structure on the site was demolished, which is not expected to occur prior to 2022. The structure currently located on the site is currently in use and demolition can not be accomplished earlier than 2022 without disrupting base operations. As the Airman Family Readiness Center is required to be in operation sooner than 2022, this site is not available and, therefore, is not a viable alternative.

2.6 ENVIRONMENTAL IMPACT ANALYSIS PROCESS

The EIAP includes the review of all information pertinent to the proposed actions and reasonable alternatives and provides a full and fair discussion of potential consequences to the natural and human environment. The process includes involvement with the public and agencies to identify possible consequences of an action, as well as the focusing of analysis on

environmental resources potentially affected by the proposed action, alternatives, or No Action Alternatives.

2.6.1 Public and Agency Involvement

Through the scoping process, the Air Force will obtain information regarding pertinent environmental issues the agencies felt should be addressed in the environmental impact analysis. Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, requires intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the process of Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), the proponent must notify concerned federal, state, and local agencies and allow them sufficient time to evaluate potential environmental impacts of a proposed action. Agency consultations were undertaken with regard to biological and cultural resources, primarily for compliance with the Endangered Species Act (ESA) and with the National Historic Preservation Act (NHPA). Appendix A contains letters sent to agencies as part of the IICEP process and agency responses.

The Air Force published a newspaper advertisement in *The Daily Press* and on the base's public website, www.langley.af.mil, announcing the availability of the Draft EA for public review at the Langley AFB library, in libraries in the cities of Hampton and Poquoson, and in the York County Library. A copy of the newspaper advertisements is included in Appendix A. Copies of the Draft EA were be provided to the Virginia Department of Environmental Quality (VDEQ) Single Point of Contact to allow for review by appropriate state and local agencies. Written comments received from the public and agencies during the 30-day EA review period are also included in Appendix A.

2.6.2 Regulatory Compliance

This EA has been prepared to satisfy the requirements of NEPA (Public Law [P.L.] 91-190, 42 USC 4321 et seq.) as amended in 1975 by P.L. 94-52 and P.L. 94-83. The intent of NEPA is to protect, restore, and enhance the environment through well-informed federal decisions. In addition, this document was prepared in accordance with 32 CFR Part 989, et seq., Environmental Impact Analysis Process, which implements Section 102 (2) of NEPA and regulations established by the Air Force (40 CFR 1500-1508; 32 CFR Part 989).

Implementation of the proposed actions, alternatives, or the No Action Alternative would require concurrence from several regulatory agencies. Compliance with the ESA involves communication with the Department of the Interior (delegated to the United States Fish and Wildlife Service [USFWS]) in cases where a federal action could affect listed threatened or endangered species, species proposed for listing, or species that could be candidates for listing. A letter was sent to the appropriate USFWS agencies, as well as their state counterparts, informing them of the proposed actions and requesting data regarding applicable protected species. The preservation of cultural resources falls under the purview of SHPO, as mandated by the NHPA and its implementing regulations. VDEQ provided SHPO with a copy of the Draft EA for review and coordination.

Construction of each of the component projects would follow standard Best Management Practices (BMPs) for prevention of excessive erosion and stormwater runoff. The BMPs would meet or exceed standards established in the *Virginia Erosion and Sediment Control Handbook* (Virginia Department of Conservation and Recreation [DCR] 1992).

Construction of the proposed structures would result in additional stormwater runoff. Standard practices, such as forebays and retention ponds, would be employed to reduce the transmission of nutrient and other pollutants to the Chesapeake Bay. These measures would be in keeping with standard construction practices at Langley AFB and would satisfy the requirements of the Chesapeake Bay Protection Act with regards to reduction of drainage pollution.

2.6.3 Permit Requirements

This EA has been prepared in compliance with NEPA; other federal statutes, such as the Clean Air Act (CAA) and the Clean Water Act (CWA); EOs, and applicable state statutes and regulations. Table 2.6-1 summarizes applicable federal, state, and local regulatory review and permits necessary for the implementation of the proposed action. In addition to this EA being prepared for the decision maker and the interested public, it is also a tool for Air Force personnel to ensure compliance with all regulatory requirements from proposal through project implementation.

Table 2.6-1. Environmental Related Regulatory Requirements

<i>Type of Permit or Regulatory Requirement</i>	<i>Requirement</i>	<i>Agency</i>
Endangered Species Act (ESA)	Required to consult on impacts of project implementation on federally listed or proposed threatened and endangered species	United States Fish and Wildlife Service (USFWS); Virginia Department Game and Inland Fisheries
Clean Water Act (CWA)	Virginia Pollutant Discharge Elimination System storm water permit	Commonwealth of Virginia Department of Environmental Quality (VDEQ)
National Historic Preservation Act (NHPA) Section 106	Consultation with State Historic Preservation Office (SHPO) and Notification to Advisory Council on Historic Preservation (ACHP)	Commonwealth of Virginia Department of Historic Resources (VDHR); ACHP
Coastal Consistency Determination	Determine consistency with the Commonwealth's Coastal Zone Management Program	VDEQ
Clean Air Act (CAA)	Potential modification to VDEQ Synthetic Minor Permit	VDEQ
United States Army Corps of Engineers (USACE) Section 404	Required for authorizing fill within wetlands or water of the United States	USACE, Norfolk District; City of Hampton, VDEQ and Virginia Marine Resources Commission (VMRC)

Any action that may encroach upon waters or wetlands regulated by State and/or Federal law and regulation will require a joint application with the United States Army Corps of Engineers (USACE)-Norfolk District, VDEQ, the City of Hampton, and the Virginia Marine Resources Commission (VMRC). Langley AFB and its contractor shall submit a *Permit for Construction in Waters in the Commonwealth and in Wetlands* to satisfy all federal, local, and state requirements. All actions involving construction/demolition in, or adjacent to, wetlands shall be in compliance with the CWA, Section 404(b)(1) Guidelines (USC, Section 1344). Water Quality Certification (pursuant to the CWA, Section 401), would be obtained prior to any proposed construction and demolition activities. The relocation of any existing stormwater infrastructure would be addressed through the Virginia Water Protection Permit program administered by VDEQ (Virginia Administrative Code [VAC], 62.1-44:20, *et seq.*) and in accordance with the Department of Defense (DoD) UFC 3-21010 and the *Virginia Erosion and Sediment Control Handbook*.

2.7 COMPARISON OF ALTERNATIVES

Table 2.7-1 summarizes the potential environmental impacts of the proposed actions, alternatives, and No-Action Alternative, based on the detailed impact analyses presented in Chapter 4.0. In no instance would the potential environmental consequences be significant with the implementation of the proposed actions or alternatives. Under the No-Action Alternatives, no changes would be made to any of the facilities discussed in this EA.

Table 2.7-1. Summary of Potential Environmental Impacts

<i>Resource</i>	<i>Proposed Action</i>	<i>Alternative One</i>	<i>Alternative Two</i>	<i>No-Action Alternative</i>
Land Use and Planning	0	0	0	0
Infrastructure	0	0	0	0
Socioeconomics	+	+	+	0
Cultural Resources	-	0	0	0
Biological Resources	0	0	0	0
Water Resources	0	0	0	0
Air Quality	-	-	-	0
Hazardous Materials and Waste Management	0	0	0	0
Environmental Restoration Program	-	-	-	0
Safety	0	0	0	0
Noise	0	0	0	0

+ = the action would be beneficial, overall, in this resource area

- = impacts would be negative, but insignificant in nature

0 = the action would have no effect on this resource area

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3.0 AFFECTED ENVIRONMENT

This chapter describes relevant existing environmental conditions at Langley AFB for resources potentially affected by the Proposed Action, alternatives, and the No Action Alternative described in Chapter 2.0. In compliance with guidelines contained in the NEPA, CEQ regulations, and 32 CFR 989, the description of the existing environment focuses on those environmental resources potentially subject to impacts. These resources and conditions are: land use, including transportation and visual; socioeconomic and environmental justice; infrastructure; cultural resources; biological resources; water resources; hazardous materials and waste management; safety; noise; and air quality. The expected geographic scope of potential impacts, known as the ROI, is defined for each resource analyzed.

RESOURCES ELIMINATED FROM DETAILED CONSIDERATION

Two resources were not evaluated in this EA because it was determined that implementation of the Proposed Action, alternatives, and the No Action Alternative is unlikely to affect them. A brief explanation of the reasons why these resources have been eliminated from further consideration in this EA is provided below.

Airspace. The Proposed Action, alternatives, and the No Action Alternative do not involve aircraft or airspace modifications.

Environmental Justice. EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued by the President on February 11, 1994. Objectives of the EO, as it pertains to this document, include identification of disproportionately high and adverse health and environmental effects on low-income populations or minority populations that would be caused by a proposed federal action. Accompanying EO 12898 was a Presidential Transmittal Memorandum that referenced existing federal statutes and regulations, including NEPA, to be used in conjunction with EO 12898.

Environmental justice concerns the disproportionate effect of a federal action on low-income or minority populations. The existence of disproportionately high and adverse impacts depends on the nature and magnitude of the effects identified for each of the individual resources. If implementation of the Proposed Action were to have the potential to significantly affect people, these effects would have to be evaluated for how they adversely or disproportionately affect low-income or minority communities. Because the Proposed Action takes place within the boundaries of the base, and because there are not expected to be significant impacts on any population, environmental justice was eliminated from further analysis.

3.1 LAND USE AND PLANNING

This section addresses transportation, visual resources, and land use. The ROI for this resource consists of Langley AFB, the eastern end of Big Bethel Reservoir, and the Landings at Langley Family Housing Area.

3.1.1 Transportation

Access to Langley AFB is provided from Interstate 64 (I-64) via Armistead Avenue to the west of the base, and from Mercury Boulevard (United States [U.S.] Route 258/Virginia State Route [SR] 32), via LaSalle Avenue (SR 167) or King Street (SR 278). Langley AFB has a network of streets that provide access to all base facilities. Nealy Avenue begins at the Main Gate and continues northeast through the installation. Sweeney Boulevard is the primary east west corridor linking directly to the West Gate at Armistead Avenue. It has three lanes (center lane reversible) from the gate to the intersection with Nealy Avenue/Hammond Avenue. Parking in some on-base areas is limited. The combination of Ward Road, Clarke Avenue, Weyland Road, and Lee Road comprise the “base perimeter road.”

The Landings at Langley Housing Area is also served by an internal network of roads which tie into publicly accessible roads via several gates. The main public roads abutting the housing area are Hampton Highway (SR 134) and Big Bethel Road (SR 600).

The Big Bethel Reservoir project site is accessible via Semple Farm Road, a two-lane road that runs along the southern shore of the reservoir.

3.1.2 Visual Resources

Langley AFB is located in the city of Hampton near the southern end of the lower Virginia Peninsula, between the Northwest and Southwest Branches of the Back River. The base is in the Coastal Plain physiographic province on Hampton Flat, a nearly flat plain that gently slopes toward the east, with elevations between 5 and 11 feet above mean sea level (MSL).

The main base occupies 2,883 acres. The largest structures on base are the aircraft operations and maintenance facilities located in the southern portion of the base. National Aeronautics and Space Administration (NASA) operates a facility complex in the northwestern, southern, and southeastern portion of the base. The large wind tunnels and aeronautical test equipment that comprise the NASA facility resemble a large manufacturing plant. A number of older buildings on base, such as the Albert Kahn-designed hangars, give the base a character reflecting its history as an important airbase from the beginning of the aviation era.

Much of the vegetation on base was planted at the time of the base’s original construction (circa 1916). Towering willow and pin oak trees were once the dominant canopy in the Langley Field Historic District, where they were planted as decorations. Unfortunately, many of these trees were lost to Hurricane Isabel in 2003. Many more are in poor condition and will need to be removed in coming years to eliminate hazards to people and structures.

3.1.3 Land Use

Land uses on Langley AFB are grouped by function in distinct geographic areas. For example, aircraft operations and maintenance facilities are located in the southern portion of the base. The residential areas on base are located along the Back River in the southeastern and northeastern portions of the base.

The installation General Plan (Air Force 2007a) serves as the single, integrated, authoritative reference for facilities development and land use on the installation. The General Plan incorporates numerous component plans which deal with more specific aspects of planning. The CIP is a component of the General Plan that translates general assessments of conditions and requirements, as discussed in other sections of the General Plan, into specific, executable projects. Area Development Plans (ADPs), part of the General Plan, provide focused information on the future organization and circulation of personnel, buildings, and equipment within portions of the base. ADPs relevant to projects evaluated in this EA include the Community Support ADP, the Flightline ADP, and the Big Bethel Reservoir ADP (draft in production).

The base's Integrated Natural Resource Management Plan (Air Force 2006a) is used to coordinate natural resource management. Trees are an integral component of the base's urban environment with their shade and beauty contributing to the quality of life and moderating the hard appearance of concrete structures and streets. Trees also help stabilize the soil by controlling wind and water erosion, reduce noise levels, and cleanse pollutants from the air. Trees also provide significant economic benefits. Several studies have shown that properly placed trees provide shade and act as windbreaks, helping to decrease residential energy consumption. Trees return overall benefits and value far in excess of the time and money invested in them for planting, pruning, care, and removal. Langley AFB officials have recognized these benefits and realize the need to protect their investment with a comprehensive, urban forest management program.

The Coastal Zone Management Act (CZMA) was enacted to develop a national coastal management program that comprehensively manages and balances competing uses of land impacts to any coastal use or resource. The CZMA federal consistency requirement, CZMA Section 307, mandates that federal agency activities be consistent to the maximum extent practicable with the enforceable policies of a state management program. The federal consistency requirement applies when any federal activity, regardless of location, affects any land or water use or natural resource of the coastal zone. The question of whether a specific federal agency activity may affect any natural resource, land use, or water use in the coastal zone is determined by the agency implementing the action.

The VDEQ oversees activities in the coastal zone of the Commonwealth through a number of enforceable programs. In reviewing the Proposed Action, alternatives, and No Action Alternative, VDEQ may require agencies to coordinate with its specific divisions or other agencies for consultation or to obtain permits; they also may comment on environmental impacts and mitigation. VDEQ enforceable programs and policies pertain to fisheries management, sub-aqueous lands management, wetlands management, dunes management, non-point source pollution control, point source pollution control, shoreline sanitation, air pollution control, and coastal lands management. The Chesapeake Bay Local Assistance Department regulates activities in the Chesapeake Bay Resource Management Areas and Resource Protection Areas.

3.2 INFRASTRUCTURE

3.2.1 Electric Power and Natural Gas

Dominion Virginia Power provides electric power from the Back River substation to the base. NASA Langley Research Center purchases electricity, which is then sold to Langley AFB. Currently, Langley AFB is in the process of installing a new contractor owned and maintained electrical distribution system. This new and improved system would include the construction of a new 8-mile direct buried underground 34.5-kilovolt (kV) loop express feeder system. Total base capacity would be increased to 36 Megavolt Amperes (MVA). Additionally, ten new transformers (5 megavolt-amp each) and associated electrical switching devices would be installed.

Virginia Natural Gas provides natural gas to Langley AFB through an underground main that extends along Sweeney Boulevard. The natural gas system is adequate to meet existing and short-term projected demand.

3.2.2 Potable Water

Langley AFB is supplied solely by Newport News Water Works through two direct connections to an on-base 20-inch line. The base has recently completed a three-phase project to replace all water mains, which are primarily polyvinyl chloride (PVC) pipe. The Langley AFB water system is classified by the Virginia Department of Health as a community water system (Public Water Supply ID Number VA3650305). A community water system is defined as “a waterworks which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.”

Total water demand at Langley averages 0.45 millions of gallons per day (MGD) while water demand at the Landings at Langley Housing Area averages 0.355 MGD. In the summer, the base averages 0.6 MGD with a 0.8 MGD peak day, Landings at Langley averages 0.5 MGD with a 0.6 MGD peak day. Newport News Water Works (NNW) system capacity is roughly 120 MGD. Three potable water treatment facilities, Harwood’s Mill Water Treatment Plant (WTP), Lee Hall WTP, and a reverse osmosis well field currently make up the NNW. The quality of the water produced by NNW is considered to be adequate by Air Force standards.

With the direct connection to the NNW, water is provided to the base at 60 pounds per square inch (psi). An upgrade of the existing 2-million-gallon ground storage tank and pump station was recently completed, allowing the pressure to be increased to 85 psi on base.

Currently, the two elevated storage tanks and the 2-million gallon ground storage tank provide Langley AFB a total storage capacity of 2.6 million gallons. Landings at Langley currently has two elevated storage tanks with a total capacity of 400,000 gallons. However, under privatization, the housing area will rely on NNW supply and the two storage tanks may be demolished. With the direct connection to the NNW water is provided to the base at 60 pounds psi. An upgrade of the existing 2-million gallon ground storage tank and pump station was recently completed, allowing the pressure to be increased to 85 psi on base.

3.2.3 Sewage

Wastewater generated at the base is discharged through the sanitary sewer system to the Hampton Roads Sanitation District (HRSD). The base has an HRSD Industrial Wastewater Discharge Permit (No. 0011), effective 2006 to 2009, that regulates the amount of pollutants that can be discharged to the sanitary sewer system. The Landings at Langley Housing Area discharge permit is held by the housing privatization contractor.

The average wastewater flow is approximately 0.6 MGD from the main base and 0.4 MGD from the Landings at Langley Family Housing Area. Past studies have determined significant inflow and infiltration is entering the system during rainfall (Air Force 2004a). The primary lift station, Building 1370, has been recently upgraded to include a 25,000-gallon overflow tank. In addition, upgrades have been carried out to the wastewater discharge system in the Shellbank and LTA areas. Upgrades to the sanitary sewer system, in accordance with a Hampton Roads Sanitation District administrative order, are approximately 75% complete.

3.2.4 Solid Waste

Solid waste generated on Langley AFB and Landings at Langley Family Housing Area is removed by contract services to either the City of Hampton's Bethel Sanitary Landfill or to the Hampton Waste-to-Energy facility for incineration. In the first 3 months of 2007, the base and Housing area generated 1,490 tons of non-construction-related solid waste. Of this total quantity of waste, 845 tons were sent to the Hampton Waste-to-Energy facility for incineration and 212 tons were diverted through recycling and composting activities. In this same time period, the base also generated 276 tons of construction and demolition debris.

The USA Waste of Virginia Bethel Landfill is a sanitary landfill, but also accepts construction and demolition waste. In 2006, this facility received 513,898.5 tons of waste of all types. With a total remaining capacity of about 25,440,572 tons, it has a remaining useful life (RUL) of about 49.5 years (VDEQ 2006). In addition, there are two dedicated construction/demolition waste disposal landfills in the Hampton Roads area (Table 3.2-1). Their combined remaining capacity is 194,461 tons. These facilities together received 96,618 tons of construction and demolition waste in 2006, and have a collective remaining useful life of about two years. The total remaining capacity in all currently permitted Hampton Roads Construction-Demolition Disposal landfills was 19,973,856 tons in 2006. Total waste received in 2006 was 2,234,387 tons for a RUL of 8.9 years.

Table 3.2-1. Waste Disposal Facilities in Hampton Roads

<i>Name</i>	<i>Permit</i>	<i>County</i>	<i>Capacity (tons)</i>	<i>2001 Disposal (tons)</i>	<i>RUL</i>
Higgerson-Buchanan Inc.	493	Chesapeake	169,461	65,193	2.59
Wolftrap Operations Inc. Debris Landfill	436	York	25,000	31,425	.8
Total for Hampton Roads			194,461	96,168	2.02
Total for Virginia			19,973,856	2,234,387	8.9

Note: 1. This is the combined RUL for the five facilities, not the sum of their individual RULs.

Source: VDEQ 2006

3.2.5 Jet Fuel

The Liquid Fuel System at Langley AFB includes facilities for receiving, storing, and distributing JP-8 jet fuel. The total capacity of Langley AFB's fuel system is 3,726,931 gallons. However, the active capacity is 3,469,909 gallons. Average daily jet fuel consumption at Langley is approximately 67,000 gallons. Peak usage during heavy sortie generation can reach nearly 220,000 gallons a day.

The Liquid Fuel System at Langley AFB includes separate receipt facilities for barge and commercial tanker truck (alternate receipt mode). This fuel is delivered primarily by barge to Langley AFB and offloaded at the Fuel Pier (Facility 721) through primary and alternate off-loading arms. It is then piped to four aboveground Bulk Storage Tanks. A Type III pumphouse pumps the fuel to two Operating Tanks from which it is issued to either fuel trucks via six fillstands or directly to aircraft on the west ramp via mobile pantograph arms which hook directly to the Type III System piping.

3.3 SOCIOECONOMICS

Socioeconomic resources are defined as the aspects of human interactions and are comprised primarily of population, employment, and income. These basic resources have a widespread influence on a number of other resources, such as infrastructure, water resources, and transportation. For example, population factors would be a driving influence on the demand for additional utilities and public services. Employment would provide the necessary personnel to fulfill that demand and the income derived from the additional employment would be spent in the community allowing for more employment to be generated.

Langley AFB is located in southeast Virginia in a large metropolitan area consisting of several independent cities and counties known collectively as Hampton Roads. Hampton Roads is divided into two sections: the Virginia Peninsula and South Hampton Roads. Langley AFB is located on the Virginia Peninsula in the City of Hampton. Therefore, the ROI for this resource is identified as sections of the Virginia Peninsula consisting of the cities of Hampton, Newport News, and Poquoson, as well as York County. As these jurisdictions are located in close proximity to Langley AFB, it is likely that any socioeconomic effects resulting from the Capital Improvement Projects at Langley AFB would be centered in these areas.

3.3.1 Local Economy

The ROI has an estimated 2006 population of approximately 400,000 and between 2000 and 2006, the ROI's total population increased at an average annual rate of 0.1 percent. The City of Newport News is the most populous jurisdiction in the ROI with a population of over 178,000 and is followed by the City of Hampton with a population of over 145,000. Between 2000 and 2006, the population in both Newport News and Hampton has been declining at an average annual rate of 0.2 percent. York County has an estimated 2006 population of nearly 62,000 which has increased at an average annual rate of 1.6 percent year. Poquoson is a more rural area with a population of nearly 12,000 and has experienced an increase in population of 0.5 percent per year (Table 3.3-1).

Table 3.3-1. Population Change Between 2000 and 2006 (estimated)

	<i>Census 2000</i>	<i>2006 (est.)</i>	<i>Avg. Ann. Change, 2000-2006</i>
Hampton	146,437	145,017	-0.2%
Newport News	180,150	178,281	-0.2%
Poquoson	11,566	11,918	0.5%
York County	56,297	61,879	1.6%
ROI	394,450	397,095	0.1%

Source: U.S. Census Bureau 2006

3.3.2 Labor Force and Employment

The labor force consists of individuals currently employed as well as individuals that are currently unemployed but looking for a job. The labor force in the ROI numbered over 192,000 in 2006 following an average annual growth of 1.3 percent between 2000 and 2006. The City of Newport News experienced the most growth in the labor force as over 5,000 people were added to the labor force between 2000 and 2006. In York County, over 4,000 people entered the labor force at an average rate of 2.6 percent per year during the same time period (Table 3.3-2).

Table 3.3-2. Labor Force, ROI, 2000-2006

	<i>2000</i>	<i>2006</i>	<i>Average Annual Change, 2000-2006</i>
Hampton	63,944	67,785	1.0%
Newport News	82,380	87,490	1.0%
Poquoson	5,797	6,278	1.3%
York County	26,697	31,175	2.6%
ROI	178,818	192,728	1.3%

Source: U.S. Bureau of Labor Statistics 2007

The ROI had a total employment of over 234,000 jobs in 2005 after increasing at an average rate of 1.0 percent per year from 2001, adding approximately 9,500 jobs. The most growth occurred in Poquoson and York County, which added over 6,000 jobs during the same time period to reach a total combined employment of over 34,000. Hampton lost 578 jobs between 2001 and 2005 at an average annual rate of 0.2 percent (Table 3.3-3).

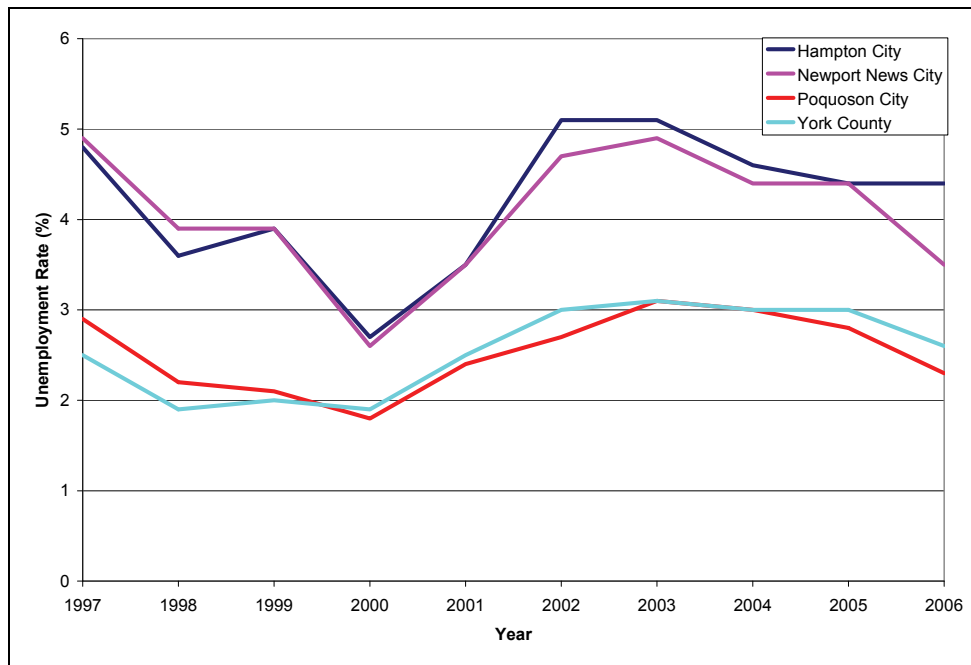
Table 3.3-3. Total Employment Growth, ROI, 2001-2005

	2001	2005	<i>Average Annual Change, 2001-2005</i>
City of Hampton	82,651	82,073	-0.2%
City of Newport News	113,991	118,056	0.9%
Poquoson and York County	28,064	34,088	5.0%
ROI	224,706	234,217	1.0%

Source: U.S. Bureau of Economic Analysis, Regional Economic Information System, 2007

Government and government-related enterprises have a large presence in the Hampton Roads area. In the ROI, “Government and Government Enterprise” is the largest employment sector, providing nearly 58,000 jobs in 2005 and representing approximately 25 percent of total employment. The second largest employment sector in the ROI is the “Manufacturing” sector with 26,600 jobs and approximately 11 percent of total employment. Information on Construction employment was not available for the City of Hampton. However, Construction employment in the cities of Newport News, Poquoson, and York County total nearly 9,500 jobs (Table 3.3-4).

Between 1997 and 2000, unemployment rates decreased to less than 3 percent for the cities of Hampton and Newport News and below 2 percent for Poquoson and York County. Following 2000, unemployment rates began to rise until leveling off between 2002 and 2004. Unemployment began to drop from 2004 until 2006 with the exception of Hampton. In Hampton, unemployment rates leveled between 2005 and 2006 at approximately 4 percent (Figure 3.3-1).



Source: U.S. Bureau of Labor Statistics 2007

Figure 3.3-1. Unemployment Rates, ROI, 1997-2006

Table 3.3-4. Employment by Industry, ROI, 2005

	<i>Hampton</i>	<i>Newport News</i>	<i>Poquoson & York County</i>	<i>ROI</i>
Total Employment	82,073	118,056	34,088	234,217
Farm	-	-	49	49
Forestry, fishing, related activities, and other 3/	(D)	(D)	(D)	-
Mining	(L)	(D)	20	20
Utilities	(D)	(D)	(D)	-
Construction	(D)	5,674	3,784	9,458
Manufacturing	2,813	23,852	(D)	26,665
Wholesale trade	1,207	(D)	(D)	1,207
Retail Trade	9,130	11,932	4,429	25,491
Transportation and warehousing	(D)	2,854	(D)	2,854
Information	2,198	1,266	211	3,675
Finance and insurance	1,309	2,466	834	4,609
Real estate and rental and leasing	2,247	3,691	2,573	8,511
Professional and technical services	5,723	6,417	2,015	14,155
Management of companies and enterprises	347	1,004	65	1,416
Administrative and waste services	5,588	7,244	2,145	14,977
Educational services	2,455	1,467	277	4,199
Health care and social assistance	6,017	10,484	1,915	18,416
Arts, entertainment, and recreation	956	1,367	1,298	3,621
Accommodation and food services	6,202	6,758	3,363	16,323
Other services, except public administration	3,716	4,999	2,683	11,398
Government and government enterprises	27,375	24,135	6,445	57,955
Federal, civilian	8,099	5,118	992	14,209
Military	9,934	6,783	1,679	18,396
State and local	9,342	12,234	3,774	25,350

Notes: (D)- Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

(L)- Less than 10 jobs, but the estimates for this item are included in the totals.

Source: U.S. Bureau of Economic Analysis 2007a

3.3.3 Income

The City of Poquoson and York County have the highest per capita income in the ROI in 2005 at \$36,964. The City of Poquoson and York County also experienced the largest increase in per capita income, gaining approximately \$5,600 between 2001 and 2005 at an average annual rate of 4.2 percent. The cities of Hampton and Newport News have slightly lower per capita incomes at \$30,389 and \$28,436, respectively. Both areas experienced increases in per capita income similar to that of the City of Poquoson and York County. The City of Hampton gained approximately \$4,900 and the City of Newport News gained approximately \$4,600 between 2001 and 2005 at an average annual rate of 4.6 percent each (Table 3.3-5).

Table 3.3-5. Per Capita Income, ROI, 2001-2005

	2001	2005	<i>Average Annual Change, 2001-2005</i>
Hampton	\$25,413	\$30,389	4.6%
Newport News	\$23,780	\$28,436	4.6%
Poquoson & York County	\$31,354	\$36,964	4.2%

Source: U.S. Bureau of Economic Analysis 2007b

In 2005, the total amount earnings in the ROI was nearly \$10.5 billion. Newport News had the largest share of earnings with \$5.3 billion followed by the Hampton with nearly \$4 billion.

As with employment, "Government and Government Enterprises" was the largest contributor to earnings in the ROI with nearly \$4 billion and comprising approximately 38 percent of total earnings. The "Manufacturing" sector contributed approximately \$1.6 billion in earnings, comprising 16 percent of total earnings. Information was not available on the amount of earnings in the "Construction" sector in Hampton. However, in Newport News, Poquoson, and York County, the Construction industry earned nearly \$400 million in 2005 (Table 3.3-6).

3.3.4 Housing

At the time of the 2000 Census, the ROI had approximately 147,700 housing units, of which 58 percent were owner-occupied. The City of Newport News had the largest housing supply with over 69,000 units followed by the City of Hampton with over 53,000. Owner-occupied housing units in Newport News comprised about 52 percent of the total number of units and in Hampton, owner-occupied housing accounted for approximately 59 percent of the total units. Poquoson had the highest rate of owner-occupied housing comprised approximately 84 percent of the 4,100 units. In York County, approximately 75 percent of the 20,000 unit housing supply was owner-occupied.

Table 3.3-6. Earnings (In Thousands) by Industry, ROI, 2005

	<i>Hampton</i>	<i>Newport News</i>	<i>Poquoson & York County</i>	<i>ROI</i>
Total Earnings	\$3,976,299	\$5,386,414	\$1,076,403	\$10,439,116
Farm	\$-	\$-	\$1,626	\$1,626
Forestry, fishing, related activities, and other	(D)	(D)	(D)	\$-
Mining	\$310	(D)	\$56	\$366
Utilities	(D)	(D)	(D)	\$-
Construction	(D)	\$247,716	\$148,942	\$396,658
Manufacturing	\$159,940	\$1,506,882	(D)	\$1,666,822
Wholesale trade	\$56,663	(D)	(D)	\$56,663
Retail Trade	\$222,898	\$280,644	\$82,630	\$586,172
Transportation and warehousing	(D)	\$107,637	(D)	\$107,637
Information	\$99,590	\$62,561	\$4,827	\$166,978
Finance and insurance	\$45,774	\$132,352	\$24,166	\$202,292
Real estate and rental and leasing	\$38,879	\$116,083	\$43,582	\$198,544
Professional and technical services	\$426,604	\$372,052	\$79,403	\$878,059
Management of companies and enterprises	\$15,418	\$103,033	\$2,716	\$121,167
Administrative and waste services	\$108,221	\$162,929	\$53,137	\$324,287
Educational services	\$94,491	\$31,224	\$2,274	\$127,989
Health care and social assistance	\$253,037	\$427,270	\$59,632	\$739,939
Arts, entertainment, and recreation	\$8,308	\$18,648	\$9,536	\$36,492
Accommodation and food services	\$89,818	\$98,428	\$50,415	\$238,661
Other services, except public administration	\$80,516	\$115,178	\$55,675	\$251,369
Government and government enterprises	\$2,109,874	\$1,465,470	\$353,453	\$3,928,797
Federal, civilian	\$785,833	\$377,320	\$76,621	\$1,239,774
Military	\$961,343	\$538,831	\$105,445	\$1,605,619
State and local	\$362,698	\$549,319	\$171,387	\$1,083,404

Notes: (D)- Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

(L)- Less than 10 jobs, but the estimates for this item are included in the totals.

Source: U.S. Bureau of Economic Analysis 2007b

Information was not available for Poquoson or York County on the number or characteristics of the housing in 2005. However, in Hampton, the total number of housing units grew to over 55,000 by 2005, gaining over 1,300 units. Newport News gained approximately 3,500 units to reach a total housing supply of over 73,000 housing units. Between 2000 and 2005, housing development in Newport News and Hampton was concentrated in owner-occupied housing, possibly as a result of the lower interest rates and increased home buying activity. Therefore, the share of owner-occupied housing in Hampton and Newport News increased to 61 percent and 54 percent, respectively (Table 3.3-7).

Table 3.3-7. Housing, ROI, 2000 & 2005

	<i>2000 Total Housing Units</i>	<i>Owner-Occupied</i>	<i>Renter-Occupied</i>	<i>2005 Total Housing Units</i>	<i>Owner-Occupied</i>	<i>Renter-Occupied</i>
Hampton	53,887	31,566	22,321	55,244	33,768	21,476
Newport News	69,686	36,528	33,158	73,237	39,552	33,685
Poquoson	4,166	3,502	664	N/A	N/A	N/A
York County	20,000	15,160	4,840	N/A	N/A	N/A
ROI	147,739	86,756	60,983	N/A	N/A	N/A

Source: U.S. Census Bureau 2000, 2006

LANGLEY AFB PERSONNEL AND EXPENDITURES

Langley AFB is a major influence on the economy in the ROI. In 2005, the base employed 11,200 people, including active duty military and civilians. Jobs include part-time and full-time positions. Langley AFB's payroll is over \$726 million (Table 3.3-8).

Table 3.3-8. Langley Personnel and Payroll, 2005

	<i>Total</i>	<i>Payroll</i>
Active Duty Military	8,787	\$582,202,188
General Schedule Civilians	1,424	\$113,691,070
Federal Wage Board Civilians	113	\$5,278,280
Other (Senior Executive, Senior Level, and General Manager)	95	\$12,197,375
Civilian NAF	479	\$6,001,206
Civilian BX	234	\$6,034,815
Contract Civilians	46	\$375,889
Private Businesses	22	\$617,303
Total Personnel	11,200	\$726,398,126

Source: Langley AFB 2005

A portion of the income paid to Langley AFB employees is spent in the local communities in order to provide the employees with food, shelter, entertainment, and services. The Air Force also spends money in the community to purchase services and supplies required to keep Langley AFB operational. The money that is spent in the local communities flows through the economy with a multiplier effect and contributes to the creation of indirect jobs. In 2005, Langley AFB spent approximately \$703 million for annual expenditures in addition to over \$726 million for the annual payroll, for a total expenditure of \$1.4 billion. The Air Force estimated that these direct expenditures created or sustained 5,914 indirect jobs in the surrounding communities. The average annual pay for those indirect jobs was estimated to be \$30,823. Therefore, the overall economic impact of Langley AFB in 2005 was over \$1.6 billion (Table 3.3-9).

Table 3.3-9. Total Economic Impact of Langley AFB, 2005

Annual Payroll	\$726,398,126
Military	\$582,202,188
Federal Civilian	\$131,166,725
Other Civilian	\$13,029,213
Annual Expenditures	\$703,719,977
Estimated Annual Dollar Value of Jobs Created	\$182,287,222
Estimated Indirect Jobs Created	5,914
Average Annual Pay	\$30,823
Grand Total	\$1,612,405,325

Source: Langley AFB 2005

3.4 CULTURAL RESOURCES

Cultural resources are any prehistoric or historic district, site, or building, structure, or object considered important to a culture, subculture, or community for scientific, traditional, religious or other purposes. They include archaeological resources, historic architectural resources, and traditional resources. Archaeological resources are locations where prehistoric or historic activity measurably altered the earth or produced deposits of physical remains (e.g., arrowheads, bottles). Historic architectural resources include standing buildings, dams, canals, bridges, and other structures of historic or aesthetic significance. Traditional resources are associated with cultural practices and beliefs of a living community that are rooted in its history and are important in maintaining the continuing cultural identity of the community. Historic properties (as defined in 36 CFR 60.4) are significant archaeological, architectural, or traditional resources that are either eligible for listing, or listed in, the National Register of Historic Places (NRHP). Both historic properties and significant traditional resources identified by American Indian tribes are evaluated for potential adverse impacts from an action.

The ROI for cultural resources is the area within which the Proposed Action has the potential to affect existing or potentially occurring cultural resources. For the Proposed Action and

alternatives, the ROI is defined as Langley AFB. Structures for demolition, relocation, or rehabilitation under the Proposed Action or two action alternatives are listed in Table 3.4-1.

3.4.1 Identified Cultural Resources

There are five National Historic Landmarks on Langley AFB, all of which were designated on the merit of their contributions to the aeronautics and space program between 1915 and 1972. They include three wind tunnels and two training facilities (Langley Research Center 2007).

Archaeological surveys on Langley AFB property have examined 915 acres (32 percent) of the total land owned and an additional 1,732 acres cannot be surveyed for various reasons. In total, 73% of the base has been either surveyed or has been found to be infeasible to survey. Twenty six archaeological sites have been found to date (personal communication, Baie-Yates 2007). The NRHP-eligible Langley Field Historic District encompasses the eastern part of the base including the Lighter than Air (LTA) and Heavier than Air (HTA) areas. It includes nearly 250 contributing and non-contributing historic properties. Portions of three Langley CIP projects occur within the proposed district, although none are within the LTA or HTA areas.

Langley AFB is divided into 10 planning areas (USACE 2004a), including the off-base Landings at Langley. These serve dual purposes, defining sensitivity for archaeological resources and also encompassing defining features for the purpose of evaluating architectural resources and landscape preservation goals. CIP projects are proposed in planning areas 1, 4, 5, 6 and in the Landings at Langley Housing Area. The planning areas are discussed in the Langley Air Force Base Cultural Resource Management Plan (CRMP) (USACE 2004a: Appendix A).

Planning Area 1, the Flightline, consists primarily of disturbed soils with low potential for archaeological resources. Although the flightline and aircraft maintenance areas have not been surveyed for historic archeological resources, these areas are so disturbed the likelihood of finding significant, NRHP-eligible archaeological properties is generally low. However, the proposed location for the new Security Forces Squadron is near the 1917 location of temporary hangers and machine shop (USACE 2004a). The Flightline planning area does include a number of historic architectural properties. These include Hangars 753 and 757, both of which have been identified as contributing elements to the Langley Field Historic District (USACE 2004a), and are the subject of a historic building treatment plan (USACE 2004b) created as an appendix to the Langley AFB Architectural Compatibility Standards (USACE 2002). Hangars 753 and 757 (built in 1932 and 1929) are defined by several character defining features: building massing and materials, roof massing and parapet walls, corner brick piers with concrete coping, sliding multi-panel, metal pocket doors with industrial sash windows, ornamentation including stars and wings, opening and fenestration patterns, and landscaping. Cold War-era buildings 373, 374, 355, 741, 744 (built in 1961, 1965, 1966, 1972 and 1953) are not eligible for the NRHP. Building 361, built in 2004, is not NRHP eligible.

Planning Area 4, the Airman Living Area, has a low potential for the presence of archaeological sites due to the extent of disturbance to be found here. Three Cold War era dorms that would be demolished under the Proposed Action are in Planning Area 4. These three dorms are

Buildings 37, 38 and 123 and were built in 1968, 1969 and 1969, respectively. These dorms were addressed in a program comment signed on 18 August 2006 (ACHP 2006).

Planning Area 5, known as Community South, lies between the Airman Living Area and the shoreline. While the shoreline and northern portions of the planning area are considered to have particularly high potential for the presence of archaeological sites, no resources have been discovered during surveys to date. The area that would be affected by the current projects is considered to have a low potential due to the high level of disturbance from construction.

The Landings at Langley Housing and Big Bethel Recreational Area lie about five miles west of Langley AFB. One area within Landings at Langley has not been disturbed by construction and has high potential for cultural resources. This site is currently undergoing surveying. The remainder of the housing and recreation areas, including all of the proposed action sites has a low potential for the presence of archaeological resources. The Landings at Langley Chapel (Building 1793, built in 1966) and the Landings at Langley CDC (Building 1994, built in 1983) both date to the Cold War construction era, and have been evaluated as not eligible for the NRHP (ACC 2007).

The Big Bethel recreation area includes a number of 18th and 19th century archaeological sites. Although none of the located sites are considered eligible for the NRHP, further inventory studies have been programmed to complete the archaeological survey, and these additional surveys may identify NRHP-eligible resources. The Bethel Reservoir WTP consists of 10 buildings (50050, 50051, 50065, 50070, 50075, 50080, 50090, 50095, 50105, and 50106) all built in 1918. This facility has not been evaluated for NRHP eligibility. Unevaluated resources, whether archaeological sites or possibly historic buildings, are treated as potentially eligible for the NRHP.

3.4.2 Traditional Resources

Although Native American resources have been discovered during Cultural Resource Surveys, none have been identified as properties of traditional or cultural importance to native Americans or other traditional groups. In addition, no projects will impact those resources (USACE 2004a). No federally recognized Indian tribes or lands are located in Virginia.

Table 3.4-1. Facilities Proposed for Demolition, Relocation, or Rehabilitation under the Proposed Action or the Two Action Alternatives

<i>Bldg #</i>	<i>Facility Name</i>	<i>Build Date</i>	<i>Project Description</i>	<i>Archaeological Sensitivity</i>	<i>Planning Area</i>	<i>NRHP eligibility</i>
373 374	Fuel Systems Maintenance hangar	1961 1965	Construct new fuel maintenance facility, demo old	Low	1	Not eligible Not eligible
753	Hangar 753	1932	Complete facility rehabilitation / demo and re-construction	Low	1	Eligible, and contributing to LFHD
1793	Landings at Langley Chapel *	1966	construct addition and more parking	Low	Bethel	Not eligible
NA	Airman Family Readiness Center	NA	Construct new facility	Low	5 (prop act) 4 (alt 1)	
355 329 326 339 337 333	Security Forces Operations Facility	1966 1969 1957 1956 1976 1956	Construct new SF Operations facility, demo old	High (prop act) Low (alt 1, alt 2)	1 (prop act & alt 1) 5 (alt 2)	Not eligible
37 38 123	Dorm Campus (2 additional dorms)	1968 1969 1969	Construct 2 new 96 person dorms, demo 3 old dorms	Low	4 & 5	All three are covered by 2006 Program Comment
741 744	Fuels Automated System Complex	1972 1953	Construct new fuel systems and lab, demo old	Low	1	Both are not eligible and Non-contributing to LFHD
361	Expand LO/CRF	2004	Construct 2 bay addition to low-observable / composite repair facility (LO/CRF)	High	1	Not eligible
1994	Landings at Langley CDC	1983	Construct new CDC, demo old CDC	Low	Bethel	Not eligible
50050; 50051; 50065; 50070; 50075; 50080; 50090; 50095; 50105; 50106	Bethel Reservoir * (water treatment plant)	1918 1918 1918 1918 1918 1918 1918 1918 1918 1918	Demolish Water Treatment plant and construct conference center, ropes course, RV parking area	Unevaluated	Bethel	All buildings are unevaluated; known sites are not eligible

3.5 BIOLOGICAL RESOURCES

For purposes of the impact analysis, biological resources are divided into three major categories: (1) terrestrial communities, (2) wetland and freshwater aquatic communities, and (3) threatened, endangered, or special status (TES) species/communities. The ROI for biological resources includes Langley AFB and the specific areas associated with the proposed actions and alternatives.

3.5.1 Terrestrial Communities

Only a relatively small portion of Langley AFB is forested or remains in its natural state. Plant communities include approximately 250 acres of mixed oak-hickory hardwood forests, 60 acres of 60-year-old planted loblolly pine forests, 450 acres of tidal salt marshes, and an undetermined amount of old-field successional areas. The remaining portions of the base consist of managed lawns and developed areas of buildings, structures, and pavement.

Wildlife on the base are widespread species that are habitat generalists or tolerant of disturbance. This includes a wide variety of game and furbearing species, small mammals, waterfowl, songbirds, raptors, amphibians, reptiles, and fish. The proximity of the base to estuarine and marine habitats of Chesapeake Bay provides habitat for a variety of neotropical migrants and waterfowl.

A wetland inventory indicated that at least 14 percent of the land at Big Bethel Reservoir (75 acres) is currently forested (Tiner *et al.* 1998). Native vegetation at Big Bethel Reservoir consists primarily of mature bottomland hardwood forests with understory components. Forty species of woody plants have been identified at Big Bethel (Science Applications International Corporation 2000). Galvez *et al.* (1998) also found 15 mammal species at Big Bethel Reservoir and recorded 154 species of birds.

3.5.2 Wetland and Freshwater Aquatic Communities

Wetlands are areas of transition between terrestrial and aquatic systems where the water table is usually at, or near, the surface, or the land is covered by shallow water (Cowardin *et al.* 1979). Wetlands are often categorized by water patterns (the frequency or duration of flooding) and location in relation to upland areas and water bodies. Wetland hydrology is considered one of the most important factors in establishing and maintaining wetland processes (Mitsch 2000).

Wetlands are defined in the USACE *Wetlands Delineation Manual* as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (Environmental Laboratory 1987). These resources are protected under Section 404 of the CWA (33 USC Section 1344) and at the State level under Section 401 pursuant to Chapter 13 of Title 28.2, Code of Virginia. Wetlands on federal lands are further protected under EO 11990, which states "...each federal agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands...".

Langley AFB supports a total (influenced by seasonal fluctuations) of 652 acres of wetlands, of which 462 acres are Estuarine wetlands and 190 acres are Palustrine wetlands (Air Force 1998). Wetlands are very beneficial because of their ability to store and filter stormwater, provide

habitat, and naturally control shoreline and stream bank erosion. These areas are usually characterized by poorly-drained soils and exhibit vegetation characteristics of wet environments. A wetland delineation of the entire base was conducted in late 2000 and verified by the USACE-Norfolk District on January 22, 2004 under Project Number 01-R-2076 (Air Force 2001a; USACE 2004). This study revealed the various Emergent (saline/brackish/freshwater), Scrub/Shrub, and Forested wetland systems at Langley AFB. Wetland and freshwater aquatic communities of Langley AFB are depicted in Figure 3.5-1.

Langley AFB has restored and stabilized portions of the shoreline adjacent to Northwest and Southwest Branches of Back River using non-invasive, native, emergent vegetation such as saltmarsh cordgrass (*Spartina alterniflora*) and saltmeadow cordgrass (*Spartina patens*) (personal communication, Goss 2005). This restoration effort would likely result in a more erosion-resistant shoreline, improve water quality, and promote the unique Estuarine ecosystem of Chesapeake Bay (Air Force 2001b).

Big Bethel Reservoir is 266-acre freshwater impoundment. Most of the wetlands fringing Big Bethel Reservoir are palustrine in nature and total 74.7 acres (Tiner *et al.* 1998). Figure 3.5-2 shows the wetlands present at Big Bethel. Galvez *et al.* (1998) found 18 fish taxa representing twelve families at Big Bethel Reservoir. Amphibians representing several different species were also found (Galvez *et al.* 1998).

3.5.3 Threatened, Endangered, and Special Status Species

Seventeen special status species that have the potential to occur on Langley AFB are presented in Table 3.5-1. Fifteen have special state status and twelve have federal status. No critical habitat occurs on base.

No resident endangered or threatened species or their critical habitats have been found on Bethel Reservoir (SAIC 2000).

The only federally listed threatened species known to occur in the area, the northeastern beach tiger beetle, has no record of occurrence on base or in the Big Bethel Reservoir area; it typically inhabits broad sandy beaches and has become a species of concern within the Chesapeake Bay ecosystem. The third federally listed threatened species, the piping plover, is associated with sandy beaches, which are not found on Langley AFB.

Virginia special status species include the barking treefrog, Mabee's salamander, canebrake rattlesnake, Foster's tern, least tern, glossy ibis, great egret, yellow-crowned night-heron, peregrine falcon, bald eagle, and Harper's fimbriatilis. The canebrake rattlesnake has been found along the shore of the southwest branch of the Back River.

There is one confirmed eagle nest on LAFB property. The nest, which is located in an undeveloped area directly adjacent to the Back River, was discovered in 2006 by William and Mary scientists performing aerial surveys. Between one and four eagles are now regularly seen foraging on the airfield. Habitat suitable for nesting or roosting occurs among the loblolly pines on the northern side of the base. Uniform age/size structure of loblolly pine stands may limit use of the base as nesting or roosting habitat (Barrera 1995). While the bald eagle has recently been federally de-listed, it remains on the state threatened species list.



Figure 3.5-1. Wetland Areas at Langley AFB

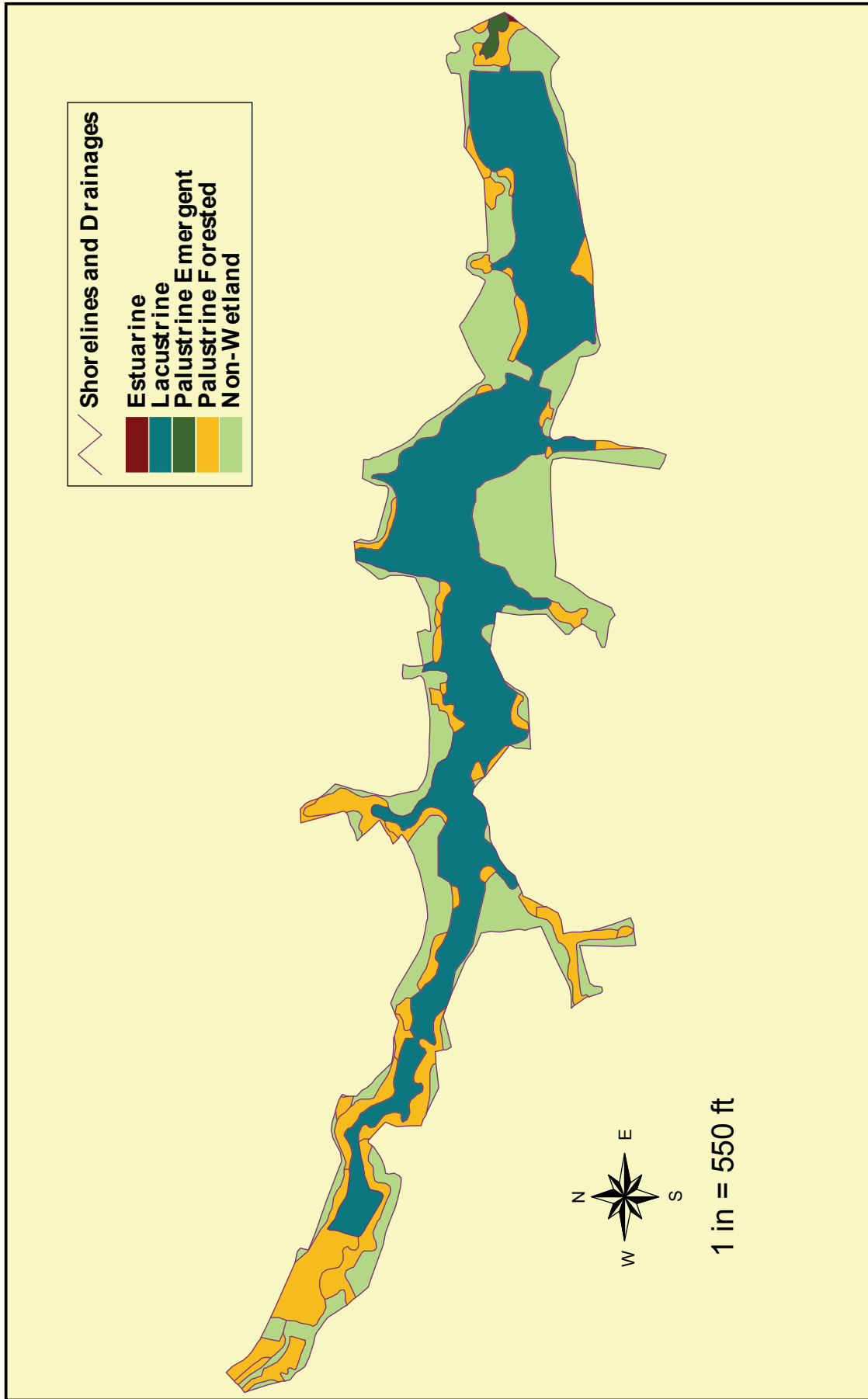


Figure 3.5-2. Big Bethel Reservoir Wetland Inventory

Source: Tiner et al. 1998

Table 3.5-1. Threatened, Endangered, and Special-Status Species/Communities that Potentially Occur on Langley AFB (Page 1 of 2)

<i>Species</i>	<i>Status</i>	<i>Areas of Occurrence</i>
Reptiles		
Canebrake rattlesnake <i>Crotalus horridus atricaudatus</i>	SE	Meadows, canebrake or “green sea” wetlands. At risk because of wetland loss. Swampy areas, canebrake thickets, and floodplains
Kemp’s Ridley sea turtle <i>Lepidochelys kempii</i>	FE/SE	Atlantic Coast and throughout the Chesapeake Bay, shallow near-shore grass beds
Leatherback sea turtle <i>Dermochelys coriacea</i>	FE/SE	Atlantic Coast and mouth of Chesapeake Bay and estuarine rivers
Loggerhead sea turtle <i>Caretta caretta</i>	FT/ST	Atlantic Coast and mouth of Chesapeake Bay and estuarine rivers and marshes
Green sea turtle <i>Chelonia mydas</i>	FT/ST	Shallow waters of lower Chesapeake Bay, sea grass flats
Northern diamond-backed terrapin <i>Malaclemys terrapin terrapin</i>	FS	Prefers the brackish water of estuaries, tidal marshes, and the tidal portions of rivers. It is sometimes seen in the Atlantic Ocean. Nesting occurs on sandy beaches or dunes
Birds		
Bald eagle <i>Haliaeetus leucocephalus</i>	ST	Forages occasionally on base. Nests within three miles of the base.
Peregrine falcon <i>Falco peregrinus</i>	ST	Observed foraging over salt marshes on base. Open wetlands near cliffs.
Piping plover <i>Charadrius melodus</i>	FT/ST	Prefers areas with expansive sand or mudflats (for foraging) in close proximity to a sand beach (for roosting). Fifty-two designated critical habitat units from North Carolina south to northern Florida along mainland beaches and barrier islands.
Loggerhead shrike <i>Lanius ludovicianus</i>	ST	Prefers open short leaved grasslands with an abundance of perching sites such as fences, woody vegetation or hedgerows. Usually nests in Eastern Redcedar or Hawthorne.
Upland sandpiper <i>Bartramia longicauda</i>	ST	Breeds in open pastures or grassy fields, often hayfields, alfalfa or clover, occasionally in open forests. Needs extensive grass areas with grasses being 1-3 feet high.
Fish		
Atlantic sturgeon <i>Acipenser oxyrinchus</i>	FS/SS	Juvenile Atlantic Sturgeon may spend several years in fresh water of some large rivers, while others may move downstream to brackish waters when temperatures drop in the fall. Breeds in near shore waters with solid substrates with depths of less than 20 meters.
Plants		
Harper’s fimbriatylis <i>Fimbristylis perpusill</i>	SE	Coastal seasonal ponds.
Virginia least trillium <i>Trillium pusillum</i> var. <i>virginianum</i>	FS	Forested wetlands and mesic woods including the “green sea” wetlands. Recorded from the City of Hampton.

**Table 3.5-1. Threatened, Endangered, and Special-Status Species/Communities
that Potentially Occur on Langley AFB (Page 2 of 2)**

<i>Species</i>	<i>Status</i>	<i>Areas of Occurrence</i>
Invertebrates		
Northeastern beach tiger beetle <i>Cicindela dorsalis dorsalis</i>	FT/ST	Broad beaches with well-developed sand dunes.
Amphibians		
Barking treefrog <i>Hyla gratiosa</i>	ST	Breeds in coastal seasonal freshwater ponds. Needs fish-free breeding habitat. Base at northern edge of range. Spends warm months in treetops, seeks moisture during dry periods by burrowing among tree roots and clumps of vegetation.
Mabee's salamander <i>Ambystoma mabeei</i>	ST	Breeds in coastal seasonal freshwater ponds. Needs fish-free breeding habitat. Tupelo and cypress bottoms in pine woods, open fields, and lowland deciduous forest.

Notes: FE = Federal Endangered SE = State Endangered
 FT = Federal Threatened ST = State Threatened
 FS = Federal Species of Concern SS = State Species of Concern
 Source: Virginia Department of Game and Inland Fisheries 2006

Agencies consulted concerning TES species/communities included the USFWS, Virginia Field Office, the Virginia Department of Game and Inland Fisheries; and the DCR, Division of Natural Heritage.

3.6 WATER RESOURCES

Water resources include surface and groundwater features located within the base as well as watershed areas affected by existing and potential runoff from the base, including floodplains. Water supply to the base is addressed in Section 3.2. The ROI is defined as the base, Landings at Langley Family Housing Area, Big Bethel Reservoir Park, and the areas immediately downstream of these areas.

Langley AFB occupies a flat lowland peninsula with a gentle eastward slope of 1 foot per mile and elevations of 5 to 11 feet MSL within the Atlantic Coastal Plain physiographic province. The base is bounded on the northeast side by the Northwest Branch of the Back River, and on the southeast side by the Southwest Branch of the Back River, which flow into the Chesapeake Bay. Storm water drainage is carried by a series of pipes, box culverts, and open ditches to 56 outfalls. The base has been issued a Virginia Pollutant Discharge Permit (No. VA0083194) that expires in 2010. This permit identifies effluent limitations and requires quarterly sampling and management of runoff. In accordance with the permit, monitoring is carried out at 11 outfalls on Langley AFB.

In the Langley AFB area, groundwater occurs in a shallow water table aquifer, an upper artesian aquifer system, and the principal artesian aquifer system. All three aquifers in this area contain water of moderate to poor quality due to high salinity and total dissolved solids; they have little or no potential for a conventional water supply (Air Force 2000a).

Due to its proximity to the Back River and the Chesapeake Bay, and its low ground elevation, much of Langley AFB lies within the 100-year floodplain. Langley AFB is susceptible to high tide surges during storms and spring tides, and flooding is sometimes severe on the base. Figure 3.6-1 illustrates the extent of the 100-year floodplain on Langley AFB.

All of the proposed CIP projects that are located on Langley AFB are located in the 100-year floodplain. No operationally viable locations were available on the base that were not in the 100-year floodplain. However, all component projects proposed to occur in the Landings at Langley Family Housing Area or in the Big Bethel Reservoir Park are not located in the 100-year floodplain.

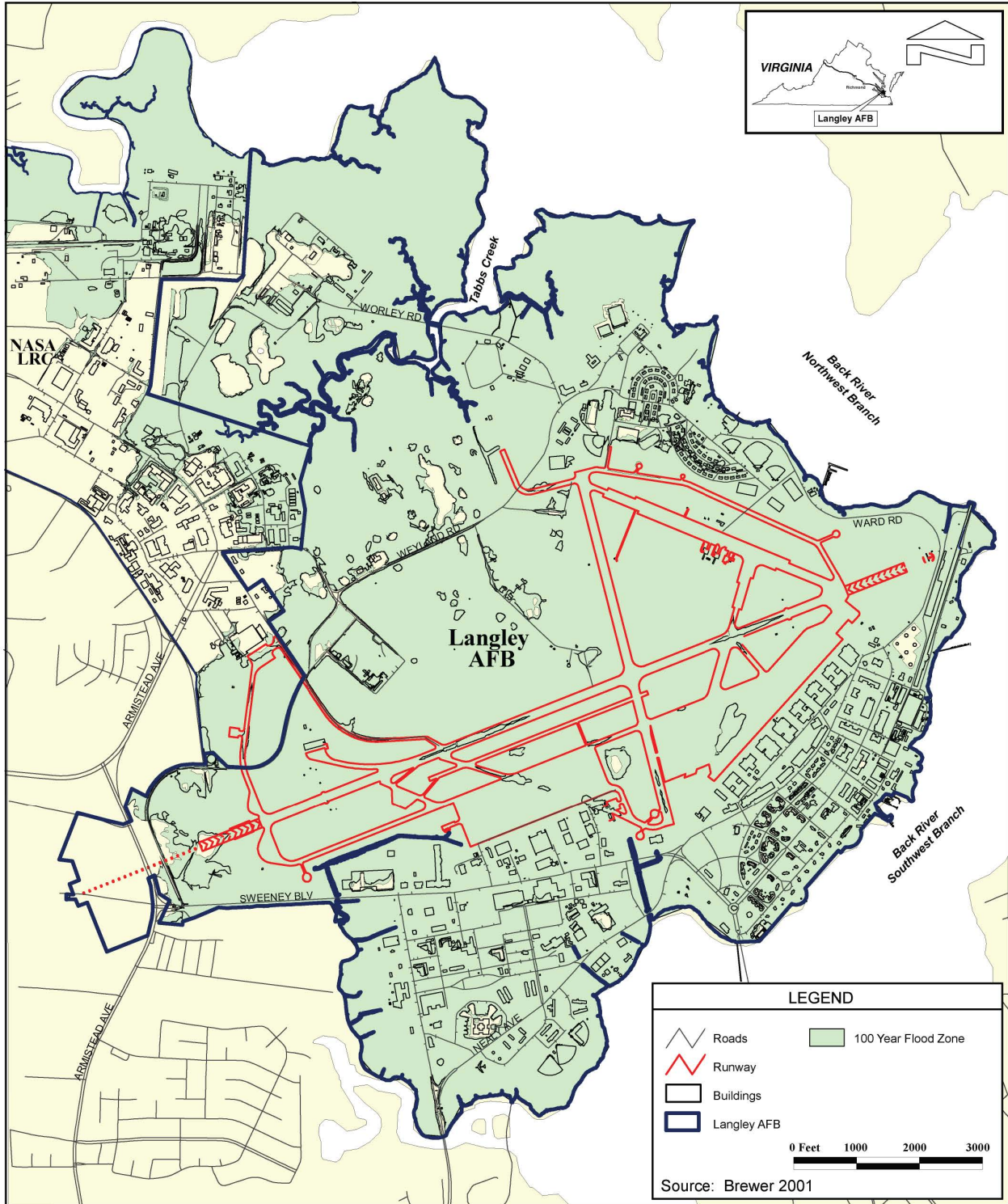


Figure 3.6-1. Floodplains on Langley AFB

3.7 AIR QUALITY

Air quality is described by the atmospheric concentration of six pollutants: ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), particulate matter equal to or less than 10 microns in diameter (PM₁₀), and lead (Pb). Langley AFB is located within the Hampton Roads Intrastate Air Quality Control Region (AQCR) #223.

Hampton Roads AQCR includes five counties (Isle of Wight, James City, Nansemond, Southampton, and York), as well as nine independent cities (Chesapeake, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg). This area includes substantial industry, several military and commercial airfields, and a large population that generates emissions. Table 3.7-1 summarizes the baseline emissions (stationary and mobile) of criteria pollutants and precursor emissions for this AQCR. Baseline Langley AFB emissions are incorporated into these totals for the AQCR.

Table 3.7-1. Baseline Emissions for Langley AFB Affected Environment

<i>Emissions</i>	POLLUTANTS (TONS/YEAR)				
	<i>CO</i>	<i>NO_x</i>	<i>PM₁₀</i>	<i>SO₂</i>	<i>VOC</i>
Hampton Roads AQCR	478,259	99,381	208,811	112,948	69,656
Langley AFB	13.51	22.39	1.48	22.39	11.45
--Stationary Sources	20.84	31.31	11.13	1.5	50.61
--Mobile Sources	29.72	7.97	6.63	0.4	3.25

Sources: U.S. Air Force 2006b, 2007b

For each criteria pollutant, Langley AFB contributes less than 1 percent of regional emissions. The base has been issued a Synthetic Minor operating permit from VDEQ Title V program.

Air quality in Hampton Roads AQCR is currently designated as attainment for all criteria pollutants. The United States Environmental Protection Agency (USEPA) re-designated Hampton Roads AQCR as attainment for the 8-hour ozone June 1, 2007 (USEPA 2007). A maintenance plan is in place to ensure continued compliance and general conformity will continue to apply (personal communication, Ballou 2007). On December 17, 2004, the USEPA designated the Hampton Roads AQCR as attainment for the newly developed standard for particulates less than 2.5 micrometer in diameter (PM_{2.5}).

3.8 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

Hazardous materials are identified and regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Occupational Safety and Health Administration (OSHA); and the Emergency Planning and Community Right-to-Know Act (EPCRA). Hazardous materials have been defined in AFI 32-7086, *Hazardous Materials Management*, to include any substance with special characteristics that could harm people, plants, or animals. Hazardous waste is defined in the Resource Conservation and Recovery Act (RCRA) as any solid, liquid, contained gaseous or semisolid waste, or any combination of

wastes that could or do pose a substantial hazard to human health or the environment. Waste may be classified as hazardous because of its toxicity, reactivity, ignitability, or corrosivity. In addition, certain types of waste are “listed” or identified as hazardous in 40 CFR 263. The ROI for this resource consists of Langley AFB.

3.8.1 Hazardous Materials

The majority of hazardous materials used by Air Force and contractor personnel at Langley AFB are controlled through an Air Force pollution prevention process called Hazardous Materials Pharmacy (HAZMART). This process provides centralized management of the procurement, handling, storage, and issuing of hazardous materials and turn-in, recovery, reuse, or recycling of hazardous materials. The HAZMART process includes review and approval by Air Force personnel to ensure users are aware of exposure and safety risks. Pollution prevention measures are likely to minimize chemical exposure to employees, reduce potential environmental impacts, and reduce costs for material purchasing and waste disposal.

3.8.2 Hazardous Waste

Langley AFB is a large-quantity hazardous waste generator. Hazardous wastes generated during operations and maintenance activities include solvents, metal-contaminated spent acids, and sludge from wash racks. Langley AFB recycles all lubricating fluids, batteries, oil filters, and shop rags. Hazardous wastes are managed in accordance with the Langley AFB Hazardous Waste Management Plan.

Langley AFB has a Spill Prevention and Facility Response Plan (certified in August 2004). The plan meets the Federal Spill Prevention Control and Countermeasures requirements, the Virginia Oil Discharge Contingency Plan requirements and the Coast Guard requirements.

3.8.3 Asbestos Waste/Lead-Based Paint Management

An asbestos management plan provides guidance for the identification of asbestos-containing materials (ACMs) and the management of asbestos. The 1 FW *Asbestos Management and Operations Plan* (Air Force 2004b) provides guidance on the management of asbestos. An asbestos facility register is maintained by Civil Engineering. Persons inspecting, designing, or conducting asbestos response actions in public or commercial buildings must be properly trained and accredited through an applicable asbestos training program. The design of building alteration projects and requests for self-help projects are reviewed to determine if asbestos contaminated materials are present in the proposed work area and, if so, are disposed of in an off base permitted landfill.

The 1 FW *Lead-Based Paint Management and Operations Plan* contains policies and procedures associated with the management of lead-based paint (LBP). The plan is designed to establish operations and management organizational responsibilities and procedures so that personnel at Langley AFB are not exposed to excessive levels of lead-contaminated dust or soils. Plan components identify management actions for worker training, notification, and labeling, the Langley AFB Work Request program, record-keeping, personal protective equipment, construction

inspection, the disposal of LBP-containing wastes, and lead toxicity investigations (Air Force 2004c).

Table 3.8-1 lists facilities that are proposed to be demolished under the Proposed Action, Alternative 1, or Alternative Two and shows whether or not each facility contains lead-based paint (LBP) or asbestos containing materials (ACM).

Table 3.8-1. ACM and LBP at Facilities to be Demolished under the Proposed Action

<i>Building #s to be Demolished</i>	<i>Constructed</i>	<i>LBP Expected</i>	<i>ACM Present</i>
753 (hangar)	1932	Yes	Yes
355 (Herron Hall, security forces)	1966	Yes	Yes
37 (dormitory)	1968	Yes	Yes ¹
38 (dormitory)	1969	Yes	Yes ¹
123 (dormitory)	1969	Yes	Yes ¹
741 (Fuels Automated Systems Complex)	1972	Yes	Yes
744 (Fuels Automated Systems Complex)	1953	Yes	Yes
1994 (Child Development Ctr.)	1983	No	No
50050; 50051; 50065; 50070; 50075; 50080; 50090; 50095; 50105; 50106 (Big Bethel Water Treatment Plant)	1919	Yes	Yes

Notes: 1. This facility was not listed in the 1991 asbestos survey. However, samples testing positive for asbestos have been taken in this facility.

Sources: Air Force 1991; personal communication, Jones 2007

3.9 ENVIRONMENTAL RESTORATION PROGRAM

The DoD developed the ERP to identify, investigate, and remediate potentially hazardous material disposal sites that existed on DoD property prior to 1984. Forty-eight ERP sites, including one at Landings at Langley Housing, have been identified since the ERP was initiated at Langley AFB. Thirty-three sites have been closed or require no further action. The remaining 15 sites are regulated under CERCLA. The Langley AFB Restoration Program Site Status Summaries (Air Force 2005) summarizes the current status ERP sites located on base properties, cleanup actions the base environmental programs and presents a comprehensive strategy for implementing actions necessary to protect human health and the environment. This strategy integrates activities under the ERP and the associated environmental compliance programs that support full restoration of the base.

ACC policy requires that any proposed project on or near a Langley AFB ERP site be coordinated through the Langley ERP Manager. Demolition and construction would take place at or near ERP sites SS-04, ST-27, ST-29, ST-32, SS-03, OT-6, ST-26, ST-28, LF-12, LF-13, ST-34, SS-23, and the AOC Dorm.

ERP site SS-04 is a fuel-saturated area covering approximately 4.5 acres along Nealy Avenue and its intersection with Danforth Avenue. The site includes 24 25,000-gallon fuel storage tanks and a JP-4 fuel transfer line, which leaked while in operation and which are no longer in service. Contaminants detected in the soil and groundwater include benzene, ethylbenzene, toluene, xylene, lead, and total recoverable petroleum hydrocarbons. Monitoring and recovery efforts have shown a reduction in contaminants below endpoints established in the 1991 site Corrective Action Plan. A No Further Action decision document was written and the site was officially closed in 2001.

Site ST-27 surrounds the underground portion of defunct JP-4 fuel transfer line. The 8- to 10-inch line starts at Building 741, runs under Danforth Avenue to its intersection with Sweeney Boulevard, continues parallel to Sweeney Boulevard, turns northwest near the intersection with of Sweeney Boulevard and Nealy Avenue, and terminates at Building 380. The line was taken out of service in 1990 after contamination resulting from numerous fuel leaks along the length of the pipe was discovered. Remediation of the site was carried out between 1992 and 1994, and included wells and trenching to allow recovery of free product from groundwater. A letter stating that “no further action is required” was received from VDEQ in 1999 and a decision document to formally close the site was signed in 2000.

ERP Site ST-29 is a series of eight 25,000-gallon underground fuel tanks located under the parking lot adjacent to Building 788 in an area of approximately 0.8 acres in the southeast portion of the Base. JP-4 contamination in groundwater at the site is expected to have resulted from leakage from the tanks and associated pipes. Fuel recovery and observation wells were installed to recover free product and monitor conditions, respectively. It was determined that no soil/groundwater remediation was required at this site to adequately protect human health and the environment. A decision document for No Further Action was signed in 2000.

ERP Site ST-32 is a fuel-saturated area covering approximately 0.1 acres and the underground fuel tank beneath the grassy area between Building 753 and Danforth Avenue in the southeast portion of the Base. The site consists of an abandoned 60,000-gallon concrete fuel tank that is buried approximately 11 feet underground adjacent to the JP-4 pipeline. The tank was constructed in 1949 and stored No. 2 and No. 4 fuel oil. Monitoring wells installed at the site did not encounter floating fuel oil and a quantitative risk assessment indicated that the No Further Action was required to protect human health or the environment. The site is considered closed.

ERP Site SS-03 originally consisted of two components: a fuel-saturated area and possible mercury and polychlorinated biphenyl (PCB)/polychlorinated terphenyl (PCT) contamination in the storm sewers. Contamination found in sewer lines at the site is being handled as part of ERP site OT-56, which includes contamination of large portions of the base storm sewer system. The fuel-saturated area covers approximately 2 acres northeast of the intersections of Nealy Avenue and Andrews Street in the east portion of base. The site is the location of an old underground fuel line that had leaked prior to its abandonment in 1965. Monitoring of three observation wells at the site revealed elevated hydrocarbons in the soil but did not reveal any

free product. A No Further Action decision document has been signed and the site is officially closed.

ERP Site OT-06 is an abandoned entomology site and former wastewater treatment plant covering approximately 6.3 acres north of the mouth of Tide Mill Creek in the south portion of the base. Operations at this site began in 1943 and lasted into the 1960s. The entomology building was demolished in the 1960s; and the wastewater treatment plan was abandoned in 1968. There are three monitoring wells located at this site. The Final Remedial Investigation Report and Final Proposed Plan were completed in March 2000; the Record of Decision for No Further Action was signed on 26 September 2000. There is no further work schedule at this site, it is considered closed.

Site ST-26 includes several fuel-saturated areas in the south-central portion of the Base. These areas include the Control Tower Area, the Hot Pits Area, and Brown's Creek. These areas were monitored separately because VDEQ maintained separate "PC" numbers for each area. The control tower site was originally identified as Site SS-21 in 1981. After soil sampling and analysis was conducted, the site was recommended for No Further Action. The Control Tower Area is the area immediately surrounding Building 381 and includes the pumping station (Building 380) and the fire station (Building 375). The Hot Pits Area is at the northern edge of the jet parking area, where jets are fueled and de-fueled. Brown's Creek (VDEQ PC #91-1843) is a tidal creek that originates near the control tower and flows directly into the Back River. An Interim Remedial Action was completed in 1991 to recover floating JP-4 fuel from recovery trenches and wells at the Control Tower and Hot Pits areas. Ongoing remedial action at the site involves the recovery of fuel and contaminated groundwater in a series of trenches. VDEQ stated in a March 2001 letter that the cleanup endpoints have been met and the site is considered closed.

ST-28 is a fuel-saturated area covering approximately 3 acres at the Base Exchange Gas Station on Pine Road in the south-central portion of the Base. Several shallow recovery wells were installed parallel to nearby Brown's Creek to recover the fuel that had leaked from the station's underground storage tanks (USTs) and gasoline distribution system. Approximately 2,350 gallons of gasoline was recovered from a succession of such wells. A decision document of No Further Action has been signed and the site is considered closed.

ERP Site LF-12 is an abandoned landfill covering approximately 13 acres southeast of Gregg Road in the northwest portion of the base. The landfill was in use from 1972 to 1981. The major portion of the site is now completely revegetated, while a portion of the older northeastern section of the site is currently used as a storage area for construction materials. One monitoring well was installed at the site. The Remedial Investigation was conducted in 1997; the Remedial Investigation report was completed in July 2000; the Final Feasibility Study was completed in June 2001; the Remedial Action was completed in April 2003; and the Draft Remedial Action Completion Report was submitted in May 2003; the Record of Decision was issued by the Air Force in 2002, but it has not been signed by the USEPA or concurred upon by VDEQ.

ERP Site LF-13 is an abandoned landfill covering approximately 12 acres west of Gregg Road in the northwest portion of the Base. Site LF-13 was reportedly used for about one month (date

unknown). However, aerial photography indicates that the area may have been used for a period of 10 years. No documentation exists regarding the types of refuse materials that were deposited at the site. The majority of the landfill materials probably were municipal-type refuse. However, materials such as waste oil and solvents in drums, lead-based paints, thinners, batteries, tires, fabrics, construction debris, sanitary wastewater treatment plant sludge, and fly ash from coal burning may have been deposited at this site. Base personnel also indicated that NASA might have deposited unknown materials in the landfill in the past that potentially may contribute to any contamination. Several Contaminants of Potential Concern have been found in the soil and groundwater at this site. However, quantitative risk assessment for the site showed that levels of risk were relatively low. In 2000, a No Further Action Record of Decision was signed and the site is considered closed.

ERP Site ST-34 is the Bulk Fuel Storage Area located near the Back River in the eastern portion of the Base. The site consists of six large aboveground JP-4 storage tanks. Five tanks have a volume of 640,000 gallons each and one has a volume of 420,000 gallons. Each tank is surrounded by a 5-foot-high asphalt-covered earth berm as secondary containment. The tanks were built on concrete piers and originally were not covered. Past investigations, consisting of monitoring well installation and groundwater sampling, have indicated little or no fuel contamination of groundwater, and no free fuel was encountered. Monitoring wells were added at the site. No further action on ST-34 is required.

ERP Site SS-23 is the location of a former coal storage area covering approximately 0.6 acres between Ward Road and the Mile-Long Building (Building 720) at Willoughby Point in the west portion of the Base. The site was used as a major coal storage area from 1917 to the early 1960s, when coal was the primary heating fuel at Langley AFB. Several Contaminants of Potential Concern have been detected in the groundwater but none have been found in the soil. No further action on ST-34 is required and the site is considered closed.

The Area of Concern Dorm Site is an open grass area of approximately one acre located northeast from the corner of Spruce Street and Cedar Avenue. Foil oil, of unknown source, was found at this site. Further exploration, monitoring, and recovery effort yielded little additional free product. The decision document to close the site was signed in 2000.

3.10 STORAGE TANKS

There are several aboveground and belowground storage tanks at or near CIP project sites. Information concerning Aboveground Storage Tanks (ASTs) and USTs located near project sites under the Proposed Action are shown in Table 3.10-1. Several ASTs located at the Bethel Reservoir WTP were used to store chemicals used for water treatment. These tanks have been emptied and rendered unusable but left in place. No USTs are known to exist at the Bethel Reservoir WTP.

Table 3.10-1. Existing Storage Tanks At or Near CIP Project Sites under the Proposed Action

<i>Tank ID</i>	<i>Tank Type</i>	<i>Status</i>	<i>Capacity (gallons)</i>	<i>Fuel</i>
373	UST	Abandoned	4,000	Fuel Oil 2
374	UST	Abandoned	1,000	Unknown
753	UST	Abandoned	60,000	Unknown
355.1	UST	Removed	1,000	Fuel Oil 2
355.2	UST	Removed	5,000	Fuel Oil 2
355.3	AST	Active	500	Diesel Fuel
355.4	UST	Removed	1,000	Fuel Oil 2
355.5	AST	Active	500	Diesel Fuel
349	AST	Removed	1,000	Fuel Oil 2
741	UST	Abandoned	550	Fuel Oil 2
741.2	AST	Active	1,000	JP8-100
741.3	AST	Active	1,000	JP8-100
741.4	AST	Active	425	Diesel Fuel
744	UST	Abandoned	550	Fuel Oil 2
379.1	AST	Active	2000	Diesel Fuel

Source: Air Force 2007c

Under Alternatives One and Two, all ASTs and USTs located near project sites under the Proposed Action would also be located near project sites. In addition, several ASTs and USTs are located near the Alternative Two location for the Security Forces Operations Center. Information on these ASTs and USTs is provided in Table 3.10-2.

Table 3.10-2. ASTs and USTs Located at or Near Project Sites under Alternative Two

<i>Tank ID</i>	<i>Tank Type</i>	<i>Status</i>	<i>Capacity (gallons)</i>	<i>Fuel</i>
339	UST	Abandoned	1,000	Fuel Oil 2
339.1	AST	Active	1,000	Diesel Fuel
333.1	UST	Abandoned	1,000	Fuel Oil 2
333.2	AST	Active	1,000	Diesel Fuel
338	UST	Removed	4,000	Fuel Oil 2
326	UST	Abandoned	2,500	Fuel Oil 2

Source: Air Force 2007c

3.11 SAFETY

Ground, explosive, flight safety, and facility operational safety are addressed in this section. Because of the proposal to construct within portions of the airfield environment, the focus of this section is on safety-of-flight issues associated with airfield operations. Within the ground

safety section, issues involving operations and maintenance activities that support operation of the airfield and the construction of the capital improvement projects are addressed. Also considered in this section is the safety of personnel and facilities on the ground that may be placed at risk from flight operations. Within the flight safety section, aircraft flight risks and safety issues associated with the conduct of aviation activities at the installation are addressed.

Although ground and flight safety are addressed independently, it should be noted that, in the immediate vicinity of the runway, risks associated with safety-of-flight issues are interrelated with ground safety concerns. Any aircraft accident at the airfield would have direct impacts on the ground in the immediate vicinity of the mishap as a result of explosion, fire, and debris spread. To avoid redundancy, in this document, surface planning factors, such as the clear zone, will be discussed under “ground safety” while aerial features, such as imaginary surfaces will be discussed under “Flight Safety”. The ROI for safety in this EA includes the airfield at Langley AFB and its immediate vicinity.

3.11.1 Ground Safety

Day-to-day operations and maintenance activities conducted by the 1 FW and their tenants in the use and operation of the airfield are performed in accordance with applicable Air Force and ACC safety regulations, published Air Force Technical Orders, and standards prescribed by Air Force Occupational Safety and Health (AFOSH) requirements. Construction and maintenance activities associated with the base are conducted in accordance with OSHA and National Fire Protection Agency (NFPA) requirements.

The Air Force has conducted several safety studies over many years assessing aircraft accidents occurring in the vicinity of airfields. These studies reveal that approximately 27 percent of the accidents occurred on, or within an area 1,000 feet on either side of the runway; approximately 29 percent occurred within an area extending 3,000 feet from the end of the runway and 1,500 feet on either side of the extended runway centerline. Extending this 3,000-foot wide region another 5,000 feet accounted for an additional 8 percent of the accidents, and extending it another 7,000 feet accounted for an additional 5 percent (Air Force 1999).

Clear Zones and Accident Potential Zones (APZs) are surface areas described geographically on the ground. Specific dimensions, geophysical, and topographic standards and approved land uses are discussed in detail in UFC 3-260-01, *Airfield and Heliport Planning and Design*; AFI 32-7063; and Air Force Handbook 32-7084. The Clear Zone is basically a square that is 3,000 feet long and 3,000 feet wide at both ends of the runway (extends 3,000 feet out from the end of the runway and 1,500 feet on either side of the runway centerline). It is 206 acres in size at each end of the runway and includes the 46 acres of the Graded Area. UFC 3-260-01 dictates that within the Clear Zone (and outside of the Graded Area), there can be no permanent facilities. Brush and trees are allowed in this area; however, they may not penetrate the approach/departure slope, or the Transitional Surface slope.

The Graded Area is an area within the Clear Zone that is 1,000 feet in length and 2,000 feet wide (extends 1,000 feet from the end of the runway and 1,000 feet on either side of the runway centerline). The Graded Area is 46 acres at each end of the runway. UFC 3-260-01 dictates that

the Graded Area must be clear of all aboveground obstacles (including roadbeds) and vegetation (except grass [herbaceous]). It must also have no abrupt surface irregularities, such as ditches or ponds. The maximum allowable slope of the Graded Area is +/- 2 percent. Several buildings, including the existing Fuels Automated System Complex, lie within the graded portion of the Graded Clear Zone and are covered by waivers.

3.11.2 Explosives Safety

Defense Department Explosives Safety Board (DDESB) 6055.9-STD and Air Force Manual 91-201, *Explosives Safety Standards*, represents DoD and the Air Force guidelines for complying with explosives safety. These regulation, as well as AFI 91-204, identifies explosive safety mishaps involved in both explosive and chemical agents. Explosives include ammunition, propellants (solid and liquid), pyrotechnics, explosives, warheads, explosive devices, and chemical agent substances and associated components presenting real or potential hazards to life, property, or the environment.

Siting requirements for munitions and ammunition storage and handling facilities are based on safety and security criteria. DDESB 6055.9 STD and Air Force Manual 91-201, *Explosives Safety Standards*, require that defined distances be maintained between munitions storage areas and a variety of other types of facilities. These distances, called Q-D arcs, are determined by the type and quantity of explosive material to be stored. Each explosive material storage or handling facility has Q-D arcs extending outward from its sides and corners for a prescribed distance. Within these Q-D arcs, development is either restricted or prohibited altogether in order to ensure safety of personnel and minimize potential for damage to other facilities in the event of an accident. In addition, explosive material storage and handling facilities must be located in areas where security of the munitions can be maintained at all times. Identifying the Q-D arcs ensures that construction does not occur within these areas.

Langley AFB controls, maintains, and stores all ordnance and munitions required for mission performance. Ordnance is handled and stored in accordance with DDESB 6055.9-STD and Air Force explosive safety directives (AFI 91-201). Additionally, all munitions maintenance is carried out by trained, qualified personnel using Air Force-approved technical data for the specific type of ordnance. Ample storage facilities exist, and all facilities are fully certified for the ordnance they store. No storage facility waivers are currently in effect.

The Air Force imposes procedures for arming and de-arming munitions and ordnance. All such activities occur on defined arm/de-arm pads. An arm/de-arm pad is located at the end of each runway and at the specified distance for safety away from incompatible land uses. Air Force and DDESB safety procedures require safeguards on weapons systems and ordnance that ensure against inadvertent releases.

Both live and inert munitions are stored and handled at Langley AFB. Inert training ordnance accounts for the vast majority of training materials. All munitions are handled and stored in accordance with DDESB and Air Force Explosive Safety Directives, and trained, qualified personnel using Air Force approved technical data carry out all munitions maintenance and aircraft loading. All storage facilities are approved for the specific ordnance involved.

3.11.3 Flight Safety

As with ground safety, day-to-day flying operations are conducted by highly trained and qualified flight crews in accordance with detailed operational procedures. Since takeoff and landing operations constitute the most critical phases of flight, there are numerous requirements applicable to the airspace through which an aircraft flies during these operations. These requirements focus on the configuration of the airspace which extends from the end of the runway and is best described as a plane which rises on given gradients forming a floor, or an imaginary surface for the airspace used during these operations.

UFC 3-260-01 defines and describes these imaginary surfaces. The imaginary surfaces of concern in this assessment are referred to as the Approach/Departure Slope and the Transitional Surface Slope. The Approach/Departure Slope rises at a rate of 50:1 (for every 50 feet horizontally there is a 1 foot increase vertically), starting 200 feet from the end of the runway.

The Transitional Surface is an imaginary surface that extends outward and upward at right angles to the runway centerline and extended runway centerline at a slope ratio of 7:1. The Transitional Surface connects the primary and the approach/departure clearance surfaces to the inner horizontal, the conical and the outer horizontal surfaces. UFC 3-260-01 dictates that the vertical height of vegetation and other fixed or mobile obstacles (such as construction equipment) will not penetrate the Transitional Surface.

3.11.4 Facility Operation Safety

Certain facilities are somewhat hazardous by their nature. For example some types of military training are hazardous, but considered necessary in providing realistic training.

3.12 NOISE

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Human response to noise varies according to the type and characteristics of the noise source, distance between source and receptor, receptor sensitivity, and time of day. The ROI for noise includes the area surrounding each project location.

Sound is measured with instruments that record instantaneous sound levels in decibels (dB). A-weighted sound level measurements (often denoted dBA) are used to characterize sound levels that are heard especially well by the human ear. All sound levels analyzed in this EA are A-weighted; thus, the term dB implies dBA unless otherwise noted.

At Langley AFB, noise contributions from aircraft operations and ground engine run-ups at the airfield have been calculated using the NOISEMAP model, the standard noise estimation methodology used for military airfields. NOISEMAP uses the following data to develop noise contours: aircraft types, runway utilization patterns, engine power settings, airspeeds, altitude profiles, flight track locations, number of operations per each flight track, engine run-ups, and time of day. The Air Force recognizes that the noise from jets can be very intrusive, particularly in instances where the activity being carried out requires quiet. Land use planning to avoid

these incompatible land uses starts with production noise contours which indicate the average noise level using the Day-Night Average Sound Level (DNL) noise metric. The DNL metric averages all aircraft noise events that take place on an average busy flying day with all of the times, during the course of the day, when there is no aircraft noise. A 10 dB penalty is applied to aircraft noise events which occur after 10 p.m. or before 7 a.m. to account for the low ambient noise level and added annoyance caused by late-night noise. Noise contours connect positions, on the ground, at which DNL is equal. DNL noise levels are typically high near the runway and lower farther away from the runway. Noise contours allow areas to be bracketed (i.e., located between X and Y dB DNL) and then recommendations can be made as to which land uses are and are not compatible in that area. In 1990, several Federal agencies met and agreed upon a set of recommendations regarding which land uses are compatible with which average noise levels. The resulting Federal Interagency Committee on Urban Noise recommendation matrix is still used by the Air Force as part of its Air Installation Compatible Use Zone (AICUZ) Program. The primary goal of the AICUZ program is to promote compatible land use off-base; however, the same set of recommendations are applied on base to achieve compatibility whenever practicable. In some cases, compatibility can be achieved by adding noise attenuation measures to structures to lower indoor noise levels.

Because meteorological conditions and other factors affect the propagation of impulse noise significantly, the actual noise reaching the noise receptor also varies significantly from day-to-day. Noise metrics that reflect this variability are considered to be an appropriate method for communicating single-event impulse noise levels (U.S. Army Center for Health Promotion and Preventative Medicine 2005).

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4.0 ENVIRONMENTAL CONSEQUENCES

4.1 LAND USE AND PLANNING

4.1.1 Transportation

Overall traffic volume on Langley AFB, Landings at Langley Housing Area, or at the Big Bethel Reservoir WTP site is not expected to increase noticeably under the Proposed Action. Of the ten CIP projects proposed, only the bait shop/conference center and ropes course at the Big Bethel Reservoir would involve creation of new jobs. Three full-time employees, or the part-time equivalent thereof, would be needed to operate the ropes course and bait shop/conference center. All other projects would involve current employees moving to a new facility, and are not currently expected to be associated with increases in road traffic.

In all selected facility locations, existing road networks are expected to have sufficient capacity to handle traffic associated with the new facilities. Certain roads in the Landings at Langley Housing Area will be being reconfigured in the future as part of the housing privatization process. Any traffic delays associated with this construction would be temporary, lasting only for the duration of construction. The contracting firm responsible for redeveloping the housing area is contractually required to retain, at a minimum, current road capacity leading to the CDC location.

The number of visitors to the Big Bethel Reservoir would be expected to increase somewhat in response to the improvements proposed to be made at the current site of the water treatment plant. The resulting increase in traffic volume is not expected to be substantial and transportation impacts would likely be limited to minor delays in traffic at most. Modifications to the configuration of Semple Farm Road at the entrance to the WTP site may be considered to improve safety for drivers entering and exiting the site. Overall impacts to transportation resources are expected to be insignificant in nature.

4.1.2 Visual Resources

With the exception of Hangar 753, all structures to be demolished and replaced are not visually distinctive from other buildings on base and their demolition is not expected to be considered a negative visual impact. In many cases, the replacement for the demolished structure would be located at the same site as the original structure. All structures proposed to be built as part of the Proposed Action would conform to installation guidelines on appearance and would be of similar nature to the structures located nearby. Landscaping would be added, as appropriate, to maintain the current park-like feel of Langley AFB.

Hangar 753 is one of the largest structures on Langley AFB and is visually distinctive. Every effort would be taken to preserve the visual appearance of the Hangar in accordance with SHPO agreements while still reaching project objectives with regards to functionality and safety of the hangar. See the Cultural Resources section of this EA for more detailed discussion of impacts to this historic structure.

Mature trees are a part of the historic character of the base. Therefore, standard landscaping practices would be used to alleviate harming existing trees to the extent practicable.

4.1.3 Land Use

The Proposed Action is taken directly from the installation General Plan and is in full compliance with Langley AFB land use planning goals and objectives. Each of the project locations was selected based on operational, environmental, and land-use planning considerations in accordance with standard installation planning procedures.

All Proposed Actions would be in accordance with the enforceable regulatory programs of the Virginia Coastal Resources Management Program to the maximum extent practicable. As noted in Appendix B, none of the proposed actions would have any component that would affect any of the following sections of the Enforceable Regulatory Program: Fisheries Management, Subaqueous Lands Management, Dunes Management, and Shoreline Sanitation.

Fisheries Management. The development associated with this project would have no significant effect on the conservation and enhancement of finfish and shellfish resources, or on the promotion of commercial and recreational fisheries.

Subaqueous Lands Management. The development of this project would not involve encroachment into, on, or over, state-owned subaqueous lands.

Dunes Management. There are no sand-covered beaches or sand dunes in the vicinity of this project.

Shoreline Sanitation. This project would include interconnections to the base sanitary sewer system. No septic systems, regulated by this program, would be proposed.

4.1.4 Alternatives

Alternative One. Under Alternative One, impacts to transportation, visual resources, and land use would be the same as under the Proposed Action with the following exception. The interior and exterior of Hangar 753 would be rehabilitated rather than the entire structure being demolished and rebuilt. Under this alternative, more of the visual characteristics of the original hangar would remain.

Alternative Two. Under Alternative Two, impacts to transportation, visual resources, and land use would be the same as under the Proposed Action with the following exception. The interior of Hangar 753 would be rehabilitated rather than the entire structure being demolished and rebuilt. Under this alternative, only the interior of the building would change in its appearance. The original exterior appearance would remain as it is currently.

No Action Alternative. Under the No Action Alternative, the CIP projects would not be implemented and no impacts to current land use, transportation, and visual resources would occur.

4.2 INFRASTRUCTURE

Construction and demolition activities could result in some temporary interruption of utility services. These impacts would be temporary, occurring only during the duration of the construction and demolition period. In general, infrastructure on Langley AFB would improve under implementation of the Proposed Actions.

4.2.1 Electrical/Natural Gas Distribution

The Proposed Actions include construction, demolition and relocation of existing utilities in order to provide adequate interconnections and service to facilities proposed to be built under the CIP. Several of the projects would require extension of electrical and natural gas service from the nearest available source to the project site. Additional demand associated with the new facilities will be partially offset by the demolition of several existing facilities. Furthermore, the new facilities can be expected to be more energy-efficient than the facilities that they are replacing. Overall, a minor increase in electrical and natural gas usage is expected to occur with execution of the CIP projects. The projects currently underway to increase electrical capacity at Langley AFB are expected to provide sufficient power to support the proposed CIP facilities.

4.2.2 Potable Water

Connections to the existing Langley AFB water systems are available to support the construction activities associated with the Proposed Actions. Water supply lines would be run from existing infrastructure to each of the proposed facilities.

Water consumption would not be expected to rise substantially under the Proposed Action, which involves addition of only three jobs. Water consumption is expected to be slightly higher at the expanded CDC and chapel. Although manning is not currently expected to increase due to other projects, the consumption of potable water would increase slightly with the operation of larger facilities simply because the larger facilities require more cleaning and other daily operations. Water supply provided by NNW currently exceeds demand by a substantial margin. No adverse consequences to potable water are anticipated from the construction and operation of the proposed facilities.

4.2.3 Sewage

Connections to the existing Langley AFB sewage system are available to support the construction activities associated with the proposed actions. Sewage lines would be run from existing infrastructure to each of the proposed facilities.

The Langley AFB sewage pump station currently operates at or slightly beyond its capacity during rainfall events due to inflow and infiltration of rainwater into sewer system pipes. Upgrades to the system to address these problems are currently under way in accordance with a Hampton Roads Sanitation District administrative order. The upgrades are approximately 75 percent complete. Once these repairs are complete, inflow and infiltration will be reduced to manageable levels. The proposed projects are not expected to add substantially to total sewer

system throughput and impacts to the system of the proposed action would be insignificant in nature.

4.2.4 Solid Waste

Demolition and construction of several buildings as part of the Proposed Action would generate solid wastes consisting of concrete, brick, wood, structural steel, glass, and miscellaneous metal building components. Under the Proposed Action, approximately 263,225 SF of existing structure would be demolished and 371,968 SF would be constructed generating an estimated 20,978 tons of waste. Total waste expected to be generated was calculated based on a waste generation rate of 155 pounds per square foot of facility demolished and 3.89 pounds per square foot of facility constructed. These waste generation rates were adopted based on the findings of several sampling studies, as documented in the USEPA's 1998 document titled *Characterization of Building-Related Construction and Demolition Debris in the United States*. Demolition contractors would be directed to recycle materials to the maximum extent possible, thereby reducing the amount of demolition debris disposed of in landfills. Materials not suitable for recycling would be taken to a landfill permitted to handle construction debris wastes, such as the Bethel Landfill in Hampton. That landfill has the capacity to operate for 49.5 years (VDEQ 2006). If all 20,978 tons of construction and demolition wastes were sent to Bethel Landfill, implementation of the Proposed Action would reduce the remaining useful life of this facility by approximately 1.94 years. No significant environmental consequences on landfill capacity would be expected due to implementation of the Proposed Action.

4.2.5 Jet Fuel

The management of jet fuels would become more efficient under the Proposed Action or action alternatives with the construction of new Fuels Automated System Complex and the Fuels System Maintenance Hangar. Construction would need to be phased such that jet fuel is always available at required capacity.

4.2.6 Alternatives

Alternative One. Under Alternative One, impacts to electrical distribution, potable water, and the sewer system would be the same as under the Proposed Action. However, the quantity of solid waste generated would be different. Several buildings would be demolished under Alternative One that would not be demolished under the Proposed Action. Under Alternative One, the interior and exterior of Hangar 753 would be renovated rather than the entire Hangar being demolished. Based on discussions with the Langley AFB Planning Staff, renovations would not involve replacement of major structural components of the hangar (personal communication, Baie-Yates 2006). A waste generation rate of 77.5 pounds per square foot of facility renovated (50 percent of demolition waste generation rate) was used as a waste generation rate for this project. Based on this waste generation rate, it is expected that approximately 2,558 tons of solid waste would be generated. Total solid waste generated under this alternative would be approximately 23,802 tons. As with the Proposed Action, the contractor(s) tasked with demolition would be instructed to recycle construction debris wherever practicable. However, if all 23,802 tons of debris were deposited at Bethel landfill, the

RUL of that landfill would only decrease by approximately 2.19 years. No significant environmental consequences to infrastructure would be expected as a result of the implementation of Alternative One.

Alternative Two. Under Alternative Two, impacts to electrical distribution, potable water, and the sewer system would be the same as under the Proposed Action. However, the quantity of solid waste generated would be different. The same facilities identified for demolition under Alternative One would also be demolished under Alternative Two. However, only the interior of Hangar 753 would be renovated. These interior renovations would be relatively minor in terms of total material removed and replaced (personal communication, Baie-Yates 2006). It was estimated that renovation would generate 33 percent as much solid waste as demolition of a facility of the same size. Based on this assumption, approximately 51.6 pounds of solid waste would be generated per square foot of facility renovated. Based on this waste generation rate, it is expected that approximately 17,441 tons of solid waste would be generated under this alternative. As with the Proposed Action, the contractor(s) tasked with demolition would be instructed to recycle construction debris wherever practicable. However, if all 17,441 tons of debris were to be deposited at Bethel landfill, the RUL of that landfill would only decrease by approximately 1.62 years. No significant environmental consequences on infrastructure would be expected due to implementation of Alternative Two.

No Action Alternative. Under the No Action Alternative, no changes would occur to the infrastructure at Langley or the demands made on the infrastructure.

4.3 SOCIOECONOMICS

The socioeconomic analysis focuses on the potential impacts of the construction and demolition activities associated with the CIP. The alternative locations of the individual projects are not relevant for the socioeconomic analysis, as all of the construction expenditures would be spent in the same ROI for each alternative. Therefore, the socioeconomic analysis is aggregated into the Proposed Action and No Action Alternative. All construction expenditures are estimates based on the data currently available. Actual construction expenditures may differ slightly from those presented.

The proposed construction would occur between 2007 and 2012. The 1 FW estimates that construction costs would total approximately \$98.6 million. It is anticipated that local construction companies would be contracted to perform the proposed construction. It is estimated that these construction expenditures would result in a short-term increase of approximately 621 direct construction jobs and 450 secondary jobs within the ROI over the term of the construction. These jobs would have a positive, economic effect of 1,071 jobs, comprising approximately 11 percent of the construction jobs available in the ROI, with the exception of Hampton. These jobs would only have a temporary benefit to the local economy that would end when the construction is complete. The Conference Center/Bait Shop and ropes course proposed to be located at the Big Bethel Reservoir would require three full-time employees. To date, no other employee requirements have been identified for any of the other CIP projects. The long-term benefits to the local economy are expected to be minimal. Economic impacts

would be primarily limited to the direct and indirect short-term effects of the infusion of construction funds.

4.3.1 Alternatives

Alternative One. Under Alternative One, socioeconomic impacts would be similar to those under the Proposed Action. Total project expenditures would be slightly less under Alternative One than under the Proposed Action because the interior and exterior of Hangar 753 would be renovated rather than the entire structure being demolished and rebuilt. No significant impacts to socioeconomic resources would be expected to occur under Alternative One.

Alternative Two. Socioeconomic impacts under Alternative Two would be similar to those under the Proposed Action and Alternative One. Construction expenditures would be slightly less under Alternative Two than under Alternative One due to renovations to Hangar 753 being limited to interior renovations only. No significant impacts to socioeconomic resources would be expected to occur under Alternative Two.

No Action Alternative. Under the No Action Alternative, the proposed CIP projects would not occur and the construction expenditures would not be spent in the local economy. There would be no change in employment levels, in the construction industry, or any of the related secondary industries.

4.4 CULTURAL RESOURCES

A number of Federal regulations and guidelines have been established for the management of cultural resources. Section 106 of the NHPA, as amended, requires Federal agencies to take into account the effects of their undertakings on historic properties. Historic properties are cultural resources that are listed in, or eligible for listing in, the NRHP. Eligibility evaluation is the process by which resources are assessed relative to NRHP significance criteria for scientific or historic research, for the general public, and for traditional cultural groups. Under Federal law, impacts to cultural resources may be considered adverse if the resources have been determined eligible for listing in the NRHP or have been identified as important to American Indians as outlined in the American Indian Religious Freedom Act and EO 13007, *Indian Sacred Sites*.

Analysis of potential impacts to cultural resources considers direct impacts that may occur by physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or alter its setting; or neglecting the resource to the extent that it deteriorates or is destroyed. Direct impacts can be assessed by identifying the types and locations of proposed activity and determining the exact location of cultural resources that could be affected. Indirect impacts generally result from increased use of an area.

4.4.1 Proposed Actions

The Proposed Action consists of implementation of several CIP projects to include demolition of 22 buildings, additions and/or alteration to two buildings, and new construction of several buildings and parking areas (Table 4.4-1). For all projects, compliance with Section 106 of the NHPA, including SHPO consultation, would take place prior to the project beginning. Several of the projects include ground-disturbing activities, where there is a possibility of encountering previously unrecorded and unknown archaeological resources. In the event of inadvertent discoveries of cultural resources during any project-related activities, all activities at that location would be halted until the find is evaluated by a qualified professional archaeologist in compliance with the Langley AFB CRMP (USACE 2004a) and federal regulations.

Of the many Cold War-era building on Langley AFB, only the Alert Hangar (Bldg 1362) is considered to be eligible for listing on the NRHP (ACC 2007). The existing Fuels System Maintenance Hangar (Building 373), which would be demolished under the Proposed Action, is not eligible for the NRHP. Any new construction must conform to the design standards presented in the Langley AFB Architectural Compatibility Standards (n.d.).

Under the Proposed Action, projects would occur in Planning Areas 1, 4, 5, 6 and the Landings at Langley Housing Area and Big Bethel Recreation Area. Construction of a new Security Forces Operation Facility would entail the demolition of two structures. Building 355 was built during the Cold War (1966), but is not considered eligible for the NRHP. Building 1330 was built in 1942 but is not expected to be eligible for the NRHP. Consultation with the SHPO will occur prior to any demolition activities (personal communication, Baie 2008). The proposed location for the new construction is in an area of “high archeological probability” (USACE 2004a). The Fuels Automated System Complex would also require the demolition of two more Cold War-era buildings, Building 741, built in 1972 and Building 744, built in 1953, neither of which is eligible for the NRHP. The location for the new facility is located in an area with low archaeological probability.

Construction of an addition to the LO/CRF, Building 361 (built in 2004) would occur in an area of low archaeological probability.

Demolition of Hangar 753 would constitute an adverse effect to an NRHP-eligible building. Langley AFB has developed a historic building treatment plan (USACE 2004b) that presents preferred treatments for modifications. It also lists actions to avoid when building additions or altering the buildings. However, demolition obviates any of these measures. Langley AFB must develop a mitigation plan in consultation with the SHPO at the Virginia Department of Historic Resources (VDHR).

**Table 4.4-1. Facilities Proposed for Demolition, Addition, Alteration
under the Proposed Action**

<i>Project Description</i>	<i>Facility Name</i>	<i>Building #</i>	<i>Construction Date</i>	<i>Impact</i>
Construct new Fuels System Maintenance Hangar, demo old	Fuels Systems Maintenance Hangar	373	1961	No effect
Complete facility demo and re-construction	Hangar 753	753	1932	Adverse effect
Construct addition and more parking	Landings at Langley Chapel	1793	1966	No effect
Construct new facility	Airman Family Readiness Center	NA	NA	No effect
Construct new SF Operations facility, demo old	Security Forces Operations Facility	355 1330	1966 1942	No effect Unknown
Construct 2 new dorms, demo 3 old dorms	Dormitories	37 38 123	1968 1969 1969	No effect
Construct new fuel systems and lab, demo old	Fuels Automated System Complex	741 744	1972 1953	No effect
Construct 2-bay addition to low-observable/composite repair facility (LO/CRF)	LO/CRF	361	2004	No effect
Construct new CDC, demo old CDC	Landings at Langley CDC	1994	1983	No effect
Develop area for additional recreational uses including: small conference center, ropes course, and RV parking area	Bethel Reservoir (water treatment plant)	50050; 50051; 50065; 50070; 50075; 50080; 50090; 50095; 50105; 50106	1918 1918 1918 1918 1918 1918 1918 1918 1918 1918	Unknown

The construction area for dormitories on the residence campus lies mostly within Planning Area 4, which has a low archaeological probability. The overlap into Planning Area 5 is in an area that also has low archaeological site probability. Demolition of the three dormitory buildings (37, 38, and 123) is covered by the Advisory Council on Historic Preservation (ACHP) Program Comment for Cold War Era Unaccompanied Personnel Housing (1946-1974), which was signed on 18 August 2006. Although they are from the Cold War era, their demolition is not seen as major impact (ACHP 2006). The planned location of the Airman Family Readiness Center also lies in an area of low archaeological probability in Planning Area 5.

Additions, alterations and demolition in Landings at Langley will have no effect on historic properties. Neither the Landings at Langley Chapel (Building 1793, built in 1966) nor the Landings at Langley CDC (Building 1994, built in 1973), although part of the Cold War-era building boom, are not eligible for the NRHP (ACC 2007).

The recently acquired recreation area at Big Bethel Reservoir includes a number of archaeological sites that are not eligible for the NRHP (USACE 2004a). However, additional survey might be necessary if the proposed construction occurs in a location that has not yet been surveyed for archaeological resources. The 1918 WTP has not been evaluated for NRHP eligibility. If it is determined to be eligible, demolition would be an adverse effect and Langley AFB would be required to develop appropriate mitigation measures in consultation with Virginia SHPO, the ACHP, and other parties.

4.4.2 Alternatives

Alternative One. Effects from Alternative 1 would be similar to those under the Proposed Action, with some exceptions (Table 4.4-2). Hanger 753 would not be demolished under this alternative. Instead, the hangar would undergo interior and exterior renovations. While renovations would be made in keeping with the historic building treatment plan (USACE 2004b) to the extent practicable, consultation with the Virginia SHPO and the ACHP would be required to determine what special measures, if any, would be required to mitigate any adverse impacts to NRHP-eligible structures.

For the Airman Family Readiness Center, the new facility would be constructed in Planning Area 4, with a low probability for the presence of archaeological resources.

Under Alternative One, buildings 339, 337, 333, 329, and 326 would need to be demolished to make room for the Security Forces Operations Center. None of these buildings are eligible for the NRHP nor do they contribute to the Langley Field Historic District.

In Planning Area 1, construction of the new Fuel Systems Maintenance Hangar would require the demolition of two Cold War era hangars. Neither Building 373 (built in 1961) nor Building 374 (built in 1965) is considered eligible for the NRHP. The location for the new facility under this alternative is not considered sensitive for the presence of archaeological resources.

**Table 4.4-2. Facilities Proposed for Demolition, Addition, and Alteration
under Alternative One**

<i>Project Description</i>	<i>Facility Name</i>	<i>Building #</i>	<i>Construction Date</i>	<i>Impacts</i>
Construct new Fuels System Maintenance Hangar, demo old	Fuels Systems	373	1961	No effect
	Maintenance Hangar	374	1965	
Interior and exterior renovation	Hangar 753	753	1932	No effect (after consult and/or mitigation)
Construct addition and more parking	Landings at Langley Chapel	1793	1966	No Effect
Construct new facility	Airman Family Readiness Center	n/a	n/a	n/a
Construct new SF Operations facility, demo old	Security Forces Operations Facility	355	1966	No Effect
		1330	1942	Unknown
		326	1957	No effect
		329	1969	No effect
		333	1956	No effect
		337	1976	No effect
Construct 2 new dorms, demo old	Dormitories	37	1968	No effect
		38	1969	
		123	1969	
Construct new fuel systems and lab, demo old	Fuels Automated System Complex	741	1972	No effect
		744	1953	
Construct 2 bay addition to low-observable / composite repair facility (LO/CRF)	LO/CRF	361	2004	No effect
Construct new CDC, demo old CDC	Landings at Langley CDC *	1994	1983	No Effect
Develop area for additional recreational uses including: expanded paintball field, small conference center, ropes course, and additional camp sites	Bethel Reservoir * (water treatment plant)	50050;	1918	Unknown
		50051;	1918	
		50065;	1918	
		50070;	1918	
		50075;	1918	
		50080;	1918	
		50090;	1918	
		50095;	1918	
		50105;	1918	
50106	1918			

Alternative Two. Alternative Two would be the same as the Proposed Action, with two exceptions (Table 4.4-3). Under Alternative Two, the new Security Forces Operations Facility would occur in Planning Area 5, still in an area of low archaeological probability. Also, under this alternative, Hangar 753 would undergo interior renovations only. As with the Proposed Action, Langley AFB must coordinate with the Virginia SHPO and the ACHP to formulate appropriate mitigations to any adverse impacts to the NRHP-eligibility of historic properties. These properties include Hangar 753 and, potentially, the Bethel WTP. New construction must conform to the Langley AFB Architectural Compatibility Standards. For all projects, compliance with Section 106 of the NHPA, including SHPO consultation, would take place prior to the project beginning. Several of the projects include ground-disturbing activities, where there is a possibility of encountering previously unrecorded and unknown archaeological resources. In the event of inadvertent discoveries of cultural resources during any project-related activities, all activities at that location would be halted until the find is evaluated by a qualified professional archaeologist in compliance with the Langley CRMP (USACE 2004a) and federal regulations.

No Action Alternative. Under the No Action Alternative, CIP construction projects would not take place as proposed. Impacts to cultural resources are not expected under this alternative and resources would continue to be managed in compliance with federal law, Air Force regulations and agreements, and the Langley AFB CRMP.

4.5 BIOLOGICAL RESOURCES

4.5.1 Terrestrial Communities

The proposed projects would not result in a significant impact to terrestrial communities due to construction/demolition occurring in previously developed and or maintained grass areas. Impacts in these areas are expected to be limited to displacement of members of commonly occurring species.

- Replace Fuel System Maintenance Area
- Hangar 753 Renovation/Rebuild
- Add/Alter Landings at Langley Chapel
- Airman Family Readiness Center
- Security Forces Operation Center
- Construction of Two Additional Dorms
- Automated Fuel Systems Complex
- Expansion of the LO/CRF
- The Landings at Langley Child Development Center

Table 4.5-1 details the expected impacts to terrestrial communities of the projects proposed to occur at the Big Bethel Reservoir.

**Table 4.4-3. Facilities Proposed for Demolition, Addition, and Alteration
under Alternative Two**

<i>Project Description</i>	<i>Facility Name</i>	<i>Building #</i>	<i>Construction Date</i>	<i>Impact</i>
Construct new Fuels System Maintenance Hangar, demo old	Fuels Systems Maintenance Hangar	373	1961	No effect
Interior renovation	Hangar 753	753	1932	No effect (after consult and/or mitigation)
Construct addition and more parking	Landings at Langley Chapel	1793	1966	No effect
Construct new facility	Airman Family Readiness Center	NA	NA	No effect
Construct new SF Operations facility, demo old	Security Forces Operations Facility	355 1330	1966 1942	No effect Unknown
Construct 2 new dorms, demo 3 old dorms	Dormitories	37 38 123	1968 1969 1969	No effect
Construct new fuel systems and lab, demo old	Fuels Automated System Complex	741 744	1972 1953	No effect
Construct 2-bay addition to low-observable/composite repair facility (LO/CRF)	LO/CRF	361	2004	No effect
Construct new CDC, demo old CDC	Landings at Langley CDC	1994	1983	No effect
Develop area for additional recreational uses including: small conference center, ropes course, and RV parking area	Bethel Reservoir (water treatment plant)	50050; 50051; 50065; 50070; 50075; 50080; 50090; 50095; 50105; 50106	1918 1918 1918 1918 1918 1918 1918 1918 1918 1918	Unknown

Table 4.5-1. Impacts to Terrestrial Communities for the Proposed Projects at the Big Bethel Reservoir

<i>Improvement</i>	<i>Impact Description</i>
Demolish Water Treatment Plant	All structures associated with the water treatment plant would be removed. Land cleared of structures would be re-developed for other uses.
Recreational Vehicle Parking	The installation of an RV parking area at the Water Treatment Plant site would not result in a significant impact to terrestrial communities as construction/demolition would occur in previously developed and/or maintained grass areas.
Bait Shop	This Improvement would not result in a significant impact to terrestrial communities as construction/demolition would occur in previously developed and/or maintained grass areas.
Ropes Course	This Improvement would occur in an area that is currently forested. However, installation of the ropes course would not require removal of all trees from the site. While design is not yet complete for this facility, it is expected that ground disturbance would be limited to embedding of several poles to support the ropes course. It is expected that the majority of trees on the site would be left in place and that, in the long-term, the area would still act as viable habitat for the current terrestrial communities. No significant impacts are expected.

4.5.2 Wetland and Aquatic Communities

The Proposed Action would not be expected to affect wetlands and aquatic communities as long as BMPs for sediment control, construction, beneficial landscaping, etc. are utilized.

4.5.3 Threatened, Endangered, and Special Status Species

TES species and their critical habitat are not found in the project areas. Therefore, no impacts to TES species are expected.

4.5.4 Alternatives

Alternative One. Alternative One would have the same impacts to biological resources as the Proposed Action.

Alternative Two. Alternative Two would have the same impacts to biological resources as the Proposed Action.

No Action Alternative. The No Action Alternative would involve no changes to current operations and would not result in any impacts to biological resources.

4.6 WATER RESOURCES

4.6.1 Surface Water/Groundwater

Execution of the Proposed Actions would result in additional areas becoming developed and impermeable to water which would, in turn lead to increased quantities of stormwater runoff. The Proposed Action also involves demolition of several facilities. It is assumed that structures would be removed entirely when demolished, leaving a permeable, stabilized surface. The square footage of all structures proposed to be constructed or demolished and the net change in total square footage of impermeable surface is listed in Table 4.6-1

Table 4.6-1. Square Footage of Impermeable Surfaces for Facilities to be Constructed or Demolished under the Proposed Action

<i>Action</i>	<i>New Impervious Surface (SF)¹</i>	<i>Demolished Impervious Surface (SF)¹</i>	<i>Net Change (SF)</i>
Replace Fuel System Maintenance Hangar ²	50,000	16,863	33,137
Hangar 753 Re-build ²	70,900	66,000	4,900
Add/ Alter Landings at Langley Chapel	4,250	0	4,250
Airman Family Readiness Center	9,000	0	9,000
Security Forces Operations Center	17,500	19,379	-21,257
Dorm Campus (2 additional dorms)	22,725	24,844	-51,806
Fuels Automated System Complex	4,500	4,800	-300
Expand Low-Observable and Composite Repair Facility (LO/CRF)	15,100	0	15,100
Landings at Langley Child Development Center (CDC)	24,000	4,600	19,400
Demolish Big Bethel Reservoir Water Treatment Plant	0	28,837	-57,674
Conference Center/Bait Shop	5,400	0	5,400
Recreational Vehicle Parking	74,997	0	74,997
Ropes Course	0	0	0
TOTAL	298,372	165,322	35,147

Notes: 1. SF impervious surface was estimated to be: total structure SF divided by number of floors
 2. Some of the facilities listed have multiple stories in some limited portion of the structure. However, to be conservative, the structure was assumed to have only one floor for purposes of impervious surfaces calculations.

Stormwater would be directed to a series of drainage swales following the existing drainage system. BMPs including dry ponds, forebays, and swales would be applied to the proposed construction sites to reduce excess stormwater runoff. For all projects, BMPs would meet or exceed minimum standards as detailed in accordance with DCR's *Virginia Erosion and Sediment Control Handbook*. Per new Virginia Department of Conservation and recreation guidelines, construction projects should be designed to either maintain or improve upon runoff conditions at the site (4 VAC 50-60).

There would be no significant impacts to water resources from point source or non-point sources with implementation of the Proposed Actions. The Proposed Actions would not conflict with point source or non-point source pollution control objectives associated with the Virginia Coastal Zone Management Program. Prior to the start of construction, silt fences, storm drain inlet and outlet protection, and other appropriate standard construction practices would be instituted in accordance with DCR's *Virginia Erosion and Sediment Control Handbook*. A General Permit for Discharges of Stormwater from Construction Activities would be required for each project that would disturb more than 2,500 square feet.

4.6.2 Floodplains

All component projects of the Proposed Action which are located on Langley AFB and the alternatives to these actions are located in the 100-year floodplain. An examination of Figure 3.6-1 indicates that there are no viable alternative locations available within the cantonment area of Langley AFB that are above the 100-year floodplain. Areas above the 100-year floodplain are located within the clear zone on the western end of the runway and at a few small locations on the north side of the base, away from existing infrastructure. All component projects proposed to take place at Landings at Langley Family Housing Area or Big Bethel Reservoir Park are not located in the 100-year floodplain.

4.6.3 Alternatives

Alternative One. Under Alternative One, impacts to water resources would be similar to the impacts under the Proposed Action. The differences between the Proposed Action and Alternative One are primarily locational and measures taken to address stormwater can be expected to be similar from one location to another. Alternative One would involve the demolition of Facility 374 in addition to Facility 373 (existing Fuels Systems Maintenance Hangar and a nearby hangar) but not Hangar 753. Under Alternative One, the Family Readiness Center would be sited on a location where two dormitories currently stand. Demolition of these dormitories has been considered under separate analysis. In sum total, implementation of Alternative One would involve construction of approximately 226,604 SF and demolition of 143,405 SF of impervious surface for a net increase of 83,199 SF. All structures that, under the Proposed Action, would be built in a floodplain, would also be built in a floodplain under Alternative One.

Alternative Two. Under Alternative Two, the Security Forces Operations Center would be located at the current site of facilities 339, 337, 329, and 326 and demolition of these facilities would be required. The Fuel Systems Maintenance Hangar would be sited at the same location

as designated under the Proposed Action and would only require demolition of one structure. Approximately 226,604 SF of impervious surface would be constructed, and approximately 153,613 SF of impervious surface would be demolished, for a net increase of 72,991 SF.

No Action Alternative. Under the No Action Alternative, the ten CIP projects would not be implemented and water resources would not be impacted in any way.

4.7 AIR QUALITY

4.7.1 Construction-Related Emissions

In order to evaluate the air pollutant emissions and their impact to the overall ROI, the emissions associated with the project activities were compared to the total ROI emissions as recorded in the USEPA 2002 National Emissions Inventory (NEI) (USEPA 2002). Impacts to air quality would be considered to be significant if the total emissions of any pollutant equals 10 percent or more of the ROI's total emissions for that specific pollutant. The 10 percent criteria approach is used in the General Conformity Rule (CAA, Section 176[c][4]) as an impact threshold to be used in non-attainment and maintenance areas. Although the Hampton Roads AQCR is in attainment with all CAA standards, the General Conformity Rule's impact threshold was utilized to provide a consistent approach to evaluating the impact of construction and aircraft emissions. To provide a more conservative evaluation, the impacts screening in this analysis, used a more restrictive criteria than required in the General Conformity Rule. Rather than comparing emissions from construction activities to regional inventories (as required in the General Conformity Rule), emissions were compared to the individual county (Hampton) potentially impacted, which is a smaller area.

The Air Force's Air Conformity Applicability Model (ACAM) was utilized to provide a level of consistency with respect to emissions factors and calculations. Air emissions estimated using ACAM were compared to the established 10 percent criterion for Hampton Roads AQCR as represented in the NEI. Emissions associated with construction and demolition activities are the main issues generated by the proposed action and were the focus of the air analysis (Table 4.7-1). Air quality issues associated with operational activities at Langley AFB after the completion of construction are not included in this evaluation. Other assumptions and methodology used for this analysis are included in the Air Quality Appendix.

Table 4.7-1. Proposed Action Construction and Demolition Emissions

<i>Emission Activities</i>	TOTAL EMISSIONS (TONS/YEAR)				
	<i>CO</i>	<i>NO_x</i>	<i>PM₁₀</i>	<i>SO₂</i>	<i>VOC</i>
Airman Family Readiness Center	20.37	6.66	0.78	1.31	2.53
Fuels Automated System Complex	5.4	1.77	0.21	0.37	0.14
Landings at Langley CDC	27.16	8.88	1.04	1.73	0.69
Landings at Langley Chapel	9.62	3.15	0.37	0.63	0.24
Big Bethel Reservoir Improvement Projects	56.95	18.6	2.16	3.61	2.78
Dorms	56.56	18.29	2.16	4.54	1.6
Expand LO/CRF	17	5.57	0.65	1.1	0.43
Fuel System Maintenance Hangar	56.3	18.44	2.16	3.53	1.42
Hangar 753	56.68	18.53	2.16	3.58	1.63
Security Forces Operations Ctr	39.6	12.95	1.51	2.5	1
Total	345.64	112.84	13.2	22.9	12.46
Hampton County	45124	5580	11801	1979	6742
Percent of Hampton County	0.77%	2.02%	0.11%	1.16%	0.18%
Hampton Roads AQCR	478,259	99,381	208,811	112,948	69,656
Percent of AQCR Emissions	0.07%	0.11%	0.01%	0.02%	0.02%

Note: Emissions are the total emissions for the proposed activity which includes construction and point sources.

Even under the assumption that all construction and demolition would occur concurrently, emissions would be minimal in the frame of reference of both the county and the AQCR. The pollutant making up the largest percentage of total ROI emissions would be from NO_x at 2.02 percent of the county and 0.11 percent of the AQCR. The project emissions are below the 10 percent criteria and are not expected to have adverse affects on the regional air quality.

4.7.2 Emissions Related to Daily Operations

Only three new employees are expected to be hired as part of the Proposed Action or action alternatives. Operation of all of the proposed facilities except for the Bait Shop/Conference Center and ropes course would be carried out by people already employed by Langley AFB. Therefore, any increases in emission related to commuting are expected to be extremely small. Overall, any increases in air emissions as a result of day-to-day operations of the proposed facilities would be expected to be minor and insignificant in nature.

4.7.3 Alternatives

Alternative One. Alternative One would involve less total square footage of new structure being built and demolished than the Proposed Action. Therefore, air quality impacts associated with this alternative would be less than impacts associated with the Proposed Action and would clearly fall below the threshold for significance.

Alternative Two. Alternative Two would also involve less construction and demolition than the Proposed Action and emission associated with this alternative would fall well below established thresholds for significance.

No Action Alternative. Under the No Action Alternative, the proposed CIP projects would not be carried out. No impacts to air quality would occur under the No Action Alternative.

4.8 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

4.8.1 Hazardous Materials

All hazardous materials and construction/demolition debris generated during execution of the Proposed Action would be handled, stored, and disposed of in accordance with federal state and local regulations and laws. Permits for handling and disposal of hazardous materials would be the responsibility of the contractor. Hazardous materials related to construction and demolition would not be stored on base. All hazardous materials used at the construction site including, but not limited to, paint, paint thinners, gasoline, diesel, oil and lubricants shall be removed daily. Only quantities of hazardous materials required to carry out the work for the day would be permitted on site. Construction, demolition, and renovation associated with the Proposed Actions may require the use of hazardous materials by construction personnel. In accordance with the base's HAZMART procedure, copies of Material Safety Data Sheets must be provided to the base and maintained on the construction site. Construction personnel would comply with federal, state, and local environmental laws and would employ affirmative procurement practices when economically and technically feasible. No adverse environmental consequences related to hazardous materials are expected from the construction, demolition, and renovation associated with the proposed construction actions.

Expansion of the LO/CRF would increase the quantity of hazardous materials stored on base. Deployable materials associated with the additional LO/CRF bay, including hazardous wastes, would be stored in a 2,000 SF attached storage facility designed for that purpose. Hazardous wastes would be stored in a manner that is in accordance with all applicable laws and regulations.

4.8.2 Hazardous Waste

Hazardous waste, such as paints, adhesives, and batteries, may be generated by construction personnel during the construction, demolition, and renovation associated with the proposed actions. Storage and disposal of these wastes would be coordinated by the site construction contractors with the base hazardous waste program manager. The amounts and types of hazardous wastes generated by base personnel during the operation and maintenance of each of the proposed facilities are not anticipated to change. No adverse environmental impacts related to hazardous wastes are expected from the continued use of these materials. In the event of fuel spillage during demolition or construction, the contractor would be responsible for its containment, clean up, and related disposal costs. The contractor would have sufficient spill supplies readily available on the pumping vehicle and/or at the site to contain any spillage. In the event of a contractor-related release, the contractor would immediately notify the 1 FW Civil Engineering/Environmental Management Office and take appropriate actions to correct its

cause and prevent future occurrences. Upon completion of the projects, contractors would be required to remove all hazardous materials and wastes from the work site.

4.8.3 Asbestos/Lead-Containing Waste

Prior to any demolition activities associated with the Proposed Actions, the affected facilities would be inspected to identify all ACMs, including Category I and Category II non-friable ACM and LBP. Table 3.8-1 lists known occurrences of ACM and expected occurrences of LBP in structures to be demolished. Structures built before 1977 are expected to contain LBP. If ACMs or LBP are found in or near the demolition areas, then the following Federal and State regulations must be followed.

- **Asbestos Removal and Disposal.** Upon classification as friable or non-friable, all waste ACM should be disposed of in accordance with the Virginia Solid Waste Management Regulations (9 VAC 20-80-640), and transported in accordance with the Virginia regulations governing Transportation of Hazardous Materials (9 VAC 20-110-10 et seq.). Buildings containing ACM would require asbestos abatement as part of the demolition of the building.
- **LBP Removal and Disposal.** The proposed project should comply with the U.S. Department of Labor, OSHA regulations, and with the Virginia Lead-Based Paint Activities Rules and Regulations (9 VAC 20-60-261). Lead-containing materials would also be disposed of in accordance with applicable regulations. The proposed projects should comply with OSHA regulations and with the Virginia Lead-Based Paint Activities Rules and Regulations (9 VAC 20-60-261).

4.8.4 Alternatives

Alternative One. Under Alternative One, hazardous materials and hazardous wastes would be handled using the same procedures and precautions as would be used under the Proposed Action. Under Alternative One, demolition of Hangar 373 and 374 would be required in order to make room for construction of the new Fuels System Maintenance Hangar. The two hangars to be demolished were constructed in 1961 and 1965, respectively, and are expected to contain LBP. In addition, ACM have been found at both hangars. Under this alternative, Hangar 753 would undergo interior and exterior be renovations rather than being demolished. Under Alternative One, Buildings 339, 337, 333, 329, and 326 would be demolished. All of these buildings were constructed prior to 1977 and therefore, are expected to contain LBP. In addition, ACM have been found at all of the buildings.

All buildings, or portions of buildings, affected would be surveyed for ACM/LBP. ACM/LBP and contaminated soil abatement would be undertaken in a manner consistent with all applicable laws and regulations. No significant impacts are expected to occur under the Proposed Action.

Alternative Two. Impacts under this alternative would be the same as those under Alternative One in all respects except that Hangar 753 would undergo renovation rather than demolition. As with other alternatives, all buildings, or portions of buildings, affected would be surveyed

for ACM/LBP. ACM/LBP and contaminated soil abatement would be undertaken in a manner consistent with all applicable laws and regulations.

No Action Alternative. Under the No Action Alternative, construction, demolition, and relocation associated with the CIP projects would not occur. There would be no environmental consequences to Hazardous Materials and Waste Management activities.

4.9 ENVIRONMENTAL RESTORATION PROGRAM

Some of the proposed project areas include ERP sites and/or are located within 500 feet of ERP sites (Table 4.9-1). The 1st Civil Engineering Squadron, Environmental Restoration Branch (1 CES/CEVR) would request an ACC waiver and notify VDEQ and USEPA for construction of any projects located near an ERP site. Prior to the start of construction, a Health and Safety Plan would be submitted and approved identifying the potential hazards associated with contamination at these ERP sites. Disturbance of soils in these areas would be in strict accordance with VDEQ regulations. If disposal of contaminated soil were found to be required, that disposal would be funded with CIP project funds.

Because this environmental analysis is being run during an early stage of the facility planning and design process, the exact location of the proposed facilities within the defined project areas has not been decided. However, preliminary site drawings indicate that disturbance of ERP sites located within the project areas during construction can be avoided with exceptions as shown in Table 4.9-1.

Table 4.9-1. ERP Sites Located On or Near CIP Project Sites under the Proposed Action

<i>Project</i>	<i>ERP Site(s) in Project Area</i>	<i>ERP Sites Within 500 Feet of Project Area¹</i>
Replace Fuel System Maintenance Hangar	none	SS-04
Hangar 753 Re-build	ST-27	ST-27, ST-29, ST-32, SS-03
Airman Family Readiness Center	none	OT-06
Security Forces Operations Center	ST-27	ST-27, ST-26, SS-04, ST-28, SS-04
Dorm Campus (2 new dorms)	AOC Dorm (avoidance of ERP site is possible)	AOC Dorm
Fuels Automated System Complex	ST-27, SS-03 (avoidance of ERP site is possible)	SS-04, SS-03, ST-34, ST-27, ST-29, SS-23
Expand LO/CRF	none	SS-21, ST-26, SS-04
Landings at Langley Chapel Addition	none	none
Landings at Langley CDC	none	none
Conference Center/Bait Shop	none	none
Ropes Course	none	none
RV Parking Area	none	none

Under the Proposed Action, the Security Forces Operations Center and the Hangar 753 replacement would be built on part of Site ST-27. The dorm campus and Fuels Automated System Complex project areas would overlap ERP site boundaries. However, the ERP sites may be avoidable during construction (based on the size of the project area and proposed structure footprint and the percentage of the project area taken up by the ERP site). In instances where construction on an ERP site is not avoidable, construction workers would take necessary precautions to avoid harmful chemical exposure. In addition, site design may include measures taken to contain any contamination below the surface. So long as all appropriate precautions are taken, it is not anticipated that environmental risks associated with ERP sites would increase significantly with implementation of the Proposed Action.

4.9.1 Alternatives

Alternative One. Buildings that would be located differently under Alternative One than under the Proposed Action are listed in Table 4.9-2 along with any ERP sites located on or near the proposed project site. Projects not listed would have the same ERP sites nearby as described for the Proposed Action (Table 4.9-1).

Table 4.9-2. ERP Sites Located On or Near CIP Project Sites under Alternative One

<i>Project</i>	<i>ERP Site(s) in Project Area</i>	<i>ERP Sites Within 500 Feet of Project Area¹</i>
Replace Fuel System Maintenance Hangar	none	SS-04, ST-26, ST-27, ST-28, ST-49
Airman Family Readiness Center	none	OT-51, LF-05, AOC Dorm
Security Forces Operations Center	none	ST-49

The same precautions would be taken under Alternative One as under the Proposed Action. No significant impacts are expected to occur under Alternative One.

Alternative Two. Buildings that would be located differently under Alternative Two than under the Proposed Action are listed in Table 4.9-3 along with any ERP sites located on or near the proposed project site. Projects not listed would have the same ERP sites nearby as described for the Proposed Action (Table 4.9-1).

Table 4.9-3. ERP Sites Located On or Near CIP Project Sites under Alternative Two

<i>Project</i>	<i>ERP Site(s) in Project Area</i>	<i>ERP Sites Within 500 Feet of Project Area¹</i>
Replace Fuel System Maintenance Hangar	none	SS-04
Airman Family Readiness Center	none	OT-06
Security Forces Operations Center	OT-06 (appears to be unavoidable)	OT-06

Under Alternative Two, the Security Forces Operations Center would be located on OT-06 and disturbance of contaminated soil on this site appears to be unavoidable. Contamination on the site was the result of activities at the former entomology shop and wastewater treatment plant.

The same precautions would be taken under Alternative Two as under the Proposed Action. No significant impacts are expected under Alternative Two.

No Action Alternative. Under the No Action Alternative, the proposed CIP projects would not be carried out and no impacts to ERP sites would occur.

4.10 STORAGE TANKS

Seven ASTs and eight USTs are located at or near project sites under the Proposed Action. Five of the USTs have been closed and abandoned in place. 1 CES Engineering would determine whether these tanks would have to be disturbed prior to construction of the proposed CIP facilities. The other three USTs have been removed. ASTs associated with building proposed for demolition would be removed or moved to serve new CIP facilities. The decommissioned ASTs at the Bethel Reservoir WTP would be removed as part of the demolition process. No USTs are known to exist at this site. If tanks were found during excavations, 1 CES Engineering would make a determination as to whether or not the tanks could remain in place without negative repercussions in the long-term. Disturbing any of the USTs would require notification of the VDEQ prior to moving or removal activities. Impacts under this alternative would be insignificant in nature.

4.10.1 Alternatives

Alternative One. Under this alternative, all of the same tanks located near Proposed Action project sites would also be located near project sites. The same notifications and decision-making process followed under the Proposed Action would be followed under Alternative One. Impacts under this alternative would be insignificant in nature.

Alternative Two. Under Alternative Two, several tanks would be located near project sites in addition to those located near project sites under the Proposed Action. These four USTs and 2 ASTs are located in the area proposed for the Security Forces Operations Center. The same notifications and decision-making process followed under the Proposed Action would be followed under Alternative One. Impacts under this alternative would be insignificant in nature.

No Action Alternative. Under the No Action Alternative, the proposed CIP projects would not be carried out and no impacts to Storage Tanks would occur.

4.11 SAFETY

Both the existing Fuels Automated System Complex and its proposed replacement are located within the runway primary surface and Graded Clear Zone. The replacement Fuels Automated System Complex must be located near the location of the current complex to take advantage of existing fuels-related infrastructure. Siting of this facility within Graded Clear Zone would require a MAJCOM waiver. Obstruction lighting would be required to maintain safety of flight

in accordance with AF regulations. Because the two existing fuels facility (Building 741) would be demolished, the number of waivers would decrease by one. Neither the existing facility nor its proposed replacement violate the 50:1 approach/departure surface. The net effect of this project on safety is negligible.

The project sites for the expansion of the LO/CRF, the replacement of Hangar 753, and the construction of a new fuel barn are located within the explosives Q-D arc. Siting of these facilities within the Q-D arcs is considered to be acceptable because these facilities are 'related' land uses as defined in DDESB 6055.9 STD and AFM 91-201 Explosives Safety Standards. Expansion of the LO/CRF would increase slightly the number of people working in a Q-D arc, thereby slightly increasing safety risk. Because both the existing Hangar 753 and its proposed replacement are located within the Q-D arc, no change to safety would occur as a result of that project. The current Fuels System Maintenance Hangar is not located within a Q-D arc, but its replacement is within the Q-D arc. The net effect of implementation of this alternative would be a slight decrease in explosives safety.

Construction and demolition activities within the airfield environs will follow the requirements contained in Attachment 15 of UFC 3-260-01, *Airfield and Heliport Planning and Design Construction Phasing Plan and Operational Safety on the Airfield During Construction*.

Demolition-related safety issues to workers would be minimal and no different from standard, on-going activities occurring at Langley AFB. During demolition, approved industrial safety procedures would be followed. Additionally, safety features of construction vehicles would be maintained, including back-up alarms, moving part guards, and emergency stop switches.

All appropriate safety precautions would be taken at the proposed ropes course. A trained ropes course employee would be on hand to provide guidance to people using the ropes course.

Safety risks would be increased during construction and demolition; however, these risks would be reduced with implementation of standard construction and demolition safety practices. Operation of the ropes course would involve some inherent safety risk. It is assumed that anyone using the ropes course would be required to sign a liability waiver prior to use. Overall, impacts to safety under the Proposed Action would be minimal and insignificant in nature.

4.11.1 Alternatives

Alternative One. Under Alternative One, safety impacts would be the same as those described for the Proposed Action in all respects except that the new Fuels System Maintenance Complex would not be constructed within a Q-D arc. Instead, this hangar would be constructed at the site of the existing fuels system maintenance hangar. Under this alternative, safety impacts would all be positive and insignificant in nature.

Alternative Two. Under Alternative Two, safety impacts would be the same as under the Proposed Action.

No Action Alternative. Under the No Action Alternative, none of the proposed CIP projects would be carried out and safety at Langley AFB would remain at current levels. There would be no impact to safety under the Proposed Action.

4.12 NOISE

The proposed construction and demolition projects would result in noise being created in the vicinity of the project sites during normal working hours for the duration of the construction/demolition projects. Noise levels associated with types of heavy equipment expected to be used in these projects are listed in Table 4.12-1.

Table 4.12-1. Noise Levels Associated with Construction Equipment Expected to be Used During Proposed Construction and Demolition Projects

<i>Equipment</i>	MAXIMUM SOUND LEVEL (IN DB) AT FULL POWER				
	100'	200'	300'	400'	500'
Dozer	75.6	69.6	66.1	63.6	61.7
Dump Truck	70.4	64.4	60.9	58.4	56.5
Crane	74.5	68.5	65	62.5	60.6
Front End Loader	73.1	67.1	63.5	61	59.1
Grader	79	73	69.4	66.9	65
Jackhammer	82.9	76.8	73.3	70.8	68.9

Source: Roadway Construction Noise Model

As a result of the beddown of the F-22A Raptor, Langley AFB has been the location of an increased number of construction projects. A continuation of construction noise at locations near the proposed CIP projects would be expected to cause only minor annoyance. Furthermore, the sites of proposed construction and demolition on Langley AFB are already exposed to frequent high-intensity aircraft noise events.

Both the CDC and chapel are located within 200 feet of the nearest noise sensitive receptors. The Landings at Langley Family Housing Area will be undergoing extensive demolition and construction in upcoming years as part of the housing privatization process and construction noise will be pervasive as a result. The Big Bethel Reservoir projects site is located approximately 300 feet from the nearest noise sensitive receptors at its closest point. These receptors are located off of Air Force property. Construction/demolition noise may cause annoyance in nearby residents, particularly if impact tools are used during demolition.

Table 4.12-2 shows compatibility of the proposed structures with the noise zone in which they are proposed to be built and describes any action which would need to be taken to achieve conditional compatibility. Project compatibility was assessed against noise contours published in the 2007 Langley AFB AICUZ report. As part of the Air Force programming process, requirements for new structure noise attenuation are considered, and the structure is designed with these requirements in mind. As such, noise impacts under the Proposed Action are expected to be minor and insignificant in nature.

Table 4.12-2. Land Use Compatibility with Aircraft Noise under the Proposed Action

<i>Project</i>	<i>Land Use Category</i>	<i>Noise Zone(s) (DNL)¹</i>	<i>Compatible²</i>
Replace Fuel System Maintenance Hangar	Repair Services	>80	Y
Hangar 753 Re-build	Repair Services	>80	Y
Airman Family Readiness Center	Personal Services	70-74	25 dB NLR
Security Forces Operations Center	Government Services	75-79; >80	Y; 25 dB NLR
Dorm Campus (2 additional dorms)	Group Quarters	70-74	30 dB NLR
Fuels Automated System Complex	Petrol. Refining and Related	>80	Y
Expand LO/CRF	Repair Services	>80	Y
Landings at Langley CDC	Educational Services	<65	Y
Landings at Langley Chapel Addition	Cultural Activities	<65	Y
Conference Center / Bait Shop	Professional Services	<65	Y
Ropes Course	Recreational Activities	<65	Y
RV Parking Area	Automobile Parking	<65	Y

Notes: 1. Proposed facility sites that span multiple noise zones show compatibility in both zones.

2. Y = Yes; N = No; "XX DB NLR" = interior noise level reduction (NLR), required in order for facility to be compatible.

4.12.1 Alternatives

Alternative One. Impacts under Alternative One would be similar to impacts under the Proposed Action. The duration and intensity of construction/demolition noise near Hangar 753 would be reduced somewhat, as the structure would be renovated rather than being demolished and re-built entirely. Buildings 373, 374, 339, 337, 333, 329, and 326 would be demolished under this alternative, which would produce some noise beyond that produced under the Proposed Action. All other component projects vary from the Proposed Action only in respect to location and impacts related to their construction noise would be expected to be similar to the Proposed Action. The compatibility of certain CIP projects would be different under Alternative One than it would be under the Proposed Action due to the location of construction being different. Table 4.12-3 displays compatibility of structures for which location would be different under Alternative One and the Proposed Action. Impacts under Alternative One are expected to be minor and insignificant in nature.

Table 4.12-3. Land Use Compatibility with Aircraft Noise under Alternative One

<i>Project</i>	<i>Land Use Category</i>	<i>Noise Zone(s) (DNL)¹</i>	<i>Compatible²</i>
Replace Fuel System Maintenance Hangar	Repair Services	>80	Y
Airman Family Readiness Center	Personal Services	70-74	25 dB NLR
Security Forces Operations Center	Government Services	75-79; >80	Y; 25 dB NLR

Notes: 1. Proposed facility sites that span multiple noise zones show compatibility in both zones.
 2. Y = Yes; N = No; “XX DB NLR” = interior noise level reduction (NLR), required in order for facility to be compatible.

Alternative Two. Impacts under Alternative Two would be similar to impacts under the Proposed Action. The duration and intensity of construction/demolition noise at Hangar 753 would be reduced relative to the Proposed Action and Alternative One as the structure would undergo interior renovations only. Buildings 373 and 374 would be demolished under this alternative, which would produce some noise beyond that produced under the Proposed Action. All other component projects vary from the Proposed Action only in respect to location. Impacts related to their construction noise would be expected to be similar to those occurring under the Proposed Action. The compatibility of certain CIP projects would be different under Alternative Two than it would be under the Proposed Action due to the location of construction being different. Table 4.12-4 displays compatibility of structures for which location would be different under Alternative Two and the Proposed Action. Impacts under Alternative Two are expected to be minor and insignificant in nature.

Table 4.12-4. Land Use Compatibility with Aircraft Noise under Alternative Two

<i>Project</i>	<i>Land Use Category</i>	<i>Noise Zone(s) (DNL)¹</i>	<i>Compatible²</i>
Replace Fuel System Maintenance Hangar	Repair Services	>80	Y
Airman Family Readiness Center	Personal Services	70-74	25 dB NLR
Security Forces Operations Center	Government Services	70-74	25 dB NLR

Notes: 1. Y = Yes; N = No; “XX DB NLR” = interior noise level reduction (NLR), required in order for facility to be compatible.
 2. Proposed facility sites that span multiple noise zones show compatibility in both zones.

No Action Alternative. Under the No Action Alternative, CIP projects would not occur. However, Langley AFB and the Landings at Langley Family Housing Area would continue to experience noise due to other ongoing construction activities. Under the No Action Alternative, noise levels in the vicinity of the Big Bethel WTP would remain very low. The area surrounding Langley AFB would continue to experience jet noise at varying levels. No noise impacts would result from selection of the No Action Alternative.

5.0 CUMULATIVE EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

5.1 CUMULATIVE EFFECTS

This section provides (1) a definition of cumulative effects, (2) a description of past, present, and reasonably foreseeable actions relevant to cumulative effects, and (3) an evaluation of cumulative effects potentially resulting from these interactions.

5.1.1 Definition of Cumulative Effects

CEQ regulations stipulate that the cumulative effects analysis within an EA should consider the potential environmental impacts resulting from “the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR 1508.7). Recent CEQ guidance in *Considering Cumulative Effects* affirms this requirement, stating that the first steps in assessing cumulative effects involve defining the scope of the other actions and their interrelationship with the proposed actions. The scope must consider geographic and temporal overlaps among the proposed actions and other actions. It must also evaluate the nature of interactions among these actions.

Cumulative effects are most likely to arise when a relationship or synergism exists between proposed actions and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with, or in close proximity to, the proposed actions would be expected to have more potential for a relationship than actions that may be geographically separated. Similarly, actions that coincide, even partially, in time would tend to offer a higher potential for cumulative effects.

To identify cumulative effects, this EA addresses three questions:

- Does a relationship exist such that elements of the proposed actions might interact with elements of past, present, or reasonably foreseeable actions?
- If one or more of the elements of the proposed actions and another action could be expected to interact, would the proposed actions affect or be affected by impacts of the other action?
- If such a relationship exists, does an assessment reveal any potentially significant impacts not identified when the proposed actions are considered alone?

In this EA, an effort has been made to identify all actions that are being considered and that are in the planning phase at this time. To the extent that details regarding such actions exist and the actions have a potential to interact with the proposed actions in this EA, these actions are included in this cumulative analysis. This approach enables decision makers to have the most current information available so that they can evaluate the environmental consequences of the proposed actions.

5.1.2 Past, Present, and Reasonably Foreseeable Actions

This EA applies a stepped approach to provide decision makers with not only the cumulative effects of the Proposed Action and alternatives, but also the incremental contribution of past, present, and reasonably foreseeable actions.

5.1.3 Past and Present Actions

Langley AFB is an active military installation that undergoes continuous change in mission and in training requirements. This process of change is consistent with the U.S. defense policy that the Air Force must be ready to respond to threats to American interests throughout the world. In 1998, the Air Force implemented a force structure change that added 12 F-15C aircraft and 134 personnel to Langley AFB, increasing the total number of F-15C aircraft to 66. In 2001 Langley AFB was chosen as the bed-down location of the Initial Operational Wing for 72 of the new F-22A aircraft. To support this beddown, various projects, including demolition and construction of three hangars, a new simulator building, and other support buildings, were constructed and approximately 16 acres of the base along the flightline were disturbed.

The base, like any other major military installation, also requires new construction, facility improvements, and infrastructure upgrades. The base has been in operation since 1917, and many facilities require extensive renovation or demolition. Demolition on Langley AFB in 2006 and 2007 included the bachelor officer's quarters (75), gas station (258), marina restaurant (615), dock (610), munitions shop (320), facilities related to aircraft arresting (391, 395, 796, and 798), the foundation of the mile-long building, hazardous materials storage buildings (1057, 1361), a TACAN station (1385), and two water towers (616 and 620). Reconstruction of the King Street and West Gates is now complete, and new facility construction recently completed also includes a new youth center, mini mall, TACAN facility, munitions storage igloos, housing management office, dormitory complex, and operations support facility.

Currently, 1 FW is upgrading portions of electrical system, sanitary sewer system, and potable water distribution system. A new storm sewer pumphouse has been recently built in the Heavier-Than-Air district of Langley AFB and a vacuum sewer building has been or is being constructed in the same area. Several Americans with Disabilities Act (ADA) compliant elevator towers are being or have been constructed as additions to several existing structures (546, 635, 664, 669, 671, 703, and 11). In addition, a number of small mechanical buildings are being or have been constructed on the Headquarters Air Combat Command Campus and vacuum/sewer buildings are being or have been constructed in the . There are also numerous hurricane repair projects under way to repair damage to facilities resulting from Hurricane Isabel, which struck the Hampton Roads area in 2003. These projects include upgrades to the Langley AFB golf course and renovations to several dormitories. Other major construction activities currently under way include a Munitions Storage Area management building, hospital expansion, Distributed Common Ground System, and Logistics Supply Center.

5.1.4 Reasonably Foreseeable Future Actions

For the FY 2007 to FY 2012 timeframe, 1 FW has proposed a number of actions that are independent of the Proposed Action and would be implemented irrespective of a decision on

the proposed CIP projects. In order to redevelop portions of the base and to eliminate facilities that are obsolete, the 1 FW has planned for demolition of several industrial buildings (731, 732, 735, and 1033), several Munitions Storage Area buildings (1050, 1053, 1066, 1067, 1069, 1070, and 1077), the shoppette on Langley AFB (272), the shoppette in the Landings at Langley Family Housing Area (1421 and 1422), the vehicle fuel station (335), and a water tower (1000).

Demolition of 14 garages in the Langley Field historic district and Hanger 757 may also be carried out. The 1 FW is also planning to construct new buildings over the next five years. Major projects planned include construction of force protection and access improvements to the LaSalle Gate, new visitors' quarters, a new Combat Arms training and maintenance range, replacement of the 2 million gallon potable water storage tank, modification of the alert facility to accept F-22A aircraft, and relocation of the government gas station. Other projects being considered are construction of 2 more housing units and 24 new garages in the Langley Field Historic District. Each of these actions has been analyzed under a separate environmental impact analysis project.

Other facility upgrades/renovations at Langley AFB facilities are in the planning stage and are summarized in Table 5.1-1.

Table 5.1-1. Planned Facility Upgrades at Langley AFB

<i>Facility</i>	<i>Building Space (square feet)</i>
North Base Area	
VA ANG Fire Training Facility	6,000
North Base Food Center	25,000
Education Center Expansion	25,000
North Base Industrial Area	
Auto/ Skills Development Facility	21,721
Transportation Vehicle Complex	26,000
EOD Operations Facility	29,998
Outdoor Recreational Facility	10,570
Flightline	
Consolidated Headquarters	42,495
Community Support Area	
Visitor's Quarters	36,000

Source: Personal communication, Baie-Yates 2007

In addition to those projects listed above, small construction projects are expected to occur over the next five years that are either currently in extremely early stages of planning or that have not yet been proposed.

5.1.5 Analysis of Cumulative Impacts

The following analysis examines how the impacts of these other actions might be affected by those resulting from the Proposed Action at Langley AFB and whether such a relationship would result in potentially significant impacts not identified when the proposed action is

considered alone. For example, execution of several large-scale projects in the Langley Field Historic District could affect eligibility of the district for the National Register of Historic Places. While several of the proposed projects and reasonably foreseeable actions affect structures contributing to the district, consultation with the SHPO and compliance with published guidelines on treatment of historic facilities would minimize any negative effects of these actions on the historic value of the district as a whole.

None of the future infrastructure actions (analyzed in previous environmental documents) would be expected to result in more than negligible impacts either individually or cumulatively. All actions affect defined areas, and the magnitude of the actions is minimal. Given that the Proposed Action would likewise have a minimal effect within the base, the combined impacts of these actions would remain well below the threshold of significance for any resource category.

5.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA requires that environmental analysis include identification of “. . . any irreversible and irretrievable commitments of resources which would be involved in the proposed action and alternatives should it be implemented.” Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable timeframe. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the demolition of a historic building).

Under the Proposed Action, 18 buildings would be demolished, additions and/or alteration would be made to two buildings, and 13 new construction projects would be completed. Buildings 355, 741, 744 are cold war era structures, but are not considered to be eligible for the NRHP (ACC 2007). Hangar 753, which would be demolished under the Proposed Action, is eligible for the NRHP. The replacement for Hangar 753, and all other CIP facility construction projects, would conform to the design standards presented in the *Langley AFB Architectural Compatibility Standards* (n.d.). Alternative One would renovate the interior and exterior of Hangar 753 while Alternative Two would renovate only the interior. All renovations would be consistent with the *Langley Air Force Base Historic Building Treatment Plan* (USACE 2004b) and would avoid actions, wherever practicable, that would run counter to goals presented in the plan. The water treatment plant would need to be assessed for NRHP eligibility before its proposed demolition is carried out. For all projects, compliance with Section 106 of the NHPA, including SHPO consultation, would take place prior to the project beginning.

For the Proposed Actions, most resource commitments are neither irreversible nor irretrievable. Most environmental consequences are short-term and temporary (such as air emissions from construction) or longer lasting but negligible (e.g., utility increases).

CIP project construction would require consumption of construction materials (e.g., concrete, wiring, insulation, and windows) and the irretrievable commitment of fossil fuels through the use of vehicles necessary to remove demolition debris and construct the proposed facilities. The amount of these materials used is not expected to significantly decrease the availability of the resources.

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Goss, Mathew. 2005. Environmental Programmer, 1 CES/CEVQ, Langley Air Force Base, Virginia.

Grimes, Jeree. 2007. Water Quality Program Manager, 1 CES/CEVC, Langley Air Force Base, Virginia.

Jones, Robert. 2007. Air Quality Program Manager, 1 CES/CEVC, Langley Air Force Base, Virginia.

Wiker, David. 2007. Tank Program Manager, 1 CES/CEVC, Langley Air Force Base, Virginia.

7.0 LIST OF PREPARERS

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Years of Experience: 3

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Years of Experience: 3

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B.S., Political Science, Boise State University, Boise, ID 2001

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Years of Experience: 34

Kim Wilson, Production Manager

Years of Experience: 22

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APPENDIX A
CONSULTATION LETTERS

"Fish and Wildlife IICEP Letter"



DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 1ST FIGHTER WING
LANGLEY AIR FORCE BASE VA

1 CES/CEV
37 Sweeney Boulevard
Langley AFB VA 23665-2107

Ms. Karen L. Mayne
U.S. Fish and Wildlife Service
Virginia Field Office
6669 Short Lane
P.O. Box 99
Gloucester VA 23061

CERTIFIED MAIL
RETURN RECEIPT
7004 2510 0005 8068 0280

Dear Ms. Mayne

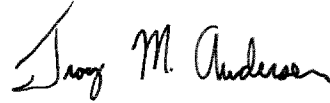
Langley Air Force Base (AFB) is in the process of preparing an Environmental Assessment (EA) to assess the potential environmental impacts of several projects identified in the base Capital Improvements Plan (CIP). These projects are sited at Langley AFB, Bethel Manor Military Family Housing Area, and Big Bethel Reservoir (Atchs 1-5). The eleven projects to be analyzed include facility construction, renovation, and demolition of facilities to better support the 1st Fighter Wing mission. These projects are tentatively scheduled to occur over the next five years at an approximate total cost of \$99.4 million. Under the proposed action, the Air Force would construct or renovate approximately 391,000 sq. ft. of useable space and develop two outdoor areas. To facilitate the construction projects, approximately 260,000 sq. ft. of currently existing structures would be demolished.

This EA will address impacts associated with construction and impacts of changes in daily operations. Alternatives to the proposed action will be developed during the EIAP process and a no-action alternative will be addressed.

Pursuant to analysis of the proposed action, as well as compliance with the Endangered Species Act, we would like to request information regarding listed threatened, endangered, and candidate species that occur or may occur in the potentially affected area. Please identify a point of contact for any follow-up questions we may have concerning the data you provide and we look forward to receiving your comments as part of this process.

Please provide your comments or requests for additional information to me at the above address, by calling (757)764-1095, or through e-mail (troy.andersen@langley.af.mil). Your response before 14 December 2007 will allow us to ensure your contribution is included in the draft EA.

Sincerely

A handwritten signature in black ink that reads "Troy M. Andersen". The signature is written in a cursive style with a large initial 'T' and 'A'.

TROY M. ANDERSEN, GS-11
Environmental Impact Analysis Manager

Attachments:
5 Maps of Proposed CIP Project Areas



"Standard IICEP Letter"

DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 1ST FIGHTER WING
LANGLEY AIR FORCE BASE VA

1 CES/CEV
37 Sweeney Boulevard
Langley AFB VA 23665-2107

Virginia Department of Game and Inland Fisheries
Region 1
3801 John Tyler Memorial Highway
Charles City VA 23030

CERTIFIED MAIL
RETURN RECEIPT
7004 2510 0005 8068 0570

To Whom It May Concern

Langley Air Force Base (AFB) is in the process of preparing an Environmental Assessment (EA) to assess the potential environmental impacts of several projects identified in the base Capital Improvements Plan (CIP). These projects are sited at Langley AFB, Bethel Manor Military Family Housing Area, and Big Bethel Reservoir (Atchs 1-5). The eleven projects to be analyzed include facility construction, renovation, and demolition of facilities to better support the 1st Fighter Wing mission. These projects are tentatively scheduled to occur over the next five years at an approximate total cost of \$99.4 million. Under the proposed action, the Air Force would construct or renovate approximately 391,000 sq. ft. of useable space and develop two outdoor areas. To facilitate the construction projects, approximately 260,000 sq. ft. of currently existing structures would be demolished.

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A handwritten signature in black ink that reads "Troy M. Andersen".

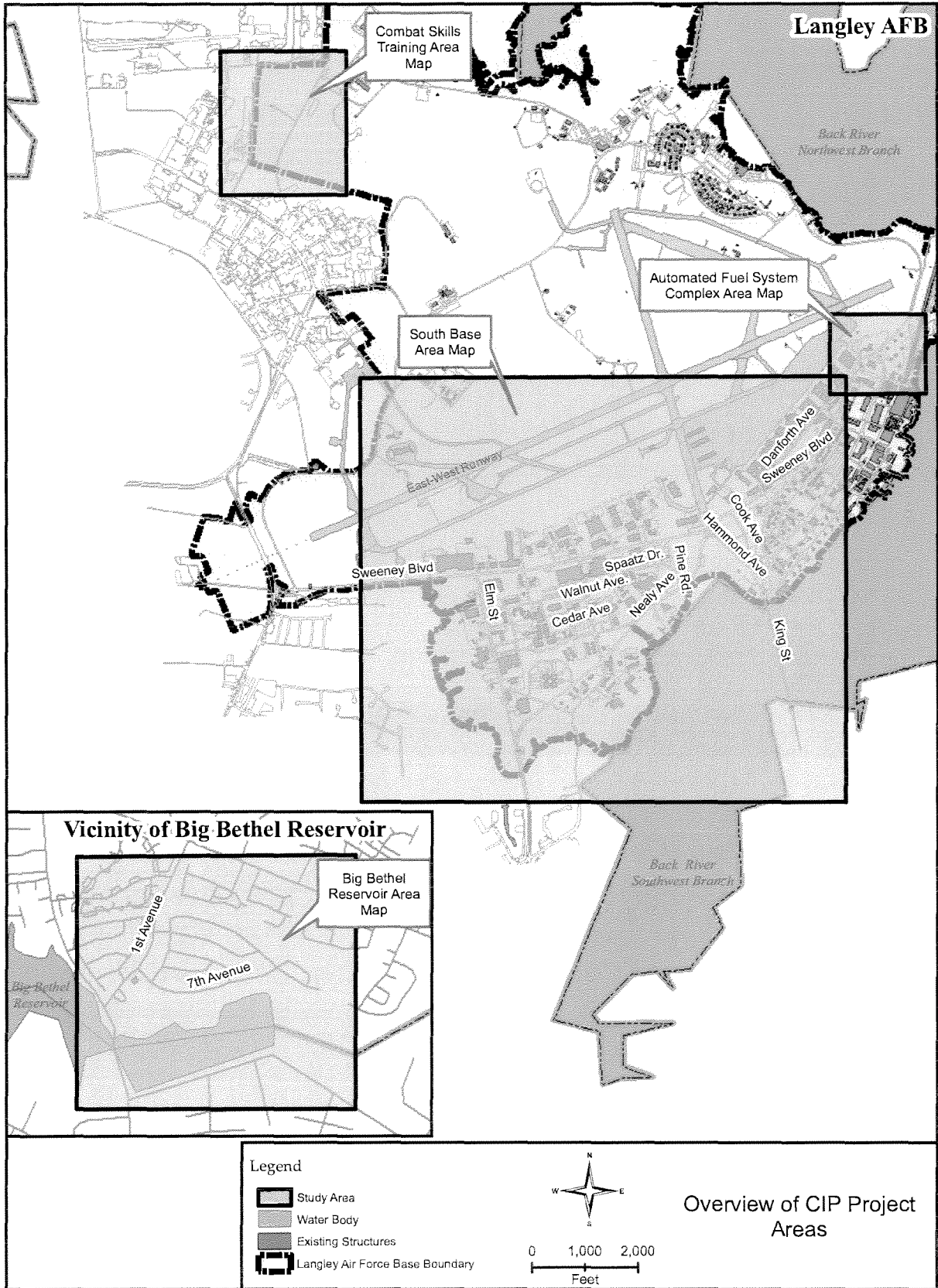
TROY M. ANDERSEN, GS-11
Environmental Impact Analysis Manager

Attachments:
5 Maps of Proposed CIP Project Areas

Global Power For America

Standard IICEP Letter Distribution:

- Mr. Gregory Sullivan, Building 1229, MS 213, Hampton, VA 23681-2199
- Mr. James McReynolds, York County Administrator, 224 Ballard St., P.O. Box 532, Yorktown, VA 23690-0532
- Ms. Judy Wiggins, City Clerk, Poquoson City Hall, 500 City Hall Ave., Poquoson, VA 23662
- Ms. Catherine Glass, City Clerk, Hampton City Hall, 22 Lincoln St., Hampton, VA 23669
- Ms. Ellie Irons, Virginia Department of Environmental Quality, Office of Environmental Impact Review, 629 East Main Street, 6th Floor, Richmond, VA 23219
- Mr. Harold Winer, Virginia Department of Environmental Quality, Tidewater Regional Office, 5636 Southern Boulevard, Virginia Beach, VA 23462
- Mr. Tom Modena, Virginia Department of Environmental Quality, Waste Division, 629 East Main Street, 4th Floor, Richmond, VA 23219
- Ms. Ellen Gilinsky, Virginia Department of Environmental Quality, Virginia Water Protection Program, 629 East Main Street, 9th Floor, Richmond, VA 23219
- Mr. Keith Tignor, Virginia Department of Environmental Quality, Office of Plant & Pest Services, 1100 Bank Street, Richmond, VA 23219
- Ms. Catherine Harold, Chesapeake Bay Local Assistance Department, 101 N. 14th Street, 17th Floor, Richmond, VA 23219
- Mr. John Davy, Virginia Department of Conservation & Recreation, 203 Governor Street, Richmond, VA 23219
- Mr. Michael Foreman, Virginia Department of Forestry, 900 Natural Resources Drive, Suite 800, Charlottesville, VA 22903
- Mr. Ray Fernald, Virginia Department of Game & Inland Fisheries, 4010 West Broad Street, Richmond, VA 23230
- Mr. Alan Weber, Virginia Department of Health, Division of Drinking Water, 109 Governor Street, 6th Floor, Richmond, VA 23219
- Mr. Gerald P. Wilkes, Virginia Department of Mines, Minerals and Energy, Division of Mineral Resources, P.O. Box 3667, Charlottesville, VA 22903
- Mr. Thomas A. Barnard, Jr., Virginia Institute of Marine Science, P.O. Box 1345, Gloucester Point, VA 23062
- Mr. Tony Watkinson, Virginia Marine Resources Commission, 2600 Washington Avenue, 3rd Floor, Newport News, VA 23607
- Ms. Ethel Eaton, Virginia Department of Historic Resources, 2801 Kensington Avenue, Richmond, VA 23221



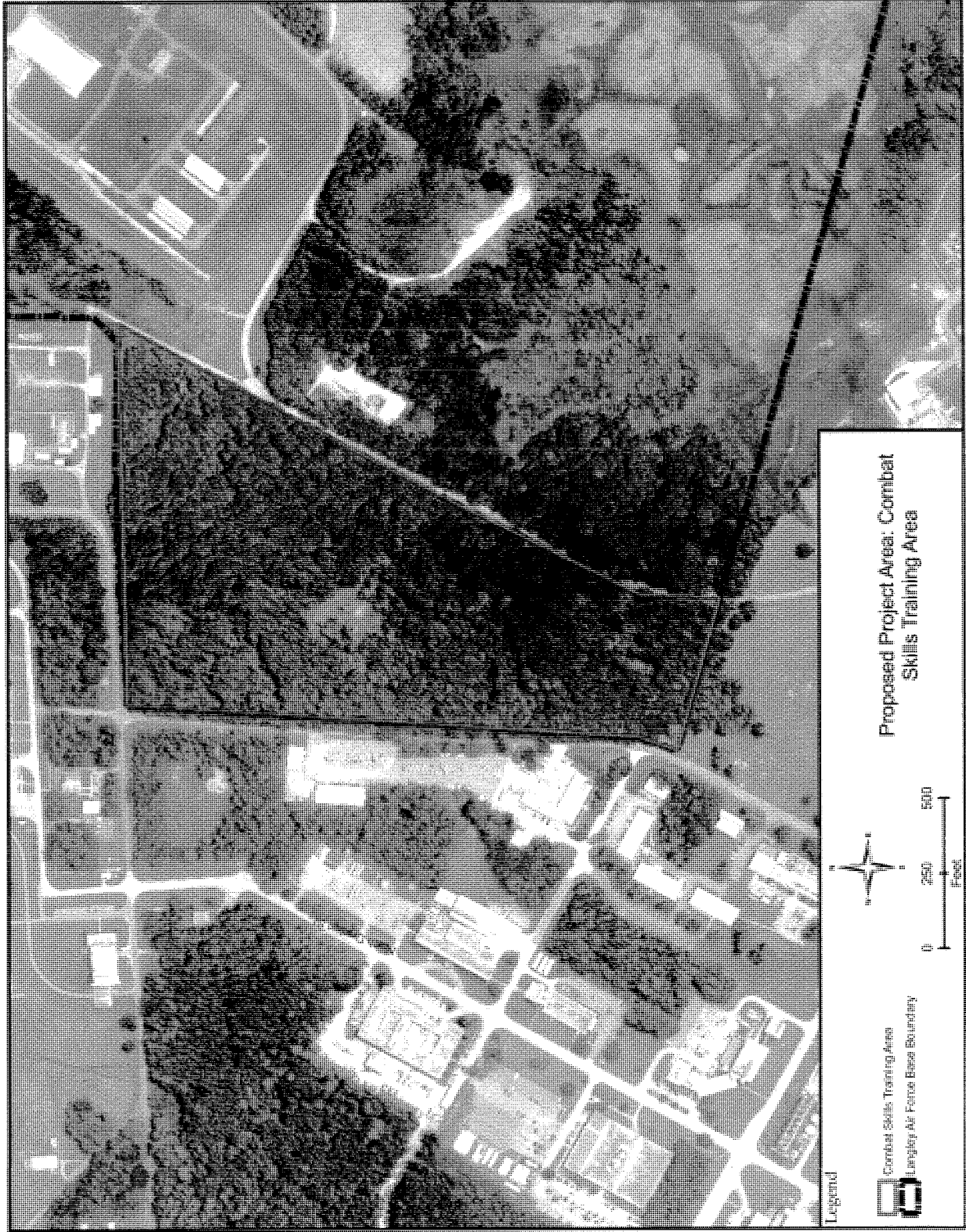


**Proposed and Alternative
Project Areas: South Base Area**

Legend

- Hangar 753
- Family Support Center
- Fuel System Maintenance Hangar
- Low-Observable/Composite Repair Facility Projects
- Security Forces Squadron
- Additional Dormitory Construction Area
- Langley Air Force Base Boundary

0 500 1,000
Feet



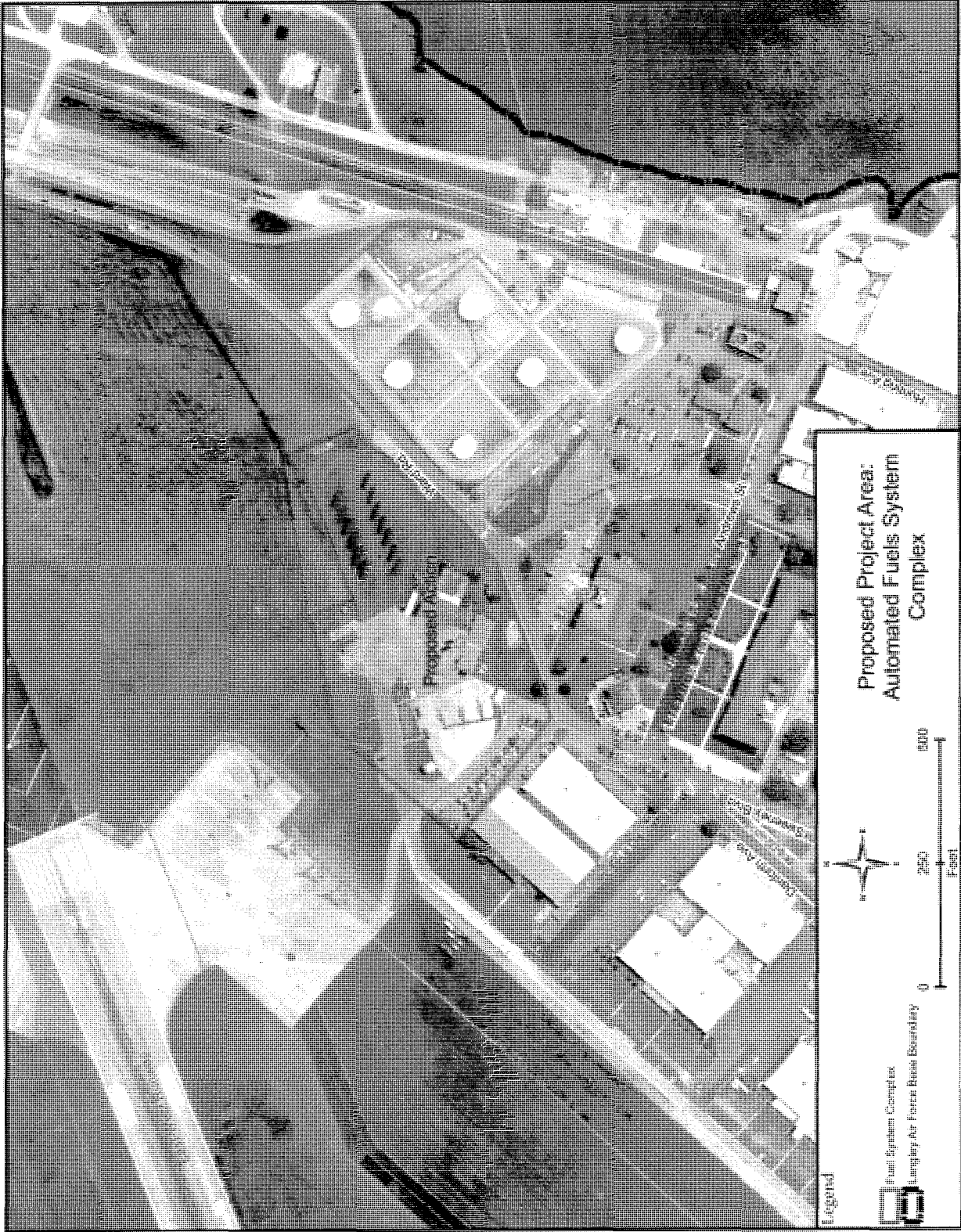
Legend



Combat Skills Training Area
Langley Air Force Base Boundary



Proposed Project Area: Combat Skills Training Area





Newspaper Advertisement

**Notice of Availability
U.S. Air Force Draft Environmental Assessment for
Selected Capital Improvement Plan Projects at Langley Air
Force Base (AFB), Virginia**

Langley AFB has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI)/Finding of No Practicable Alternative (FONPA) analyzing potential impacts of implementing selected Capital Improvement Plan projects at Langley AFB.

The proposed action calls for construction, modification, or demolition of several facilities sited on Langley AFB, in the Landings at Langley Housing Area, and at the Big Bethel Reservoir. In total, approximately 372,000 square feet of new structures would be built and 263,000 square feet would be demolished under the Proposed Action.

The Air Force evaluated two alternatives to the Proposed Action as well as the No-Action Alternative. The two alternatives would site certain proposed facilities at alternative locations and would involve renovation of Hangar 753 rather than replacement. A copy of the Draft EA and FONSI/FONPA will be available August 20, 2008 at the locations listed below.

Poquoson Public Library	500 City Hall Avenue Poquoson, VA
Hampton Public Library	4207 Victoria Blvd. Hampton, VA
York County Public Library	100 Long Green Blvd. Yorktown, VA
Bateman Library	42 Ash Avenue Langley AFB, VA

You may request a copy of the document from Langley AFB Public Affairs at 757-764-5701. Please provide any comments on the Draft EA by September 18, 2008 to the address below.

**1 CES/CEA
37 Sweeney Boulevard
Langley AFB, VA 23665-2107
Attn: Mr. Troy Andersen**



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

Fax (804) 698-4500 TDD (804) 698-4021

www.deq.virginia.gov

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

I. Preston Bryant, Jr.
Secretary of Natural Resources

November 28, 2007

Mr. Troy M Andersen
Environmental Impact Analysis Manager
Department of the Air Force
1 CES/CEV
37 Sweeney Boulevard
Langley AFB, Virginia 23665-2107

RE: Scoping for the preparation of an Environmental Assessment for the Capital Improvements Plan, Department of the Air Force, Headquarters of the 1st Fighter Wing, Langley Air Force Base

Dear Mr. Andersen:

This is in response to your letter received on November 20, 2007 requesting comments or requests for additional information prior to the preparation of a draft Environmental Assessment.

Project Description

According to your letter, Langley Air Force Base (AFB) is in the process of preparing an Environmental Assessment for several projects identified in the base Capital Improvements Plan (CIP). These projects are sited at Langley AFB, Bethel Manor Military Family Housing Area and Big Bethel Reservoir. The eleven projects include the construction, renovation and demolition of facilities to better support the 1st Fighter Wing mission. The Air Force would construct or renovate approximately 391,000 square feet of useable space and develop two outdoor areas. Approximately 260,000 square feet of currently existing structures would be demolished. The proposed projects are tentatively scheduled to occur over the next five years.

Environmental Review

The roles of the Virginia Department of Environmental Quality (DEQ) in relation to the project under consideration are as follows. First, DEQ's Office of Environmental Impact

Review (this Office) will coordinate Virginia's review of any environmental documents prepared pursuant to the National Environmental Policy Act (NEPA) and comment to the Air Force on behalf of the Commonwealth. A similar review process will pertain to the federal consistency determination that must be provided pursuant to the Coastal Zone Management Act (CZMA). If the federal consistency determination is included as part of the EA, there can be a single review.

Federal Consistency under the Coastal Zone Management Act

Pursuant to the Coastal Zone Management Act of 1972, as amended, federal activities affecting Virginia's coastal resources or coastal uses must be consistent with the Virginia Coastal Resources Management Program (VCP) (see section 307(c)(1) of the Act and the Federal Consistency Regulations, 15 CFR Part 930, sub-part C). The Air Force must provide a consistency determination which involves an analysis of the activities in light of the Enforceable Policies of the VCP (first enclosure), and a commitment to comply with the Enforceable Policies. In addition, we invite your attention to the Advisory Policies of the VCP (second enclosure). The federal consistency determination may be provided as part of the NEPA documentation or independently, depending on your agency's preference; we recommend, in the interests of efficiency for all concerned, that it be provided together with the NEPA document and that 60 days be allowed for review in keeping with the Federal Consistency Regulations (see section 930.41(a)). Section 930.39 of the Federal Consistency Regulations and Virginia's Federal Consistency Information Package at <http://www.deq.virginia.gov/eir/federal.html> give content requirements for the consistency determination.

Project Scoping

While this Office does not participate in scoping efforts beyond the advice given herein, other agencies are free to provide scoping comments concerning the preparation of the NEPA documents for the proposed project. Therefore, we are sharing your letter with selected state and local Virginia agencies, which are likely to include the following (note: starred (*) agencies administer one or more of the Enforceable Policies of the Virginia Coastal Resources Management Program; see "Federal Consistency..." below):

- Department of Environmental Quality:
 - Office of Environmental Impact Review
 - Tidewater Regional Office*
 - Air Division*
 - Waste Division
- Department of Game and Inland Fisheries*
- Department of Conservation and Recreation:
 - Division of Soil and Water Conservation*
 - Division of Planning and Recreation Resources
- Marine Resources Commission*


- Department of Agriculture and Consumer Services
- Department of Health
- Department of Transportation
- Department of Mines, Minerals, and Energy
- Department of Forestry
- Department of Historic Resources
- Virginia Institute of Marine Science
- Hampton Roads Planning District Commission
- City of Chesapeake.

In order to ensure an effective coordinated review of the consistency determination and/or any resulting Environmental Assessment, we will require 18 copies of the document when it is published. The document should include a U.S. Geological Survey topographic map as part of its information. We recommend, as well, that project details unfamiliar to people outside of your office be adequately described.

If you have questions about the environmental review process or the federal consistency review process, please feel free to call me at (804) 698-4325 or Anne Pinion of this Office at (804) 698-4488.

I hope this information is helpful to you.

Sincerely,



Ellie L. Irons, Manager
Office of Environmental Impact Review

cc: Michelle Hollis, DEQ-TRO
Kotur S. Narasimhan, DEQ-Air
Paul Kohler, DEQ-Waste
Amy Ewing, DGIF
Robbie Rhur, DCR
Tony Watkinson, MRC
Susan Douglas, VDH
Mary Stanley, VDOT
Matt Heller, DMME
Todd Groh, VDF
Ethel R. Eaton, DHR
Keith Tignor, VDACS
Arthur Collins, Hampton Roads PDC
Jesse T. Wallace, City of Hampton
James McReynolds, York County



COMMONWEALTH of VIRGINIA

L. Preston Bryant, Jr.
Secretary of Natural Resources

DEPARTMENT OF ENVIRONMENTAL QUALITY
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Mailing address: P. O. Box 10009, Richmond, Virginia 23240
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David K. Paylor
Director

(804) 698-4000
1-800-592-5482

Attachment 1

Enforceable Regulatory Programs comprising Virginia's Coastal Resources Management Program (VCP)

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

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

- b. Subaqueous Lands Management - The management program for subaqueous lands establishes conditions for granting or denying permits to use state-owned bottomlands based on considerations of potential effects on marine and fisheries resources, tidal wetlands, adjacent or nearby properties, anticipated public and private benefits, and water quality standards established by the Department of Environmental Quality (DEQ). The program is administered by the Marine Resources Commission; Virginia Code 28.2-1200 to 28.2-1213.
- c. Wetlands Management - The purpose of the wetlands management program is to preserve wetlands, prevent their despoliation, and accommodate economic development in a manner consistent with wetlands preservation.
- (1) The tidal wetlands program is administered by the Marine Resources Commission; Virginia Code 28.2-1301 through 28.2-1320.
 - (2) The Virginia Water Protection Permit program administered by DEQ includes protection of wetlands --both tidal and non-tidal; Virginia Code §62.1-44.15:5 and Water Quality Certification pursuant to Section 401 of the Clean Water Act.

- d. Dunes Management - Dune protection is carried out pursuant to The Coastal Primary Sand Dune Protection Act and is intended to prevent destruction or alteration of primary dunes. This program is administered by the Marine Resources Commission; Virginia Code 28.2-1400 through 28.2-1420.

- e. Non-point Source Pollution Control – (1) Virginia's Erosion and Sediment Control Law requires soil-disturbing projects to be designed to reduce soil erosion and to decrease inputs of chemical nutrients and sediments to the Chesapeake Bay, its tributaries, and other rivers and waters of the Commonwealth. This program is administered by the Department of Conservation and Recreation; Virginia Code 10.1-560 et seq.

(2) Coastal Lands Management is a state-local cooperative program administered by the DCR's Division of Chesapeake Bay Local Assistance and 84 localities in Tidewater (see i) Virginia; Virginia Code §10.1-2100 –10.1-2114 and 9 VAC10-20 et seq.

- f. Point Source Pollution Control - The point source program is administered by the State Water Control Board (DEQ) pursuant to Virginia Code 62.1-44.15. Point source pollution control is accomplished through the implementation of:
 - (1) the National Pollutant Discharge Elimination System (NPDES) permit program established pursuant to Section 402 of the federal Clean Water Act and administered in Virginia as the Virginia Pollutant Discharge Elimination System (VPDES) permit program.
 - (2) The Virginia Water Protection Permit (VWPP) program administered by DEQ; Virginia Code §62.1-44.15:5 and Water Quality Certification pursuant to Section 401 of the Clean Water Act.

- g. Shoreline Sanitation - The purpose of this program is to regulate the installation of septic tanks, set standards concerning soil types suitable for septic tanks, and specify minimum distances that tanks must be placed away from streams, rivers, and other waters of the Commonwealth. This program is administered by the Department of Health (Virginia Code 32.1-164 through 32.1-165).

- h. Air Pollution Control - The program implements the federal Clean Air Act to provide a legally enforceable State Implementation Plan for the attainment and maintenance of the National Ambient Air Quality Standards. This program is administered by the State Air Pollution Control Board (Virginia Code 10.1-1300 through §10.1-1320).

- (i) Coastal Lands Management is a state-local cooperative program administered by the DCR's Division of Chesapeake Bay Local Assistance and 84 localities in Tidewater, Virginia established pursuant to the Chesapeake Bay Preservation Act; Virginia Code §10.1-2100 –10.1-2114 and Chesapeake Bay Preservation Area Designation and Management Regulations; Virginia Administrative Code 9 VAC10-20 et seq.

Attachment 2

Advisory Policies for Geographic Areas of Particular Concern

- a. Coastal Natural Resource Areas - These areas are vital to estuarine and marine ecosystems and/or are of great importance to areas immediately inland of the shoreline. Such areas receive special attention from the Commonwealth because of their conservation, recreational, ecological, and aesthetic values. These areas are worthy of special consideration in any planning or resources management process and include the following resources:
 - a) Wetlands
 - b) Aquatic Spawning, Nursery, and Feeding Grounds
 - c) Coastal Primary Sand Dunes
 - d) Barrier Islands
 - e) Significant Wildlife Habitat Areas
 - f) Public Recreation Areas
 - g) Sand and Gravel Resources
 - h) Underwater Historic Sites.

- b. Coastal Natural Hazard Areas - This policy covers areas vulnerable to continuing and severe erosion and areas susceptible to potential damage from wind, tidal, and storm related events including flooding. New buildings and other structures should be designed and sited to minimize the potential for property damage due to storms or shoreline erosion. The areas of concern are as follows:
 - i) Highly Erodible Areas
 - ii) Coastal High Hazard Areas, including flood plains.

- c. Waterfront Development Areas - These areas are vital to the Commonwealth because of the limited number of areas suitable for waterfront activities. The areas of concern are as follows:
 - i) Commercial Ports
 - ii) Commercial Fishing Piers
 - iii) Community Waterfronts

Although the management of such areas is the responsibility of local government and some regional authorities, designation of these areas as Waterfront Development Areas of Particular Concern (APC) under the VCRMP is encouraged. Designation will allow the use of federal CZMA funds to be used to assist planning for such areas and the implementation of such plans. The VCRMP recognizes two broad classes of priority uses for waterfront development APC:

- i) water access dependent activities:
- ii) activities significantly enhanced by the waterfront location and complementary to other existing and/or planned activities in a given waterfront area.

Advisory Policies for Shorefront Access Planning and Protection

- a. Virginia Public Beaches - Approximately 25 miles of public beaches are located in the cities, counties, and towns of Virginia exclusive of public beaches on state and federal land. These public shoreline areas will be maintained to allow public access to recreational resources.
- b. Virginia Outdoors Plan - Planning for coastal access is provided by the Department of Conservation and Recreation in cooperation with other state and local government agencies. The Virginia Outdoors Plan (VOP), which is published by the Department, identifies recreational facilities in the Commonwealth that provide recreational access. The VOP also serves to identify future needs of the Commonwealth in relation to the provision of recreational opportunities and shoreline access. Prior to initiating any project, consideration should be given to the proximity of the project site to recreational resources identified in the VOP.
- c. Parks, Natural Areas, and Wildlife Management Areas - Parks, Wildlife Management Areas, and Natural Areas are provided for the recreational pleasure of the citizens of the Commonwealth and the nation by local, state, and federal agencies. The recreational values of these areas should be protected and maintained.
- d. Waterfront Recreational Land Acquisition - It is the policy of the Commonwealth to protect areas, properties, lands, or any estate or interest therein, of scenic beauty, recreational utility, historical interest, or unusual features which may be acquired, preserved, and maintained for the citizens of the Commonwealth.
- e. Waterfront Recreational Facilities - This policy applies to the provision of boat ramps, public landings, and bridges which provide water access to the citizens of the Commonwealth. These facilities shall be designed, constructed, and maintained to provide points of water access when and where practicable.
- f. Waterfront Historic Properties - The Commonwealth has a long history of settlement and development, and much of that history has involved both shorelines and near-shore areas. The protection and preservation of historic shorefront properties is primarily the responsibility of the Department of Historic Resources. Buildings, structures, and sites of historical, architectural, and/or archaeological interest are significant resources for the citizens of the Commonwealth. It is the policy of the Commonwealth and the VCRMP to enhance the protection of buildings, structures, and sites of historical, architectural, and archaeological significance from damage or destruction when practicable.

Andersen Troy M Civ 1 CES/CEVQ

From: Narasimhan,Kotur [ksnarasimhan@deq.virginia.gov]
Sent: Friday, November 30, 2007 10:23 AM
To: Andersen Troy M Civ 1 CES/CEVQ
Subject: Environmental Impact Assessment of Capital Improvement Plan (CIP)

Your letter on the above project

November 30 , 2007

Mr. Troy M. Andersen, GS-11
Environmental Impact Analysis Manager
Department of the Air Force
Headquarters 1st Fighter Wing
Langley Air Force Base
37 Sweeney Boulevard
Langley AFB VA 23665 – 2107

Dear Mr. Anderson:

Re: Projects Identified in the Base Capital Improvement Plan (CIP)

Thank you for providing DEQ-AIR an opportunity to comment on the proposed environmental Impact Review of the above project.

While considering the environmental impact of the project, the following Virginia Air regulations may be kept in view:

- 1. 9 VAC 5-40-5600 et seq. – Open Burning**
- 2. 9 VAC 5-50-60 et seq. Fugitive Dust Emissions**

In addition it will be necessary to restrict the emissions of volatile organic compounds (VOC) and oxides of nitrogen (NO_x) during construction, renovation and demolition activities as the projects fall under ozone maintenance area.

Should you have any questions please do not hesitate to contact me.

Sincerely,

Kotur S. Narasimhan
Environmental Engineer Senior
Air Data Analysis



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

Fax (804) 698-4500 TDD (804) 698-4021

www.deq.virginia.gov

December 4, 2007

L. Preston Bryant, Jr.
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

Mr. Troy M. Anderson
1 CES/CEV
37 Sweeney Boulevard
Langley AFB, VA 23665-2107

Dear Mr. Anderson

The Department of Environmental Quality has received your letter regarding the preparation of an Environmental Assessment (EA) to assess the potential impacts of several projects identified in the base Capital Improvements Plan. These projects are sited at Langley AFB, Bethel Manor Military Family Housing Area and Big Bethel Reservoir. The DEQ Waste Division staff has reviewed your letter and has the following comments concerning the waste issues associated with this project:

When the environmental impact report is written or compiled, it should include an environmental investigation on and near the property to identify any solid or hazardous waste sites or issues. This should include a search of waste-related databases.

The report author should analyze the data in the web-based Waste Division databases to determine if the project would affect or be affected by any sites identified in the databases. These are the Solid Waste Database, CERCLA Facilities, Voluntary Remediation Program, and Hazardous Waste Facilities databases.

The Solid Waste Database

A list of active solid waste facilities in Virginia.

CERCLA Facilities Database

A list of active and archived CERCLA (EPA Superfund Program) sites.

Hazardous Waste Facilities Database

A list of hazardous waste generators, hazardous waste transporters, and hazardous waste storage and disposal facilities. Data for the CERCLA Facilities and Hazardous Waste Facilities databases are periodically downloaded by the Waste Division from U.S. EPA's website.

Accessing the DEQ Databases:

The report author should access this information on the DEQ website at <http://www.deq.state.va.us/waste/waste.html> . Scroll down to the databases which are listed under Real Estate Search Information heading.

The ***solid waste information*** can be accessed by clicking on the Solid Waste Database tab and opening the file. Type the county or city name and the word County or City, and click the Preview tab. All active solid waste facilities in that locality will be listed.

The ***Superfund information*** will be listed by clicking on the Search EPA's CERCLIS database tab and opening the file. Click on the locality box, click on sort, then click on Datasheet View. Scroll to the locality of interest.

The ***hazardous waste*** information can be accessed by clicking on the Hazardous Waste Facility tab. Go to the Geography Search section and fill in the name of the city or county and VA in the state block, and hit enter. The hazardous waste facilities in the locality will be listed.

The ***Voluntary Remediation Program*** GPS database can be accessed by clicking on "Voluntary Remediation," then "What's in my backyard" in the center shaded area, and then under "Mapping Applications," click on "What's in my backyard" again.

This database search will include most waste-related site information for each locality. In many cases, especially when the project is located in an urban area, the database output for that locality will be extensive.

This database search will include most waste-related site information for each locality. In many cases, especially when the project is located in an urban area, the database output for that locality will be extensive.

Any soil that is suspected of contamination or wastes that are generated must be tested and disposed of in accordance with applicable Federal, State, and local laws and regulations. Some of the applicable state laws and regulations are: Virginia Waste Management Act, Code of Virginia Section 10.1-1400 et seq.; Virginia Hazardous Waste Management Regulations (VHWMR) (9VAC 20-60); Virginia Solid Waste Management Regulations (VSWMR) (9VAC 20-80); and Virginia Regulations for the Transportation of Hazardous Materials (9VAC 20-110). Some of the applicable Federal laws and regulations are: the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Section 6901 et seq., the applicable regulations contained in Title 40 of the Code of Federal Regulations; and the U.S. Department of Transportation Rules for Transportation of Hazardous materials, 49 CFR Parts 107.

Also, if an older structure will be demolished as part of this project, the structure should be checked for asbestos-containing materials (ACM) and lead-based paint (LBP). If they are found, in addition to the federal waste-related regulations mentioned above, State regulations 9VAC 20-80-640 for ACM and 9VAC 20-60-261 for LBP must be followed.

Finally, DEQ encourages all construction projects and facilities to implement pollution prevention principles, including the reduction, reuse, and recycling of all solid wastes generated. All hazardous wastes should be minimized.

If you have any questions or need further information, please contact Paul Kohler at (804) 698-4208.

Sincerely,



Paul W. Kohler
Environmental Specialist II

CC: Cynthia Houchens

Andersen Troy M Civ 1 CES/CEVQ

From: GAllup, Elizabeth (MRC) [Elizabeth.GAllup@mrc.virginia.gov]
Sent: Wednesday, December 12, 2007 3:27 PM
To: Andersen Troy M Civ 1 CES/CEVQ
Subject: EA comments

Please be advised that the Marine Resources Commission, pursuant to Section 28.2-1204 of the Code of Virginia, has jurisdiction over any encroachments in, on, or over any State-owned rivers, streams, or creeks in the Commonwealth. Accordingly, if any portion of the subject projects involves any encroachments channelward of ordinary high water along natural rivers and streams, a permit may be required from our agency.

Elizabeth Gallup

Environmental Engineer

Virginia Marine Resources Commission

2600 Washington Ave.

Newport News, VA 23607

(757) 247-8027

elizabeth.gallup@mrc.virginia.gov

Andersen Troy M Civ 1 CES/CEVQ

From: Amy.Ewing@dgif.virginia.gov
Sent: Friday, December 14, 2007 2:45 PM
To: Andersen Troy M Civ 1 CES/CEVQ
Subject: ESSLog# 24603_EIS Scoping_Langley CIP

Mr. Anderson,

We received a request from you requesting comments regarding the eleven projects proposed in the base Capital Improvements Plan. These are proposed for Langley AFB, Bethel Manor Military Family Housing Area, and Big Bethel Reservoir. We have reviewed these project sites for wildlife occurrences and offer the following comments and recommendations.

According to our records, state Endangered canebrake rattlesnake has been documented in the vicinity of all the project sites. Canebrakes occupy hardwood and mixed hardwood-pine forests, cane fields, and the ridges and glades of swampy areas. The preferred habitat is mature hardwood forests containing numerous logs and a layer of leaves and humus. They overwinter in the base of hollow trees or in stumps. Unique habitat associations include downed logs and bottomland hardwoods. They also occupy natural and anthropogenic open habitats adjacent to forests (e.g. clearcuts, agricultural fields) during certain times of year. We recommend that the EA developed address whether habitat for this species is available at the project site and if so, how the Dept. of the Air Force plans to avoid, minimize, and/or mitigate impacts upon this listed species and/or its habitat.

Our typical recommendations regarding the protection of this species range from educating contractors (see below) to altering the project design to avoid or minimize impacts to compensatory mitigation for habitat loss or impacts upon individuals of the species. We have included below some of our typical recommendations, but they may change depending on the scope of impacts and project location.

We recommend that, prior to the start of construction, all contractors are trained in the identification, basic natural history, and legal status of canebrake rattlesnakes. This could be accomplished via an appropriate information sheet distributed to those working on the project (see attached). Information also can be found on our website, <http://www.dgif.virginia.gov/wildlife/species/display.asp?id=030013>. If a canebrake rattlesnake is observed at any time during the development or construction of this project, the applicant should contact VDGIF herpetologist John Kleopfer (804-829-6580) or our Richmond office (804-367-8999) so that we may safely capture and relocate the animal to a suitable site.

Mitigation preferences (in order of preference):

1. Preservation of suitable habitat adjacent to already preserved, occupied habitat. Preservation should be in perpetuity through a third party conservation easement/agreement. Such agreement should preserve the land in its current state or an enhanced state. No building/timbering/trail development should be allowed in such areas, unless first reviewed by our agency to address possible impacts upon canebrake rattlesnakes or the overall health of the preservation area. Future vegetation management of the site should be to the benefit of canebrake rattlesnakes.
2. Purchase of credits at a wetland mitigation bank that falls within the natural range of canebrake rattlesnakes and is known to include suitable habitat for the species. This should include the purchase of a combination of upland and wetland credits, if available.
3. We recommend in lieu payment into the Aquatic Resources Trust Fund.

State Threatened bald eagle has been documented in the vicinity of the projects proposed near Big Bethel Reservoir. We recommend the EA address concerns related to the protection of this species. This may include ground truthing of nests located within the project

vicinity and a determination of ways impacts upon this species can be avoided, minimized or mitigated. We have attached the current bald eagle guidelines for Virginia. Since the federal de-listing of this species, our agency has been in coordination with the USFWS to revise these guidelines, but until that process is complete, the attached document should be consulted.

We recommend conducting any in-stream activities during low or no-flow conditions, using non-erodible cofferdams to isolate the construction area, blocking no more than 50% of the streamflow at any given time, stockpiling excavated material in a manner that prevents reentry into the stream, restoring original streambed and streambank contours, revegetating barren areas with native vegetation, and implementing strict erosion and sediment control measures. Due to future maintenance costs associated with culverts, and the loss of riparian and aquatic habitat, we prefer stream crossings to be constructed via clear-span bridges. However, if this is not possible, we recommend countersinking any culverts below the streambed at least 6 inches, or the use of bottomless culverts, to allow passage of aquatic organisms. We also recommend the installation of floodplain culverts to carry bankfull discharges.

To minimize overall impacts to wildlife and our natural resources, we offer the following comments about development activities: We recommend that the applicant avoid and minimize impacts to undisturbed forest, wetlands, and streams to the fullest extent practicable. Avoidance and minimization of impact may include relocating stream channels as opposed to filling or channelizing as well as using, and incorporating into the development plan, a natural stream channel design and wooded buffers. We recommend maintaining undisturbed wooded buffers of at least 100 feet in width around all on-site wetlands and on both sides of all perennial and intermittent streams. We recommend maintaining wooded lots to the fullest extent possible. We generally do not support proposals to mitigate wetland impacts through the construction of stormwater management ponds, nor do we support the creation of in-stream stormwater management ponds. We are willing to assist the applicant in developing a plan that includes open-space, wildlife habitat, and natural stream channels which retain their wooded buffers.

We recommend that the stormwater controls for this project be designed to replicate and maintain the hydrographic condition of the site prior to the change in landscape. This should include, but not be limited to, utilizing bioretention areas, and minimizing the use of curb and gutter in favor of grassed swales. Bioretention areas (also called rain gardens) and grass swales are components of Low Impact Development (LID). They are designed to capture stormwater runoff as close to the source as possible and allow it to slowly infiltrate into the surrounding soil. They benefit natural resources by filtering pollutants and decreasing downstream runoff volumes.

Thank you.

Amy M. Ewing
Environmental Services Biologist
Virginia Dept. of Game and Inland Fisheries 4010 West Broad Street
Richmond, VA 23230
804-367-2211
amy.ewing@dgif.virginia.gov



BALD EAGLE PROTECTION GUIDELINES FOR VIRGINIA



Prepared by

Virginia Field Office
U.S. Fish and Wildlife Service
6669 Short Lane
Gloucester, VA 23061
804-693-6694

Virginia Department of Game and Inland Fisheries
P.O. Box 11104
Richmond, VA 23230
804-367-1000

Last Updated: 5/15/2000

INTRODUCTION

The Virginia Department of Game and Inland Fisheries (VDGIF) and the U.S. Fish and Wildlife Service (USFWS) are responsible for the conservation and management of the bald eagle (*Haliaeetus leucocephalus*) throughout Virginia. To provide consistent management of the bald eagle in Virginia, the VDGIF and USFWS have developed the following general guidelines. These guidelines indicate the zones around eagle nests, night roosts, and shoreline use areas in which the provisions of various laws and their implementing regulations may apply. All proposed activities that may affect or result in the take of a bald eagle in Virginia will be evaluated by the VDGIF and USFWS on a case-by-case basis, using site-specific information. The recommendations given in these guidelines may be modified as necessary in individual cases, based on a number of factors such as topography, existing forest canopy, and observed reactions of eagles to disturbance at a particular site.

In Virginia, adult bald eagles typically remain on or near their breeding territories year round. Nest building and repair begins as early as November and peaks in mid-winter, but may occur during any month of the year. Courtship flights and related mating behavior are most frequently observed during January and February, and eggs are usually laid between mid-January and late March. Most eggs hatch between early March and early May and eaglets stay in the nest for 11 to 12 weeks after hatching.

Most young are capable of sustained flight by mid July, but remain dependent on the parents and stay in the general vicinity of the nest for several more weeks. Eagles are most sensitive to disturbance from mid-December to early July, the period when they are building their nests, incubating and raising young, and while the young are learning to fly.

Virginia also has several areas along the major tidal river systems where non-breeding eagles are known to concentrate for roosting and feeding. Some of these areas are used by eagles in the summer and some are used in the winter. These eagle concentration areas are extremely important, because they are used by eagles from throughout the East Coast, as well as resident eagles.

FEDERAL LAWS PROTECTING THE BALD EAGLE

Endangered Species Act (ESA) (87 Stat. 884; 16 U.S.C. 1531 et seq.; 50 CFR Part 17) – Section 7(a)(2) requires federal agencies to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any federally listed threatened or endangered species. If a federal agency determines that its action “may affect” a listed threatened or endangered species, the agency is required to consult with the USFWS regarding the degree of impact and measures available to avoid or minimize the adverse effects.

Section 9 of the ESA makes it illegal for any person subject to the jurisdiction of the United States to “take” any federally listed endangered or threatened species of fish or wildlife without a special exemption. “Person” is defined under the ESA to include individuals, corporations, partnerships, trusts, associations, or any other private entity; local, state, and federal agencies; or any other entity subject to the jurisdiction of the United States. Under the ESA, “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt to engage in any such conduct. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering.

Section 10(a)(1)(B) of the ESA establishes an incidental take permit provision that authorizes the USFWS, under some circumstances, to permit the taking of federally listed wildlife by private individuals if such taking is “incidental to, and not the purpose of carrying out otherwise lawful activities.”

Bald and Golden Eagle Protection Act (54 Stat. 250, as amended; 16 U.S.C. 668; 50 CFR Part 22) – This 1940 Act prohibits the taking of bald and golden eagles or their nests and eggs. Under this Act, taking is defined as “to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.”

Migratory Bird Treaty Act (MBTA) (40 Stat. 755, as amended; 16 U.S.C. 701 et seq.; 50 CFR Parts 10, 20, 21) – This Act, passed into law in 1918, was established to protect migratory birds and prohibits the taking of any migratory bird, nest, egg, or part, except as permitted by the USFWS. The prohibitions under this law and its implementing regulations generally include activities or attempted activities that pursue, hunt, shoot, wound, kill, trap, capture, possess, or collect any migratory bird species and their nests and eggs.

VIRGINIA LAWS AND REGULATIONS PROTECTING THE BALD EAGLE

Virginia's Endangered Species Act (§29.1-563 - §29.1-570) – This law provides that VDGIF is the state regulatory authority over federally or state listed endangered or threatened fish and wildlife in the Commonwealth, defining *fish or wildlife* as “. . . any member of the animal kingdom, vertebrate or invertebrate, except for the class *Insecta*, and includes any part, products, egg, or the dead body or parts thereof.” It prohibits the taking, transportation, processing, sale, or offer for sale within the Commonwealth of any fish or wildlife listed as a federally endangered or threatened species, except as permitted by the Board of Game and Inland Fisheries for zoological, educational, scientific, or captive propagation for preservation purposes.

The Act further authorizes the Board to adopt the federal list of endangered and threatened species, to declare by regulation that species not listed by the federal government are endangered or threatened in Virginia, and to prohibit by regulation the taking, transportation, processing, sale, or offer for sale of those species. Implementing regulations passed pursuant to this authority (4 VAC 15-20-130 through 140) further define “take” and other terms similarly to the federal Endangered Species Act.

Federal Endangered Species Act Cooperative Agreement – Federally listed endangered or threatened species also are placed under VDGIF jurisdiction via a cooperative agreement signed in 1976 with the USFWS pursuant to Section 6 of the ESA. This Cooperative Agreement recognizes VDGIF as the Virginia agency with regulatory and management authority over federally listed or threatened animals excluding insects, and provides for federal/state cooperation regarding the protection and management of those species.

State Protection of Wildlife Species – In addition to these endangered species laws, regulations, and cooperative agreement, the Code of Virginia (§29.1-521) and VDGIF regulations (4 VAC 15-30-10) provide legal protection to all native birds and to their nests, eggs, and young.

GENERAL CONSERVATION RECOMMENDATIONS

The following recommendations are *generally* appropriate to avoid take of bald eagles, and thus avoid the need for any state or federal permits or Section 7 consultation (if a federal action is involved).

Activities and projects that do not conform with these recommendations will likely require some form of approval or permit from the VDGIF and/or USFWS, and should always be coordinated with these agencies to ensure compliance with state and federal laws.

Guidelines for Eagle Nests

Primary Management Zone – This is defined as the area 750 feet (229 meters) in radius around an occupied nest. The precise size of this zone should depend on site conditions and the individual eagles' tolerance for human activity. The following activities within this zone should not occur at any time:

- land clearing, clear cutting, mining, and other habitat modification activities;
- development of residential, recreational, agricultural, commercial, or industrial structures, power lines, roads, trails, or any other construction activity;
- use of chemicals toxic to wildlife, such as pesticides and herbicides.

The following activities should not occur during the breeding/nesting season (December 15 - July 15), unless the nest is determined to be unoccupied in a particular year (VDGIF usually has this information after March 31):

- maintenance of existing buildings and roads;
- use of motorized vehicles and heavy equipment;
- aircraft flyovers within 1000 vertical feet of the ground;
- human entry and activities, including recreation, such as hiking, camping, picnicking, hunting, fishing, boating, jet skiing, etc.;
- loud noise generating activities, including blasting.

Limited selective timber harvest to within 300 feet (91 meters) of the nest tree, after consultation with the VDGIF/USFWS biologists, may be possible *outside* the breeding/nesting season, if a forest canopy is maintained.

Secondary Management Zone – This is defined as the area from 750 feet (229 meters) to 1,320 feet (400 meters) in radius around an occupied nest. The precise size of this zone should depend on site conditions and the individual eagles' tolerance for human activity. Restrictions in this zone are necessary to minimize disturbance that could compromise eagle use of the nest. Most activities within this zone should be restricted during the breeding/nesting season, and allowable activities should be determined

by VDGIF/USFWS on a case-by-case basis. Development and vegetation clearing should be minimized and line-of-sight vegetation buffers to the nest should be maintained. The following activities within this zone should generally not occur at any time:

- development of multi-story buildings; high density housing (construction of single story, low density residential houses may be acceptable); large commercial, industrial, or agricultural facilities; high traffic roads; and facilities that would generate loud noise;
- use of chemicals toxic to wildlife, such as pesticides and herbicides.

The following activities should not occur during the breeding/nesting season (December 15 - July 15), unless the nest is determined to be unoccupied in a particular year (VDGIF usually has this information after March 31):

- aircraft flyovers within 1000 vertical feet of the ground;
- construction activities;
- recreational activities that generate loud noise, such as motorized boats, jet skis, etc.;
- other loud noise generating activities, including blasting.

Outside of the breeding/nesting season, most other activities can be conducted within the secondary management zone as determined on a case-by-case basis by VDGIF/USFWS.

Nest/Nest Tree Removal – The eagle nest and the tree/structure in which it is located cannot be removed as long as any portion of the nest remains in the tree/structure.

Abandoned Nest – For three consecutive nesting seasons after the last season in which the nest was occupied (and any portion of the nest is present), the primary and secondary management zone guidelines described above should be followed. In April of the third year after the nest was last occupied, a determination of nest abandonment should be made by VDGIF/USFWS before restricted activities within these zones are undertaken.

Guidelines for Eagle Concentration Areas

Management zones, for communal night roosting sites and documented high use shoreline foraging areas, should generally be applied the same as for nests. Seasonal occupation varies depending on the specific roost or shoreline area, but is generally defined as summer (May 1 - September 30) and winter (November 1 - February 28). Appropriate human use and building/land disturbance restrictions should be determined on a case-by-case basis by VDGIF/USFWS.

DEFINITIONS

Active nest – A nest that is seen to have an adult eagle in incubating or brooding position, or that contains eggs or young.

Breeding/nesting season – December 15 through July 15 in Virginia. This period includes courtship, nest building/repairs, breeding, incubation, raising young, late nesting, and fledgling use of the nest.

Fledgling – Young bird capable of flight.

Occupied nest – A nest where there is evidence that a pair of adult eagles was present during the breeding season, even if there is no evidence that eggs were laid.

Productive/successful nest – An eagle nest that fledges young.

REFERENCES

Cline, K. 1985. Bald eagles in the Chesapeake: A management guide for landowners. National Wildlife Federation, Washington, D.C.

Therres, G. D., M. A. Byrd, and D. S. Bradshaw. 1993. Effects of development on nesting bald eagles: Case studies from Chesapeake Bay. Transactions of the 58th North American Wildlife and Natural Resources Conference. Pg. 62-69.

U.S. Fish and Wildlife Service. 1987. Habitat management guidelines for the bald eagle in the southeast region. Third revision. Atlanta, GA.

Watts, B.D., K.W. Cline, and M.A. Byrd. 1994. The bald eagle in Virginia: An information booklet for land planners. Center for Conservation Biology, College of William and Mary, Williamsburg, VA.



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 1105, Richmond, Virginia 23218
Fax (804) 698-4500 TDD (804) 698-4021
www.deq.virginia.gov

L. Preston Bryant, Jr.
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

December 8, 2007

Mr. Troy M. Anderson
Environmental Impact Analysis Manager
1 CES/CEV
37 Sweeney Boulevard
Langley AFB VA 23665-2107

**RE: Virginia Department of Environmental Quality Water Protection Program
Comments on Eleven Capitol Improvement Projects at Langley Air Force Base.**

Dear Mr. Anderson:

We have reviewed the information you provided concerning the eleven Capitol Improvement Projects (CIPs) at Langley Air Force Base. From the maps included in your submittal letter, we are unable to determine if any streams or wetlands would be impacted by the proposed CIPs and therefore cannot provide specific comment.

Should wetlands be present within the CIP footprints, information on the location, extent and type of these wetlands must be reviewed before a determination is made concerning what type of Section 404 permit from the Corps of Engineers and a Virginia Water Protection Permit from the Department of Environmental Quality may be required for the project to proceed.

Should you have any questions, please feel free to contact me at cpegghart@deq.virginia.gov or 804-698-4377.

Sincerely,

A handwritten signature in black ink, appearing to read 'Chris Egghart'.

Chris Egghart
Office of Wetlands and Water Protection



COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, VIRGINIA 23219 2000

David S. Ekern, P.E.
COMMISSIONER

December 11, 2007

Mr. Troy M. Andersen, GS-11
1 CES/CEV
37 Sweeney Boulevard
Langley AFB VA 23665-2107

Re: Langley Air Force Base Capital Improvement Plan

Dear Mr. Andersen:

The Virginia Department of Transportation has considered your request for comments or additional information to be included in the forthcoming Environmental Assessment (EA). Traffic and multi-modal transportation impacts within the vicinity of the project area as they relate to significant construction activities should be included in the EA. What are the expected changes in vehicle trips, traffic operations and Level of Service (LOS) conditions associated with the CIP? The EA as noted in your memo should evaluate impacts that are reasonably likely to occur as a result of these eleven projects.

This may be an excellent opportunity to implement or enhance pedestrian trails, sidewalks or bicycle accommodations in conjunction with the development of the outdoor areas mentioned in the CIP. If detours and road closures are expected to impact areas outside of the LAFB boundary, surrounding municipalities should be notified allowing an opportunity to coordinate or adjust traffic operations.

Thank you for the opportunity to comment on this project.

Sincerely,

A handwritten signature in cursive script that reads "Mary T. Stanley".

Mary T. Stanley
Environmental Engineer
Virginia Department of Transportation
(804) 786-0868



COMMONWEALTH of VIRGINIA

Department of Historic Resources

2801 Kensington Avenue, Richmond, Virginia 23221

L. Preston Bryant, Jr.
Secretary of Natural Resources

Kathleen S. Kilpatrick
Director

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14 December 2007

Mr. Troy M. Andersen
Environmental Impact Analysis Manager
1 CES/CEV
37 Sweeney Boulevard
Langley Air Force Base, Virginia 23665-2107

Re: Preparation of an Environmental Assessment (EA) for Several Projects in Base Capital Improvements Plan (CIP), Langley Air Force Base
Hampton, Virginia
DHR File No. 2007-1647

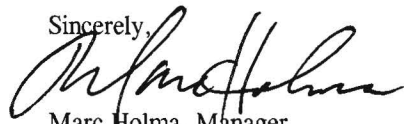
Dear Mr. Andersen:

We have received your request for our review and comment regarding the preparation of an Environmental Assessment (EA) for several projects identified in the base Capital Improvements Plan (CIP). The proposed projects are sited at Langley Air Force Base, Bethel Manor Military Housing Area, and Big Bethel Reservoir. The eleven projects identified include facility construction, renovation, and demolition of facilities to better support the 1st Fighter Wing mission. The eleven projects will occur over the next five years and have a budget of \$99.4 million. The end result will be to renovate or construct approximately 391,000 sq. ft. of useable space and the demolition existing buildings and structures totaling approximately 260,000 sq. ft.

Some of the proposed eleven undertakings have the potential to have a substantial adversely effect on historic properties at Langley AFB. The maps for the South Base Area and the Automated Fuel System Complex Area overlap most of the Langley Field Historic District, a property eligible for listing to the National Register of Historic Places. Any undertakings occurring within the historic district boundary or that has a contributing resource as its subject must be coordinated with the Department of Historic Resources (DHR) early in the planning stage in order to avoid or minimize any potential adverse effects to historic properties. Please continue to consult with DHR on a project by project basis.

If you have any questions about our comments, please call me at (804) 367-2323, Ext. 114.

Sincerely,



Marc Holma, Manager
Office of Review and Compliance

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L. Preston Bryant, Jr.
Secretary of Natural Resources

September 25, 2008

Troy M. Anderson
1 CES/CEAO
37 Sweeney Boulevard
Langley AFB, Virginia 23666-2107

RE: Environmental Assessment and Federal Consistency Determination for Selected Capital Improvement Plan Project at Langley Air Force Base in Hampton, Virginia (DEQ 08-175F)

Dear Mr. Anderson:

The Commonwealth of Virginia has completed its review of the above-referenced Draft Environmental Assessment (EA), which includes a federal consistency determination. The Department of Environmental Quality (DEQ) is responsible for coordinating Virginia's review of federal environmental documents prepared pursuant to the National Environmental Policy Act and responding to appropriate federal officials on behalf of the Commonwealth. DEQ is also responsible for coordinating state reviews of federal consistency determinations submitted under the Coastal Zone Management Act. The following agencies, locality and planning district commission joined in this review:

Department of Environmental Quality
Department of Conservation and Recreation
Department of Agriculture and Consumer Services
Department of Game and Inland Fisheries
Department of Health
Department of Transportation
Marine Resources Commission
Department of Historic Resources
Hampton Roads Planning District Commission
York County

The City of Hampton and Department of Forestry also were invited to comment.

A public notice for this proposed action was published on the DEQ website from August 22, 2008, to September 21, 2008. No comments were received in response to the public notice.

PROJECT DESCRIPTION

Langley Air Force Base (AFB) in Hampton proposes to construct, renovate or demolish several facilities located on the base and the Landings at Langley Housing Area and the Big Bethel Reservoir. The EA (pages 1-1 and 2-1) states that the proposed projects may not occur for several years, but all ten projects are expected to have been initiated, if not completed, prior to 2013. The document (page 1-1) also states that all projects should be examined prior to execution to ensure that the scope and environmental conditions have not changed to a degree that they would differ substantially from those sites described in the EA.

Buildings to be constructed would include a new fuels system maintenance hangar, a replacement for Hanger 753, an airman family readiness center, a replacement security forces operations center, two additional dorms, a fuels automated system complex, an expansion and storage shed for the low-observable composite repair facility, a replacement child development center, a conference center/bait shop, an recreational vehicle parking area and a ropes course. Buildings to be added to or renovated include the Langley Chapel. More than 371,000 square feet would be constructed in total. Langley Air Force Base finds the proposed projects consistent to the maximum extent practicable with the enforceable policies of the Virginia Coastal Resources Management Program.

FEDERAL CONSISTENCY UNDER THE COASTAL ZONE MANAGEMENT ACT

Pursuant to the Coastal Zone Management Act of 1972, as amended, federal activities located inside or outside of Virginia's designated coastal management area that can have reasonably foreseeable effects on coastal resources or coastal uses must, to the maximum extent practicable, be implemented in a manner consistent with the Virginia Coastal Resources Management Program (VCP) (also called the Virginia Coastal Zone Management Program). The VCP consists of a network of programs administered by several agencies. DEQ coordinates the review of federal consistency determinations with agencies administering the Enforceable and Advisory Policies of the VCP.

The draft EA includes a federal consistency determination and accompanying analysis of the enforceable policies of the VCP. According to information in the consistency determination, the proposed activity would have no effect on the following enforceable policies: fisheries management, subaqueous lands management, dunes management and shoreline sanitation. However, based on a review of the EA, it is possible that the subaqueous lands management policy may be impacted. Based on the information provided in the EA and federal consistency determination, and the comments of reviewing agencies, we concur that the proposed activity is consistent with the VCP, provided that Langley AFB complies with all requirements of applicable permits and other authorizations that may be required. We also encourage Langley AFB to consider the Advisory Policies of the VCP as well (attachment 2).

ENVIRONMENTAL IMPACTS AND MITIGATION

1. Subaqueous Lands Management. The EA (page B-2) states that no aspects of the proposed action or alternatives occur in state waters. There will be no dredge and fill operations. The proposed action or alternatives would not involve the use of state submerged lands.

However, the EA (table 2.1-1, page 2-6) also indicates that the construction of a conference center and bait shop at the Big Bethel Reservoir Water Treatment Plant would include a fishing pier and boat ramp, but the water body in which the pier and ramp would be built is not identified.

1(a) Agency Jurisdiction. The Virginia Marine Resources Commission (VMRC) regulates encroachments in, on or over state-owned subaqueous beds as well as tidal wetlands pursuant to Virginia Code § 28.2-1200 through 1400.

The VMRC serves as the clearinghouse for the Joint Permit Application (JPA) used by the:

- U.S. Army Corps of Engineers (Corps) for issuing permits pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act;
- DEQ for issuance of a Virginia Water Protection permit;
- VMRC for encroachments on or over state-owned subaqueous beds as well as tidal wetlands; and
- local wetlands board for impacts to wetlands.

The VMRC will distribute the completed JPA to the appropriate agencies. Each agency will conduct its review and respond.

1(b) Agency Comments. VMRC has jurisdiction over any encroachments in, on or over any state-owned rivers, streams or creeks in the Commonwealth. According to the VMRC, if any portion of the proposed project involves encroachments channelward of ordinary high water along natural rivers and streams, a permit may be required from the VMRC prior to the commencement of construction.

1(c) Recommendations. Contact the VMRC for confirmation concerning its jurisdiction over the water body or water bodies in which the pier and boat ramp will be constructed.

2. Wetlands Management. According to the EA (2-12), any action that may encroach upon regulated waters or wetlands will require a joint application with the Corps, DEQ, the City of Hampton and VMRC. Langley AFB and its contractor shall submit a permit for construction in water in the Commonwealth and in wetlands to satisfy all federal, local and state requirements. The relocation of any existing stormwater infrastructure would be addressed through the Virginia Water Protection Permit program and the *Virginia Erosion and Sediment Control Handbook*. The EA (page 3-18) also states that a

wetland delineation of the base was conducted in late 2000 and verified by the Corps in January 2004. The study revealed that there are wetland systems on Langley AFB. There are also wetlands around Big Bethel Reservoir.

The EA (table 2.1-1, page 2-6) also indicates that the construction of a conference center and bait shop at the Big Bethel Reservoir Water Treatment Plant would include a fishing pier and boat ramp, but the water body in which the pier and ramp would be built is not identified.

2(a) Agency Jurisdiction. The State Water Control Board promulgates Virginia's water regulations, covering a variety of permits to include Virginia Pollutant Discharge Elimination System Permit, Virginia Pollution Abatement Permit, Surface and Groundwater Withdrawal Permit, and the Virginia Water Protection (VWP) Permit. The VWP Permit is a state permit which governs wetlands, surface water and surface water withdrawals and impoundments. It also serves as § 401 determination of the federal Clean Water Act § 404 permits for dredge and fill activities in waters of the United States. The VWP program is under the Office of Wetlands and Water Protection and Compliance, within the DEQ Division of Water Quality Programs. In addition to central office staff members who review and issue VWP permits for transportation and water withdrawal projects, the seven DEQ regional offices perform permit application reviews and issue permits for the covered activities.

2(b) Agency Comments. According to the DEQ Tidewater Regional Office, the applicant should note that the Virginia Code Section (62.1-44.15.5) referenced on Page B-3 of the EA does not exist. While §62.1-44.15:5 (note the colon) previously constituted the appropriate general reference for the VWP program requirements, this section was repealed by the 2007 General Assembly and replaced by Section 62.1-44.15 20, *et seq.* The applicant should become familiar with these revised statutes and correct references accordingly.

Furthermore, a description of proposed activities in table 2.1-1 indicates that the construction of a conference center and bait shop will include a fishing pier and boat ramp. Given that the State Water Control Law, defines state waters as "all water, on the surface and under the ground, wholly or partially within or bordering the Commonwealth or within its jurisdiction, including wetlands," it is unclear how the consistency statement regarding no activities (including dredge and fill operations) in state waters on page B-2 was developed. Construction of a boat ramp without dredge or fill operations in state waters would appear to present somewhat of a challenge.

2(c) Recommendations. In general, DEQ recommends that stream and wetland impacts be avoided to the maximum extent practicable. To minimize unavoidable impacts to wetlands and waterways, DEQ recommends the following practices:

- Operate machinery and construction vehicles outside of stream-beds and wetlands; use synthetic mats when in-stream work is unavoidable.

- Preserve the top 12 inches of material removed from wetlands for use as wetland seed and root-stock in the excavated area.
- Erosion and sedimentation controls should be designed in accordance with the most current edition of the Virginia Erosion and Sediment Control Handbook. These controls should be in place prior to clearing and grading, and maintained in good working order to minimize impacts to state waters. The controls should remain in place until the area is stabilized.
- Place heavy equipment, located in temporarily impacted wetland areas, on mats, geotextile fabric, or use other suitable measures to minimize soil disturbance, to the maximum extent practicable.
- Restore all temporarily disturbed wetland areas to pre-construction conditions and plant or seed with appropriate wetlands vegetation in accordance with the cover type (emergent, scrub-shrub or forested). The applicant should take all appropriate measures to promote revegetation of these areas. Stabilization and restoration efforts should occur immediately after the temporary disturbance of each wetland area instead of waiting until the entire project has been completed.
- Place all materials which are temporarily stockpiled in wetlands, designated for use for the immediate stabilization of wetlands, on mats or geotextile fabric in order to prevent entry in state waters. These materials should be managed in a manner that prevents leachates from entering state waters and must be entirely removed within thirty days following completion of that construction activity. The disturbed areas should be returned to their original contours, stabilized within thirty days following removal of the stockpile, and restored to the original vegetated state.
- All non-impacted surface waters within the project or right-of-way limits that are within 50 feet of any clearing, grading or filling activities should be clearly flagged or marked for the life of the construction activity within that area. The project proponent should notify all contractors that these marked areas are surface waters where no activities are to occur.
- Measures should be employed to prevent spills of fuels or lubricants into state waters.

2(d) Finding. Provided Langley AFB obtains and complies with all necessary authorizations from the VWP program prior to initiating impacts, this activity will be in compliance with this program's regulatory requirements.

3. Nonpoint Source Pollution Control. The EA (page 2-11) states that construction of each of the component projects would follow standard Best Management Practices (BMPs) for prevention of excessive erosion and stormwater runoff. The BMPs would meet or exceed standards established in the *Virginia Erosion and Sediment Control Handbook*.

3(a) Agency Jurisdiction. The Department of Conservation and Recreation (DCR) Division of Soil and Water Conservation (DSWC) administers the Virginia Erosion and

Sediment Control Law and Regulations (VESCL&R) and Virginia Stormwater Management Law and Regulations (VSWML&R).

3(b) Erosion and Sediment Control, and Stormwater Management. Langley AFB and their authorized agents conducting regulated land-disturbing activities on private and public lands in the state must comply with the Virginia Erosion and Sediment Control Law and Regulations (VESCL&R), Virginia Stormwater Management Law and Regulations, including coverage under the general permit for stormwater discharge from construction activities, and other applicable federal nonpoint source pollution mandates (e.g. Clean Water Act Section 313, Federal Consistency under the Coastal Zone Management Act). Clearing and grading activities, installation of staging areas, parking lots, roads, buildings, utilities, borrow areas, soil stockpiles and related land-disturbance activities that result in the land-disturbance of 2,500 square feet would be regulated by VESCL&R.

Accordingly, Langley AFB must prepare and implement an erosion and sediment control plan to ensure compliance with state law and regulations. The erosion and sediment control plan is submitted to the DCR regional office that serves the area where the project is located for review for compliance. Langley Air Force Base is ultimately responsible for achieving project compliance through oversight of on-site contractors, regular field inspection, prompt action against non-compliant sites and other mechanisms consistent with agency policy. [Reference: VESCL §10.1-567]

3(c) Virginia Stormwater Management Program General Permit for Stormwater Discharges from Construction Activities. DCR is responsible for the issuance, denial, revocation, termination and enforcement of the Virginia Stormwater Management Program (VSMP) General Permit for Stormwater Discharges from Construction Activities related to municipal separate storm sewer systems and construction activities for the control of stormwater discharges from these sewer systems, and land-disturbing activities under the Virginia Stormwater Management Program.

According to the DCR DSWC, the operator or owner of construction activities involving land-disturbing activities equal to or greater than 2,500 square feet in areas designated as subject to the Chesapeake Bay Preservation Area Designation and Management Regulations (adopted pursuant to the Chesapeake Bay Preservation Act) are required to register for coverage under the General Permit for Discharges of Stormwater from Construction Activities and develop a project specific stormwater pollution prevention plan (SWPPP). The SWPPP must be prepared prior to submission of the registration statement for coverage under the general permit, and it must address water quality and quantity in accordance with the VSMP Permit Regulations. General information and registration forms for the General Permit for Discharges of Stormwater from Construction Activities are available on DCR's website at www.dcr.virginia.gov/soil_&_water/vsmp.shtml. [Reference: Virginia Stormwater

Management Law Act §10.1-603.1 *et seq.*; VSMP Permit Regulations §4VAC-50 *et seq.*]

3(d) Comment. Additional information on erosion and sediment control and stormwater management is available in section 5.

4. Air Pollution Control. The EA (page B-5) states that the proposed action and the alternatives would not result in significant air emissions. Air emissions related to project implementation would be generated from construction equipment for grading the sites, construction of the facilities, and hauling of demolition and construction debris (Finding of No Significant Impact, page 3). Three new employees are expected to be hired as part of the proposed action or action alternatives; therefore, any increases in air emissions due to commuting are expected to be small (page 4-17).

4(a) Agency Jurisdiction. The DEQ Air Division, on behalf of the Air Pollution Control Board, is responsible for developing regulations that become Virginia's Air Pollution Control Law. DEQ is charged with carrying out mandates of the state law and related regulations as well as Virginia's federal obligations under the Clean Air Act as amended in 1990. The objective is to protect and enhance public health and quality of life through control and mitigation of air pollution. The division ensures the safety and quality of air in Virginia by monitoring and analyzing air quality data, regulating sources of air pollution, and working with local, state and federal agencies to plan and implement strategies to protect Virginia's air quality. The appropriate regional office is directly responsible for the issue of necessary permits to construct and operate all stationary sources in the region as well as to monitor emissions from these sources for compliance. As a part of this mandate, the environmental documents of new projects to be undertaken in the state are also reviewed. In the case of certain projects, additional evaluation and demonstration must be made under the general conformity provisions of state and federal law.

4(b) Ozone Maintenance Area. According to DEQ's Division of Air Program Coordination, the project site is located within an ozone maintenance area. Being in an area of ozone maintenance, all precautions are necessary to restrict the emissions of volatile organic compounds and oxides of nitrogen during the deconstruction period.

A second precaution, which typically applies to road construction and paving work (9 VAC 5-40-5490 in the Regulations for the Control and Abatement of Air Pollution), places limitations on the use of "cut-back" (liquefied asphalt cement, blended with petroleum solvents), and may apply to the project. The asphalt must be "emulsified" (predominantly cement and water with a small amount of emulsifying agent) except when specified circumstances apply. Moreover, there are time-of-year restrictions on its use from April through October in VOC emission control areas.

4(c) Fugitive Dust. During construction, fugitive dust must be kept to a minimum by using control methods outlined in 9 VAC 5-50-60 *et seq.* of the Regulations for the

Control and Abatement of Air Pollution. These precautions include, but are not limited to, the following:

- Use, where possible, of water or chemicals for dust control;
- Installation and use of hoods, fans and fabric filters to enclose and vent the handling of dusty materials;
- Covering of open equipment for conveying materials; and
- Prompt removal of spilled or tracked dirt or other materials from paved streets and removal of dried sediments resulting from soil erosion.

4(d) Open Burning. If project activities include the burning of construction or demolition material, this activity must meet the requirements under 9 VAC 5-40-5600 *et seq.* of the regulations for open burning, and it may require a permit. The regulations provide for, but do not require, the local adoption of a model ordinance concerning open burning. The project developer should contact officials with the City of Hampton and York County to determine what local requirements, if any, exist.

5. Coastal Lands Management. According to the EA (page 2-11), construction of the proposed structures would result in additional stormwater runoff. Standard practices, such as retention ponds, would be employed to reduce the transmission of nutrients and other pollutants to the Chesapeake Bay. These measures would be in keeping with standard construction practices at Langley AFB and would satisfy the requirements of the Chesapeake Bay Protection Act with regards to reduction of drainage pollution.

5(a) Agency Jurisdiction. The DCR Department of Chesapeake Bay Local Assistance (DCBLA) administers the coastal lands management enforceable policy of the VCP, which is governed by the Chesapeake Bay Preservation Act (Virginia Code §10.1-2100-10.1-2114) and Chesapeake Bay Preservation Area Designation and Management Regulations (9 VAC 10-20 *et seq.*).

5(b) Agency Comments. Federal actions on installations located within the coastal zone of Virginia are required to be consistent with the performance criteria of the regulations on lands analogous to locally designated Chesapeake Bay Preservation Areas. In the City of Hampton, areas protected by the Chesapeake Bay Act, as locally implemented, require adherence to the performance criteria. These areas include Resource Protection Areas (RPAs) and Resource Management Areas (RMAs).

- RPAs include the following: tidal wetlands, non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow, tidal shores and a 100-foot vegetated buffer area located adjacent to and landward of the aforementioned features and along both sides of any water body with perennial flow.
- RMAs include the following: floodplains, highly erodible soils, highly permeable soils, steep slopes in excess of fifteen percent and other lands designated by the Board to protect the quality of state waters, including but not limited to an area

one hundred feet in width contiguous and landward of an RPA. RMAs require less stringent performance criteria than RPAs.

5(c) Chesapeake Ecosystem Unified Plan. The 1998 Federal Agencies' Chesapeake Ecosystem Unified Plan requires the signatories, including the Department of Defense – U.S. Air Force, to fully cooperate with local and state governments in carrying out voluntary and mandatory actions to comply with the management of stormwater. The agencies also committed to encouraging construction design that

- minimizes natural area loss on new and rehabilitated federal facilities;
- adopts low impact development and best management technologies for storm water, sediment and erosion control, and reduces impervious surfaces; and
- considers the Conservation Landscaping and Bay-Scapes Guide for Federal Land Managers.

5(d) Chesapeake Bay Agreement. The Chesapeake 2000 Agreement committed government agencies to a number of sound land use and stormwater quality controls. The signatories additionally committed the agencies to lead by example with respect to controlling nutrient, sediment and chemical contaminant runoff from government properties. In December 2001, the Executive Council of the Chesapeake Bay Program issued Directive No. 01-1, called Managing Storm Water on State, Federal and District-owned Lands and Facilities, which includes specific commitments for agencies to lead by example with respect to stormwater control.

5(e) Findings. The proposed projects and alternatives may be located within lands analogous to those in the Chesapeake Bay Preservation Area Designation and Management Regulations requiring stringent performance criteria as specified in § 9 VAC 10-20-130, or within the RMA and subject to the general performance criteria as specified in § 9 VAC 10-20-120.

Projects that include land-disturbing activity must adhere to the general performance criteria (§ 9 VAC 10-20-120 *et seq.*). The following criteria apply:

- minimization of land disturbance (including access and staging areas);
- retaining of indigenous vegetation; and
- minimization of impervious cover.

Also, if land disturbance will exceed 2,500 square feet in Chesapeake Bay Preservation Areas Langley AFB must comply with the requirements of the *Virginia Erosion & Sediment Control Handbook*, Third Edition, 1992. Additionally, stormwater management criteria consistent with water quality protection provisions (§ 4 VAC 3-20-17 *et seq.*) of the Virginia Stormwater Management Permit Regulations (§ 4 VAC 50-60 *et seq.*) shall be satisfied.

5(f) Conclusion. Provided these requirements are followed, DCR DSWC states that the proposed activity would be consistent with the Chesapeake Bay Preservation Act and Regulations.

6. Solid and Hazardous Waste Management. The EA (pages 3-5, 4-4 and 4-18) describes the management of solid waste at Langley AFB and the proposed management of hazardous wastes, asbestos wastes and lead-based paint during the proposed project. The EA (page 3-27) also includes information on the presence of asbestos-containing materials and lead-based paint in 18 buildings scheduled to be demolished under the proposed actions or alternatives. Seventeen buildings contain asbestos-containing materials and lead-based paint. In addition, the EA (page 3-27) describes 15 Environmental Restoration Program (ERP) sites that are regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Air Combat Command policy requires that any proposed project on or near a Langley AFB site be coordinated through the Langley ERP manager. While it is possible that construction could take place without disturbing most of the ERP sites, the document (page 4-20) also describes the sites where avoidance may not be possible. When construction on an ERP site is not avoidable, construction workers would take necessary precautions to avoid harmful chemical exposure.

6(a) Agency Jurisdiction. Solid and hazardous wastes in Virginia are regulated by DEQ, the Virginia Waste Management Board and the U.S. Environmental Protection Agency. They administer programs created by the federal Resource Conservation and Recovery Act, Comprehensive Environmental Response Compensation and Liability Act, commonly called Superfund, and the Virginia Waste Management Act. DEQ administers regulations established by the Virginia Waste Management Board and reviews permit applications for completeness and conformance with facility standards and financial assurance requirements. All Virginia localities are required, under the Solid Waste Management Planning Regulations, to identify the strategies they will follow on the management of their solid wastes to include items such as facility siting, long-term (20-year) use and alternative programs such as materials recycling and composting.

6(b) Data Base and Data File Searches. The DEQ Waste Division found that solid and hazardous waste issues were addressed in the document. The report included a search of waste-related data bases. A Geographic Information System (GIS) data base search found no waste sites within a half-mile radius that would impact or be impacted by the project. The division conducted a cursory review of data files and determined that there are several hazardous waste, solid waste, formerly used defense sites (FUDS) and voluntary remediation program (VRP) within the same zip code, although their proximity to the subject site is unknown. These sites are as follows:

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) Sites

- Langley AFB/NASA Langley Research Center, Hampton, Va.: VA2800005033, Final National Priorities List

Formally Used Defense Sites (FUDS)

- Langley AFB: C03VA1039, VA9799F8457

Hazardous Waste Sites

- Langley AFB: VA4570024477 LQG (active), VA4570024477 TSD (active)
- Industrial Plating Corporation: VAD037426228 TSD (active)

Solid Waste Sites

- USA Waste of Virginia Landfills - Bethel Landfill, Solid Waste Permit (SWP) 268, closed sanitary landfill
- USA Waste of Virginia Landfills - Bethel Landfill, SWP 299, closed sanitary landfill
- USA Waste of Virginia Landfills - Bethel Landfill, SWP 336, closed sanitary landfill
- USA Waste of Virginia Landfills - Bethel Landfill, SWP 349, closed sanitary landfill
- USA Waste of Virginia Landfills - Bethel Landfill, SWP 521, sanitary landfill

Voluntary Remediation Program (VRP)

- Former Fashion Care Cleaners, VRP00326, enrolled in program
- Williams Honda, VRP00207, certificate issued

The following websites may be accessed to locate additional information for the aforementioned sites using their identification numbers:

- <http://www.epa.gov/superfund/sites/cursites/index.htm> or
- http://oaspub.epa.gov/enviro/ef_home2.waste.

6(c) Federal Facilities Program. The DEQ Federal Facilities Restoration Program reviewed the EA. According to the program, only those alternatives that impact the Langley AFB have the potential to impact Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Environmental Restoration Program (ERP) sites that are either active or closed.

Langley AFB is on the National Priorities List and is the party responsible for remediation of CERCLA sites on base in order to be removed from the list. The LAFB ERP is charged with oversight of the CERCLA sites on base. The proposed action and the other alternatives were considered relative to their impact to active, and the subject of this review is closed ERP sites.

Section 3.9 of the draft EA identifies the ERP sites that may be impacted by the alternatives under consideration. The draft EA indicates attempts will be made to avoid ERP sites as much as possible. Section 4.9 of the draft EA identifies those ERP sites

that cannot be avoided. Section 4.9 does not identify ERP Site OT-64, Basewide Groundwater, which addresses the groundwater beneath each of the ERP sites on base nor does it discuss any of the Military Munitions Response Program Sites on base.

In the process of implementing any of the alternatives identified in the draft EA, the Federal Facilities Restoration Program recommends the facility contact Mr. John Tice, LAFB Environmental Restoration Program Manager at (757) 764-1082, for information concerning the CERCLA or Military Munitions Response Program obligations or hazards at or near the capital improvement plan project sites prior to initiating any land-, sediment- or groundwater-disturbing activities.

6(d) Asbestos-Containing Materials and Lead-Based Paint. All structures being demolished should be checked for asbestos-containing materials and lead-based paint prior to demolition. If these materials and paint are found, in addition to the federal waste-related regulations mentioned above, state regulations 9VAC 20-80-640 for asbestos-containing materials and 9VAC 20-60-261 for lead-based paint must be followed.

6(e) Agency Comments. The DEQ Tidewater Regional Office states that the document adequately addresses the solid and hazardous waste management concerns previously identified by DEQ. Langley AFB is strongly advised that the DEQ Federal Facilities Restoration Program be involved in the sighting and design of several of the proposed projects to minimize potential impacts.

6(f) Recommendations. DEQ encourages all construction projects and facilities to implement pollution prevention principles, including:

- the reduction, reuse and recycling of all solid wastes generated; and
- the minimization and proper handling of generated hazardous wastes.

Any soil that is suspected of contamination or wastes that are generated during construction-related activities must be tested and disposed of in accordance with applicable federal, state and local laws and regulations.

Further questions and requests for information on waste issues may be directed to Milt Johnson with the DEQ Tidewater Regional Office at (757) 518-2151.

7. Natural Heritage Resources. The EA (page 3-18) states that 17 special status species have the potential to occur on Langley AFB. Fifteen have special state status, and 12 have federal status. No critical habitat occurs on base, and no resident endangered or threatened species or their critical habitats have been found on Bethel Reservoir. There is one confirmed eagle nest on Langley AFB property. Langley AFB consulted with state and federal agencies on threatened and endangered species. The document (page 4-11) also states that the proposed projects would not result in a significant impact to terrestrial communities due to construction/demolition occurring in

previously developed and/or maintained grass areas. In addition, the EA (page 4-13) states that the proposed project are not expected to affect aquatic communities as long as best management practices are utilized and that threatened, endangered and special status species are their habitat are not found in the project areas.

7(a) Agency Jurisdiction. The mission of DCR is to conserve Virginia's natural and recreational resources. The DCR Natural Heritage Program's (DNH) mission is conserving Virginia's biodiversity through inventory, protection and stewardship. The Virginia Natural Area Preserves Act, 10.1-209 through 217 of the Code of Virginia, was passed in 1989 and codified DCR's powers and duties related to statewide biological inventory: maintaining a statewide database for conservation planning and project review, land protection for the conservation of biodiversity, and the protection and ecological management of natural heritage resources (the habitats of rare, threatened and endangered species; significant natural communities; geologic sites; and other natural features).

7(b) Agency Findings. DCR searched its Biotics Data System for occurrences of natural heritage resources from the project area. The Biotics Data System documents the presence of natural heritage resources in the project area. However, due to the scope of the activity and the distance to the resources, DCR does not anticipate that this project will adversely impact these natural heritage resources.

7(c) Threatened and Endangered Plant and Insect Species. The Endangered Plant and Insect Species Act of 1979, Chapter 39, §3.1-102- through 1030 of the Code of Virginia, as amended, authorizes the Virginia Department of Agriculture and Consumer Services (VDACS) to conserve, protect and manage endangered species of plants and insects. VDACS Virginia Endangered Plant and Insect Species Program personnel cooperates with the U.S. FWS, DCR DNH and other agencies and organizations on the recovery, protection or conservation of listed threatened or endangered species and designated plant and insect species that are rare throughout their worldwide ranges. In those instances where recovery plans, developed by FWS, are available, adherence to the order and tasks outlined in the plans should be followed to the extent possible.

VDACS has regulatory authority to conserve rare and endangered plant and insect species through the Virginia Endangered Plant and Insect Species Act. Under a Memorandum of Agreement established between the VDACS and DCR, DCR has the authority to report for VDACS on state-listed plant and insect species. DCR found that the current activity will not affect any documented state-listed plant and insect species. VDACS states that the EA was reviewed and no additional comments are necessary.

7(d) State Natural Area Preserves. DCR files do not indicate the presence of any State Natural Area Preserves under the agency's jurisdiction in the project vicinity.

7(e) Recommendation. Contact Rene Hypes with DCR DNH at (804) 371-2708 to secure updated information on natural heritage resources if a significant amount of time

passes before the project is implemented, since new and updated information is continually added to the Biotics Data System.

8. Wildlife Resources and Protected Species. The EA (pages 4-11 and 4-13) states that the proposed projects would not have a significant effect on terrestrial and aquatic communities. It (page 4-14) also describes how best management practices will be used to protect water resources.

8(a) Jurisdiction. The Department of Game and Inland Fisheries (DGIF), as the Commonwealth's wildlife and freshwater fish management agency, exercises enforcement and regulatory jurisdiction over wildlife and freshwater fish, including state or federally listed endangered or threatened species, but excluding listed insects (Virginia Code Title 29.1). DGIF is a consulting agency under the U.S. Fish and Wildlife Coordination Act (16 U.S.C. sections 661 *et seq.*) and provides environmental analysis of projects or permit applications coordinated through DEQ and several other state and federal agencies. DGIF determines likely impacts upon fish and wildlife resources and habitat, and recommends appropriate measures to avoid, reduce or compensate for those impacts. Furthermore, DGIF and the VMRC administer the fisheries management enforceable policy of the VCP.

8(b) Finding. DGIF's records document the state endangered canebrake rattlesnake in the vicinity of Langley AFB and Big Bethel Reservoir. Based on the proposed scope and location of the projects, DGIF does not anticipate that significant adverse impacts upon this species and/or its habitat are likely to result from the proposed work. The state threatened bald eagle has been documented on Langley AFB. However, the proposed projects are located outside of the management zone for this nest. Therefore, impacts upon bald eagle are not likely to result from the proposed work.

8(c) Recommendations. DGIF recommends that, prior to the start of construction, all contractors are trained in the identification, basic natural history and legal status of canebrake rattlesnakes. This could be accomplished via an appropriate information sheet distributed to those working on the project (attachment 3). Information also can be found on the DGIF website at www.dgif.virginia.gov/wildlife/species/display.asp?id=030013.

If a canebrake rattlesnake is observed at any time during the development or construction of this project, Langley AFB should contact John Kleopfer, DGIF herpetologist, at (804) 829-6580 or the DGIF Richmond office at (804) 367-8999) for safe relocation of the animal.

DGIF recommends the following measures to minimize overall impacts to wildlife and natural resources:

- avoid and minimize impacts to undisturbed forest, wetlands and streams to the fullest extent practicable, which may include relocating stream channels as

opposed to filling or channelizing as well as using and incorporating a natural stream channel design and wooded buffers into the development plan.

- maintain undisturbed wooded buffers of at least 100 feet in width around all on-site wetlands and on both sides of all perennial and intermittent streams;
- adhere to time-of-year restrictions when clearing forested areas to protect resident and migratory song birds from March 15 through July 31 of any year; and
- design stormwater controls to replicate and maintain the hydrographic condition of the site prior to the change in landscape. This should include, but not be limited to:
 - utilizing bioretention areas; and
 - minimizing the use of curb and gutter in favor of grassed swales.

Bioretention areas (also called rain gardens) and grass swales are components of low impact development. They are designed to capture stormwater runoff as close to the source as possible and allow it to slowly infiltrate into the surrounding soil. They benefit natural resources by filtering pollutants and decreasing downstream runoff volumes.

Contact Amy Ewing with DGIF at (804) 367-2211 for additional information regarding these comments.

9. Underground and Aboveground Storage Tanks. The EA (page 4-22) states that seven aboveground storage tanks (ASTs) and eight underground storage tanks (USTs) are located at or near project sites. Five USTs have been closed and abandoned in place, and three other USTs have been removed. ASTs associated with buildings proposed for demolition would be removed or moved to serve new facilities. If any USTs need to be disturbed, Langley AFB would contact DEQ.

9(a) Findings. The DEQ Tidewater Regional Office reports that there have been 150 petroleum releases reported at Langley AFB, three of which are currently active cases. Several of these releases are located at or adjacent to the proposed projects at LAFB. Also, there has been one petroleum release reported at the nearby Big Bethel Water Treatment Plant, where one of the projects is proposed. This closed case (PC#1999-2309) is associated with former USTs at the plant.

Langley AFB currently operates 16 USTs and 61 ASTs at various locations throughout the facility. These tanks contain a variety of petroleum products including gasoline, diesel fuel, jet fuel, heating oil and lubrication oils. There are also more than 90 locations throughout the facility where former underground tanks were removed or closed in place. Based on DEQ's review, some of the areas outlined for improvements will be located on or near existing and/or former tanks sites.

9(b) Recommendations.

- Petroleum contaminated soils generated during construction of this project must be properly characterized and disposed of properly. If evidence of a petroleum release is discovered during implementation of these projects, it must be reported to the DEQ Tidewater Regional Office. Contact Ms. Rebecca Gehring at (757) 518-2190 or Mr. Gene Siudyla at (757) 518-2117.
- Care should be taken to identify those areas where construction activities will impact petroleum storage tanks. The relocation or removal and closure of regulated petroleum storage tanks as part of these projects should be reported to the DEQ Tidewater Regional Office Petroleum Storage Tank Program at (757) 518-2115.
- If the construction of this project will include the use of portable AST storage (more than 660 gallons) for equipment fuel, the tank or tanks must be registered with DEQ using AST Registration form 7540-AST (see item seven under the Regulatory and Coordination Needs section of this report for more information).

10. Forest Resources. The EA (4-13) states that the ropes course would occur in an area that is currently forested and that the majority of the trees on the site would be left in place.

10(a) Recommendations. The Department of Forestry (DOF) did not respond to our request for comments. However, DOF generally recommends the following:

- Trees not slated for removal should be protected from the effects of future construction activities. These trees should be marked and fenced at least to the drip line or the end of the root system, whichever extends farther from the stem. Marking should be done with highly visible ribbon so that equipment operators see the protected areas easily.
- Parking and stacking of heavy equipment and construction materials near trees can damage root systems by compacting the soil. Soil compaction, from weight or vibration, affects root growth, water and nutrient uptake, and gas exchange. The protection measures suggested above should be used for parking and stacking as well as for moving of equipment and materials. If parking and stacking are unavoidable, the contractors should use temporary crossing bridges or mats to minimize soil compaction and mechanical injury to plants.
- Any stockpiling of soil should take place away from trees. Piling soil at a tree stem can kill the root system of the tree. Soil stockpiles should be covered, as well, to prevent soil erosion and fugitive dust.

Questions concerning the potential mitigation options for this project may be addressed to Todd Groh, Assistant Director of the DOF Forest Resource Management Division, at (434) 977-6555, ext. 3344, or at todd.groh@dof.virginia.gov.

11. Transportation Impacts. The EA (page 4-1) states that overall traffic volume on Langley AFB, the Landings at Langley Housing Area or the Big Bethel Reservoir wastewater treatment plant is not expected to increase noticeably. Of the 10 projects, only the construction of the bait shop/conference center and ropes course would involve the creation of new jobs. Three full-time employees (or the part-time equivalent) would be needed. All other projects would involve current employees moving to a new facility and are not expected to be associated with increases in road traffic. Modifications to the configuration of Semple Farm Road at the entrance to the Big Bethel site may be considered. Overall, no adverse impacts to transportation resources are expected.

11(a) Agency Comment. The Virginia Department of Transportation (VDOT) states that the report was reviewed for impacts to the transportation network as it relates to Langley AFB. Any increase in traffic volumes will be temporary and occur during construction. The VDOT planning office concludes that traffic operations in the area will not be adversely affected and a negative impact on the transportation network within the region is not expected.

VDOT notes that the proposed construction projects may provide an excellent opportunity to implement or enhance pedestrian trails, sidewalks or bicycle accommodations in conjunction with the development of outdoor areas.

11(b) Recommendations. If detours and road closures are expected to impact areas outside of the Langley AFB boundary, surrounding municipalities should be notified and allowed an opportunity to coordinate or adjust traffic operations.

For more information, contact Ray Hunt with VDOT at (757) 925-1595 or at ray.hunt@vdot.virginia.gov.

12. Historic Structures. The EA (page 4-7) states that compliance with Section 106 of the National Historic Preservation Act (NHPA), including State Historic Preservation Office (SHPO) consultation, would take place prior to the project beginning. Demolition of Hangar 753 would constitute an adverse effect to a building eligible for the National Register of Historic Places. Langley AFB must develop a mitigation plan in consultation with the SHPO at the Virginia Department of Historic Resources (DHR).

12(a) Agency Jurisdiction. DHR conducts reviews of projects to determine their effect on historic structures or cultural resources under its jurisdiction. DHR, as the designated Historic Preservation Office for the Commonwealth, ensures that federal actions comply with Section 106 of the NHPA of 1966, as amended, and its implementing regulation at 36 Code of Federal Regulations Part 800. The NHPA requires federal agencies to consider the effects of federal projects on properties that are listed or eligible for listing on the National Register of Historic Places. Section 106 also applies if there are any federal involvements, such as licenses, permits, approvals or funding. DHR also provides comments to DEQ through the state EIR review process.

12(b) Agency Comments. DHR would like to remind Langley AFB that the Air Force, as a federal agency, must consider the effects of its actions on historic properties listed in or eligible for the National Register of Historic Places and provide the Advisory Council on Historic Preservation the opportunity to comment in accordance with Section 106 of the NHPA, as amended, and its implementing regulations 36 CFR 800. The Section 106 review process begins with the federal agency provides a description of the undertaking and is area of potential effect to the SHPO, which is DHR.

While 36 CFR 800.8 allows federal agencies to coordinate Section 106 compliance with the National Environmental Policy Act, the federal agency must inform the applicable SHPC early in the process that it intends to do so. The agency must also take care that the environmental documentation prepared under NEPA presents information about historic properties and potential effects to such resources at a level of detail that allows the SHPO and other consulting parties to comment.

12(c) Recommendations. DHR requests that Langley AFB consult directly with the agency on the proposed projects that affect historic resources.

13. Local and Regional Comments.

13(a) Jurisdiction. In accordance with the Code of Virginia, Section 15.2-4207, planning district commissions encourage and facilitate local government cooperation and state-local cooperation in addressing, on a regional basis, problems of greater than local significance. The cooperation resulting from this is intended to facilitate the recognition and analysis of regional opportunities and take account of regional influences in planning and implementing public policies and services. Planning district commissions promote the orderly and efficient development of the physical, social and economic elements of the districts by planning, and encouraging and assisting localities to plan for the future.

13(b) Local Comments. The City of Hampton discussed the proposed projects with the Hampton Roads Planning District Commission (PDC). York County reviewed the projects and had no comment.

13(c) Regional Comments. The Hampton Roads Planning District Commission has reviewed the EA and consistency determination for the proposed projects at Langley AFB in Hampton and contacted the City of Hampton concerning the project.

The proposed projects involve the demolition of Hanger 753, a visually distinctive building that is also a contributing resource to the Langley Field Historic District. Alternatives One and Two include renovation of this facility instead of demolition; therefore, the Hampton Roads PDC recommends that Langley AFB choose one of these alternatives to avoid unnecessary impacts to cultural resources.

Additionally, the information provided in the EA indicates that the negative impacts to the Big Bethel Reservoir Water Treatment Plant and some impacts associated with the replacement of the Security Forces Operations Facility are unknown. The PDC encourages Langley AFB to evaluate these sites for cultural significance and to share the results of these evaluations.

13(d) Recommendations. If cultural studies are conducted of the water treatment plan and operations facility, Langley AFB is encouraged to share the results with the Hampton Roads PDC and affected localities. Langley AFB also is encouraged to work with the Hampton Roads PDC on issues associated with historic resources.

14. Sewage Systems and Waterworks Operation Regulations. The EA (page 4-3) states that the proposed actions include construction, demolition and relocation of existing utilities. Several of the projects would require extension of electrical and natural gas service from the nearest available source to the project site. Additional demand of utilities associated with the new facilities will be partially offset by the demolition of several existing facilities. The Langley AFB sewage pump station currently operates at or slightly beyond its capacity during rainfall events. Upgrades to the system to address these problems are currently underway in accordance with an administrative order. Once these repairs are complete, inflow and infiltration will be reduced to manageable levels.

14(a) Agency Comments. The Virginia Department of Health states that there are no groundwater or surface water intakes within five miles of the proposed projects. Potential impacts to public water distribution systems or sanitary sewage collection systems must be verified by the locality.

14(b) Discharging Sewer System Regulations. DEQ has approval authority over plans and specifications for most discharging sewage collection systems and treatment works except for single family home (less than 1,000 gallon per day) systems. This authority is contained in the Sewage Collection and Treatment (SCAT) Regulations (12 VAC 5-581). For discharging sewage collection systems and treatment works, plans and specifications must be submitted to the DEQ Tidewater Regional Office for review and approval, if applicable.

14(c) Waterworks Operation Regulations. Installation of new water lines and appurtenances must comply with the Commonwealth's Waterworks Regulations. The Virginia Department of Health (VDH) Office of Drinking Water administers both federal and state laws governing waterworks operation.

14(d) Water Conservation Recommendations. DEQ recommends that to the extent practicable, Langley AFB consider the following water conservation measures:

- Grounds should be landscaped with hardy native plant species to conserve water as well as minimize the need to use fertilizers and pesticides.

- Convert turf to low water-use landscaping such as drought resistant grass, plants, shrubs and trees.
- Low-flow toilets should be installed in new facilities.
- Consider installing low flow restrictors/aerators to faucets.
- Improve irrigation practices by:
 - upgrading sprinkler clock; watering at night, if possible, to reduce evapotranspiration (lawns need only 1 inch of water per week and do not need to be watered daily; over watering causes 85 percent of turf problems);
 - installing a rain shutoff device; and
 - collecting rainwater with a rain bucket or cistern system with drip lines.
- Consider replacement of old equipment with new high-efficiency machines to reduce water usage by 30-50 percent per use.
- Check for and repair leaks (toilets and faucets) during regular routine maintenance activities.

15. Pesticides and Herbicides. Should construction or operation of the proposed facilities require the use of herbicides or pesticides for landscape maintenance, these chemicals should be used in accordance with the principles of integrated pest management. The least toxic pesticides that are effective in controlling the target species should be used. Contact VDACS at (804) 786-3501 for more information.

16. Pollution Prevention. DEQ advocates that principles of pollution prevention be used in all construction projects. Effective siting, planning and on-site Best Management Practices (BMPs) will help to ensure that environmental impacts are minimized. However, pollution prevention techniques also include decisions related to construction materials, design and operational procedures that will facilitate the reduction of wastes at the source.

16(a) Recommendations. We have several pollution prevention recommendations that may be helpful in constructing or operating this project:

- Consider environmental attributes when purchasing materials. For example, the extent of recycled material content, toxicity level, and amount of packaging should be considered and can be specified in purchasing contracts.
- Consider contractors' commitment to the environment (such as an environmental management system or EMS) when choosing contractors. Specifications regarding raw materials and construction practices can be included in contract documents and requests for proposals.
- Choose sustainable materials and practices for infrastructure and building construction and design. These could include asphalt and concrete containing recycled materials, and integrated pest management in landscaping, among other things.

DEQ's Office of Pollution Prevention provides information and technical assistance relating to pollution prevention techniques and EMS. For more information, contact Sharon Baxter with DEQ's Office of Pollution Prevention at (804) 698-4344.

17. Energy Conservation. DEQ recommends that the proposed development should be planned and designed to comply with state and federal guidelines and industry standards for energy conservation and efficiency. For example, the energy efficiency of the facility can be enhanced by maximizing the use of the following:

- thermally-efficient building shell components (roof, wall, floor, windows and insulation);
- siting and orientation with consideration towards natural lighting and solar loads
- high efficiency heating, ventilation and air conditioning systems; and
- high efficiency lighting systems and daylighting techniques.

Please contact Matt Heller with DMME at (434) 951-6351 for additional information.

REGULATORY AND COORDINATION NEEDS

1. Subaqueous Lands Management. DEQ recommends that the Langley AFB contact Elizabeth Gallup with the VMRC at (757) 247-8027 for confirmation concerning its jurisdiction over the water body or water bodies in which the pier and boat ramp will be constructed.

2. Wetlands. Langley AFB should contact Bert Parolari, Virginia Water Protection Program Manager at the DEQ Tidewater Regional Office, at (757) 518-2166 to ensure compliance with the VWP program prior to initiating the proposed projects.

2. Erosion and Sediment Control and Stormwater Management.

2(a) Erosion and Sediment Control. Langley AFB and their authorized agents conducting regulated land-disturbing activities on private and public lands in the state must comply with the Virginia Erosion and Sediment Control Law and Regulations (VESC:L&R), Virginia Stormwater Management Law and Regulations, including coverage under the general permit for stormwater discharge from construction activities, and other applicable federal nonpoint source pollution mandates (e.g. Clean Water Act Section 313, Federal Consistency under the Coastal Zone Management Act).

Langley AFB must prepare and implement an erosion and sediment control plan to the DCR to ensure compliance with state law and regulations. The erosion and sediment control plan should be submitted to the DCR Suffolk Regional Office at (757) 925-2388.

2(b) Virginia Stormwater Management Program General Permit for Stormwater Discharges from Construction Activities. For land-disturbing activities equal to or

greater than 2,500 square feet in areas designated as subject to the Chesapeake Bay Preservation Area Designation and Management Regulations (adopted pursuant to the Chesapeake Bay Preservation Act), Langley AFB is required to register for coverage under the General Permit for Discharges of Stormwater from Construction Activities and develop a project specific stormwater pollution prevention plan (SWPPP). The SWPPP must be prepared prior to submission of the registration statement for coverage under the general permit, and it must address water quality and quantity in accordance with the VSMP Permit Regulations. Specific questions regarding the Stormwater Management Program requirements should be directed to Holly Sepety with DCR at (804) 225-2613.

3. Coastal Lands Management Enforceable Policy of the VCP. In order to ensure consistency with the Coastal Lands Management Enforceable Policy, Langley AFB must coordinate with DCR DCBLA. The DCR DCBLA administers this enforceable policy, which is governed by the Chesapeake Bay Preservation Act (Virginia Code §10.1-2100-10.1-2114) and Chesapeake Bay Preservation Area Designation and Management Regulations (9 VAC 10-20 *et seq.*). Contact Joan Salvati with DCR DCBLA at (804) 225-3440 for additional guidance and coordination.

4. Air Quality Regulations. Guidance on restricting the emissions of volatile organic compounds and oxides of nitrogen during construction may be obtained from the DEQ Tidewater Regional Office. Furthermore, activities associated with this project may be subject to air regulations administered by DEQ. The state air pollution regulations that may apply to the construction phase of the project are:

- asphalt paving operations (9 VAC 5-40-5490 *et seq.*)
- fugitive dust and emissions control (9 VAC 5-50-60 *et seq.*); and
- open burning restrictions (9 VAC 5-40-5600 through 5645).

Also, permits may be required for any boilers or fuel-burning equipment installed at the development. Prior to construction and operation, contact Jane Workman with the DEQ Tidewater Regional Office at (757) 518-2112 for a permitting determination.

5. Solid and Hazardous Wastes. All solid waste, hazardous waste and hazardous materials must be managed in accordance with all applicable federal, state and local environmental regulations. Some of the applicable state laws and regulations are:

- Virginia Waste Management Act (Code of Virginia Section 10.1-1400 *et seq.*);
- Virginia Hazardous Waste Management Regulations (VHWMR) (9 VAC 20-60);
- Virginia Solid Waste Management Regulations (VSWMR) (9 VAC 20-80);
- Virginia Vegetative Waste Management Regulations (9 VAC 20-101 *et seq.*); and
- Virginia Regulations for the Transportation of Hazardous Materials (9 VAC 20-110).

Some of the applicable federal laws and regulations are:

- Resource Conservation and Recovery Act (RCRA) (42 U.S.C. Section 6901 *et seq.*, and the applicable regulations contained in Title 40 of the Code of Federal Regulations); and
- U.S. Department of Transportation Rules for Transportation of Hazardous materials (49 Code of Federal Regulations Part 107).

For additional information, contact Milt Johnston with the DEQ Tidewater Regional Office at (757) 518-2151.

5(a) Asbestos-Containing Material. It is the responsibility of the owner or operator of a renovation or demolition activity, prior to the commencement of the renovation or demolition, to thoroughly inspect the affected part of the facility where the operation will occur for the presence of asbestos, including Category I and Category II nonfriable asbestos-containing material. Upon classification as friable or non-friable, all asbestos-containing material shall be disposed of in accordance with the Virginia Solid Waste Management Regulations (9 VAC 20-80-640) and transported in accordance with the Virginia regulations governing Transportation of Hazardous Materials (9 VAC 20-110-10 *et seq.*). Contact the DEQ Waste Division for additional information at (804) 698-4021 and Ronald L. Graham with the Department of Labor and Industry at (804) 371-0444.

5(b) Lead-Based Paint. This project must comply with the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) regulations and with the Virginia Lead-Based Paint Activities Rules and Regulations. For additional information regarding these requirements, contact David Dick with the Department of Professional and Occupational Regulation at (804) 367-8588.

6. Federal Facilities Restoration Program. Contact Mr. John Tice, LAFB Environmental Restoration Program Manager, at (757) 764-1082 for information concerning the CERCLA or Military Munitions Response Program obligations or hazards at or near the proposed project sites prior to initiating any land-, sediment- or ground water-disturbing activities.

7. Storage Tanks. Any questions concerning storage tank registration should be directed to DEQ's Tidewater Regional Office. If evidence of a petroleum release is discovered during construction of this project, it must be reported to Rebecca Gehring at (757) 518-2190 or Gene Siudyla at (757) 518-2117. Questions concerning the registration of underground or aboveground storage tanks should be directed to Tom Madigan with the DEQ Tidewater Regional Office by phone at (757) 518-2115, e-mail at temadigan@deq.virginia.gov or mail 5636 Southern Boulevard, Virginia Beach, VA 23462.

In addition to the above, if the construction of this project will include the use of portable aboveground storage tanks (> 660 gallons) for equipment fuel, the tank or tanks must be registered with DEQ using the aboveground storage tank registration form 7540-

Troy M. Anderson
Capital Improvement Plan Project
Langley Air Force Base
08-175F

AST. This form is available at the DEQ website at www.deq.virginia.gov/tanks/fnf.html. Once the registration form is completed, it should be mailed to the DEQ address on the form along with the appropriate registration fee.

8. Wildlife Resources. If a canebrake rattlesnake is observed at any time during the development or construction of this project, Langley AFB should contact John Kleopfer, DGIF herpetologist, at (804) 829-6580 or the DGIF Richmond office at (804) 367-8999), so that DGIF may safely capture and relocate the animal to a suitable site.

9. Natural Heritage Resources. Contact Rene Hypes with DCR DNH at (804) 371-2708 to secure updated information on natural heritage resources if a significant amount of time passes before the project is implemented, since new and updated information is continually added to the Biotics Data System.

10. Transportation Impacts. If detours and road closures are expected to impact areas outside of the Langley AFB boundary, the City of Hampton, York County or other affected municipalities should be notified and allowed an opportunity to coordinate or adjust traffic operations.

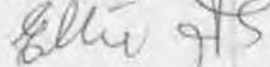
11. Historic and Archaeological Resources. Section 106 of the National Historic Preservation Act (as amended) and its implementing regulations codified at 36 Code of Federal Regulations Part 800 require federal agencies to consider the effects of their undertakings on historic properties. To ensure compliance, contact Marc Holma, Manager of the Office of Review and Compliance, at DHR by phone at (804) 367-2323, ext. 114.

12. Waterworks Operation Regulations. Installation of new water lines and appurtenances must comply with the state's waterworks regulations. For more information, contact the VDH Office of Drinking Southeast Virginia Field Office at (757) 683-2000.

13. Sewage Regulations. Modifications of the existing sewerage lines or treatment systems must comply with the Commonwealth's sewerage regulations. For more information, contact Marcy Garnett, a wastewater engineer for the DEQ Tidewater Regional Office, at (757) 518-2199.

Thank you for the opportunity to review the EA and consistency determination for this undertaking. Detailed comments of reviewing agencies are attached for your review. Please contact me at (804) 698-4325 or Julia Wellman at (804) 698-4326 for clarification of these comments.

Sincerely,



Ellie L. Irons, Manager

Troy M. Anderson
Capital Improvement Plan Project
Langley Air Force Base
08-175F

Office of Environmental Impact Review

Enclosures

cc: Paul Kohler, DEQ ORP
Michelle Hollis, DEQ TRO
Amy Ewing, DGIF
James Freas, Hampton Roads PDC
Marc Holma, DHR
Elizabeth Gallup, VMRC
Eric Stringfield, VDOT Suffolk

Attachment 2

Advisory Policies for Geographic Areas of Particular Concern

- a. Coastal Natural Resource Areas - These areas are vital to estuarine and marine ecosystems and/or are of great importance to areas immediately inland of the shoreline. Such areas receive special attention from the Commonwealth because of their conservation, recreational, ecological, and aesthetic values. These areas are worthy of special consideration in any planning or resources management process and include the following resources:
 - a) Wetlands
 - b) Aquatic Spawning, Nursery, and Feeding Grounds
 - c) Coastal Primary Sand Dunes
 - d) Barrier Islands
 - e) Significant Wildlife Habitat Areas
 - f) Public Recreation Areas
 - g) Sand and Gravel Resources
 - h) Underwater Historic Sites.

- b. Coastal Natural Hazard Areas - This policy covers areas vulnerable to continuing and severe erosion and areas susceptible to potential damage from wind, tidal, and storm related events including flooding. New buildings and other structures should be designed and sited to minimize the potential for property damage due to storms or shoreline erosion. The areas of concern are as follows:
 - i) Highly Erodible Areas
 - ii) Coastal High Hazard Areas, including flood plains.

- c. Waterfront Development Areas - These areas are vital to the Commonwealth because of the limited number of areas suitable for waterfront activities. The areas of concern are as follows:
 - i) Commercial Ports
 - ii) Commercial Fishing Piers
 - iii) Community Waterfronts

Although the management of such areas is the responsibility of local government and some regional authorities, designation of these areas as Waterfront Development Areas of Particular Concern (APC) under the VCRMP is encouraged. Designation will allow the use of federal CZMA funds to be used to assist planning for such areas and the implementation of such plans. The VCRMP recognizes two broad classes of priority uses for waterfront development APC:

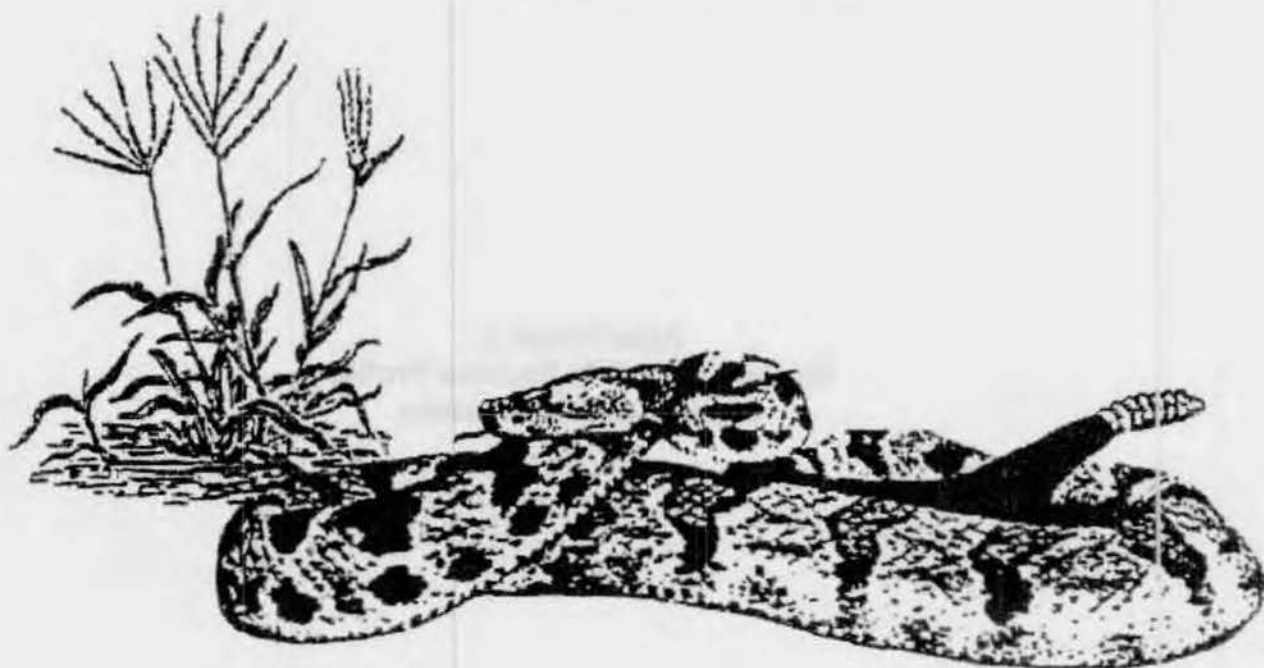
- i) water access dependent activities;
- ii) activities significantly enhanced by the waterfront location and complementary to other existing and or planned activities in a given waterfront area.

Advisory Policies for Shorefront Access Planning and Protection

- a. Virginia Public Beaches - Approximately 25 miles of public beaches are located in the cities, counties, and towns of Virginia exclusive of public beaches on state and federal land. These public shoreline areas will be maintained to allow public access to recreational resources.
- b. Virginia Outdoors Plan - Planning for coastal access is provided by the Department of Conservation and Recreation in cooperation with other state and local government agencies. The Virginia Outdoors Plan (VOP), which is published by the Department, identifies recreational facilities in the Commonwealth that provide recreational access. The VOP also serves to identify future needs of the Commonwealth in relation to the provision of recreational opportunities and shoreline access. Prior to initiating any project, consideration should be given to the proximity of the project site to recreational resources identified in the VOP.
- c. Parks, Natural Areas, and Wildlife Management Areas - Parks, Wildlife Management Areas, and Natural Areas are provided for the recreational pleasure of the citizens of the Commonwealth and the nation by local, state, and federal agencies. The recreational values of these areas should be protected and maintained.
- d. Waterfront Recreational Land Acquisition - It is the policy of the Commonwealth to protect areas, properties, lands, or any estate or interest therein, of scenic beauty, recreational utility, historical interest, or unusual features which may be acquired, preserved, and maintained for the citizens of the Commonwealth.
- e. Waterfront Recreational Facilities - This policy applies to the provision of boat ramps, public landings, and bridges which provide water access to the citizens of the Commonwealth. These facilities shall be designed, constructed, and maintained to provide points of water access when and where practicable.
- f. Waterfront Historic Properties - The Commonwealth has a long history of settlement and development, and much of that history has involved both shorelines and near-shore areas. The protection and preservation of historic shorefront properties is primarily the responsibility of the Department of Historic Resources. Buildings, structures, and sites of historical, architectural, and/or archaeological interest are significant resources for the citizens of the Commonwealth. It is the policy of the Commonwealth and the VCRMP to enhance the protection of buildings, structures, and sites of historical, architectural, and archaeological significance from damage or destruction when practicable.

Virginia's Wildlife

Species Profile



Canebrake Rattlesnake

Crotalus horridus atricaudatus

Status: State Endangered

Virginia Department of Game and Inland Fisheries
Wildlife Diversity Division
Nongame and Endangered Wildlife Program
4010 West Bond Street
P.O. Box 11704
Richmond, VA 23286-1704
(804) 367-8999



Wildlife Diversity Division
(I) Williamsburg: 757-253-7672
(II) Forest: 804-525-7522
(III) Blacksburg: 540-951-7923
(IV) Verona: 540-248-9360
(V) Fredericksburg: 540-890-6199

www.dgif.state.va.us

Support Virginia's Nongame Wildlife Program!
Remember the Nongame Wildlife Tax Checkoff as you do your Virginia state income taxes this year.

Virginia's Wildlife Species Profile: Canebrake Rattlesnake

Virginia Distribution: Southeastern Coastal Plain

Characteristics

The canebrake rattlesnake is a large venomous snake reaching a maximum length in Virginia of about 5 1/2 feet. As the only rattlesnake found in southeastern Virginia, it is easily identified by its distinctive black tail and rattle. The body color is usually pinkish, gray, yellow, or light brown, with brown to black chevrons. A brown or chestnut mid-dorsal stripe is usually present, as is a yellowish-gold to brown stripe from the eye to the back of the jaw. Canebrakes have a wide head with a deep pit on each side between the eye and nostril, and elliptical pupils.

Feeding

Canebrakes feed primarily on gray squirrels, and typically feed only once or twice each year. They may also capture and eat other rodents, rabbits, and birds.

Habitat and Distribution

The canebrake is a physically distinct variant of the timber rattlesnake (*Crotalus horridus*) which ranges from New England to Minnesota and south to Florida and Texas. Whether the canebrake warrants status as a subspecies is in question, but populations occurring southward from southern Missouri, western Tennessee, and southeastern Virginia are considered to represent this population.

In Virginia, while timber rattlesnakes are widespread in the mountain regions and western Piedmont, canebrakes occur only as two populations in the southeastern corner of the state. On the Lower Peninsula they occur in Hampton, Newport News, and York County; and south of the James River they are still found in Isle of Wight County, and in the Cities of Suffolk, Chesapeake, and Virginia Beach.



Figure 1. Canebrake and timber rattlesnake distribution in Virginia and the United States.

FACT: There are 30 species of snakes found in Virginia, but the canebrake rattlesnake is the only snake listed by the DGI as endangered or threatened in the Commonwealth.

Mature hardwood forests are the preferred habitat of canebrake rattlesnakes, but the snakes also are found in mixed hardwood-pine forests, cane thickets, and in the ridges and glades of swamps. They prefer areas with numerous logs and a significant layer of leaves and humus. Canebrakes overwinter in the bases of hollow trees and stumps, and in the underground tunnels resulting from stump and root decomposition.

Reproduction

Canebrakes mature at about 4-6 years of age, and reproduce only every 2-3 years. Mating occurs in mid-summer through fall, and litters of 7-18 young are born the following August or September. The young are about 12 inches in length at birth, and resemble the adults.

Morphology: Snakes

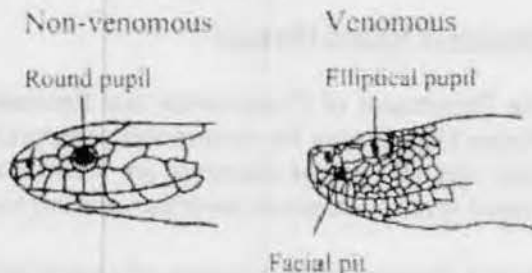


Figure 2. Facial distinctions between venomous and non-venomous snakes of Virginia.

Threats, and How You Can Help

Habitat destruction or modification, and persecution by humans, are the primary threats to canebrake rattlesnakes. Despite their reputation, most canebrakes are reluctant to bite in the wild, preferring to lay undetected among the leaf litter. They rarely rattle even when approached, but if disturbed or startled they may strike in self-defense. Most rattlesnake bites occur when humans attempt to kill, capture, or handle a snake.

If you see a rattlesnake in the wild, do not disturb it. If you are concerned about its presence, please call the local office of the Virginia Department of Game and Inland Fisheries. If a rattlesnake bites you, do not attempt to administer first aid; rather, immediately seek treatment for snakebite at a medical facility.

For additional information, consult *A Guide to Endangered and Threatened Species in Virginia* by K. Terwilliger and J.R. Tate, or *The Reptiles of Virginia* by Joseph C. Mitchell.

Citation: Fernald, R.E. 1999. (editor). Virginia's wildlife species profile: canebrake rattlesnake. VA Dept. of Game & Inland Fisheries, No. 030013.1, Richmond, Virginia.



L. Preston Bryant, Jr.
Secretary of Natural Resources

Joseph H. Maroon
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

203 Governor Street
Richmond, Virginia 23219-2010
(804) 786-6124

MEMORANDUM

DATE: September 12, 2008
TO: Julia Wellman, DEQ
FROM: Robert S. Munson, Planning Bureau Manager, DCR-DPRR
SUBJECT: DEQ 08-175F, Langley Air Force Base

A handwritten signature in cursive script that reads "Robert S. Munson".

Division of Natural Heritage

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

Biotics documents the presence of natural heritage resources in the project area. However, due to the scope of the activity and the distance to the resources, we do not anticipate that this project will adversely impact these natural heritage resources.

In addition, our files do not indicate the presence of any State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

The Virginia Department of Game and Inland Fisheries maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters, that may contain information not documented in this letter. Their database may be accessed from www.dgif.virginia.gov/wildlifeinfo_map/index.html, or contact Shirl Dressler at (804) 367-6913.

Division of Chesapeake Bay Local Assistance

We have reviewed the Environmental Assessment for the proposed project and offer the following comments regarding consistency with the provisions of the **Chesapeake Bay Preservation Area Designation and Management Regulations** (Regulations), as one of the enforceable programs of Virginia's Coastal Resources Management Program (VCRMP). Federal actions on installations located within Tidewater Virginia are required to be consistent with the performance criteria of the Regulations on lands analogous to locally designated Chesapeake Bay Preservation Areas.

In the City of Hampton the areas protected by the Chesapeake Bay Act, as locally implemented, require stringent performance criteria, and these areas include: **Resource Protection Areas** (RPAs) which include tidal wetlands, non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow, tidal shores and a 100-foot vegetated buffer area located adjacent to and landward of the aforementioned features, and along both sides of any water body with perennial flow, and **Resource Management Areas** (RMAs) which require less stringent performance criteria and include floodplains, highly erodible soils including steep slopes, highly permeable soils, nontidal wetlands not included in the RPA, and a minimum width of 100 feet contiguous to and landward of the RPA.

The proposed projects and alternatives may be located within lands analogous to those in the Chesapeake Bay Preservation Area Designation and Management Regulations requiring stringent performance criteria, as specified in § 9 VAC 10-20-130, or within the RMA and subject to the general performance criteria as specified in § 9 VAC 10-20-120.

Projects that include land disturbing activity must adhere to the general performance criteria, § 9 VAC 10-20-120 et seq. especially with respect to minimizing land disturbance (including access and staging areas), retaining indigenous vegetation and minimizing impervious surface. For land disturbance over 2,500 square feet, the project must comply with the requirements of the *Virginia Erosion & Sediment Control Handbook*, Third Edition, 1992. Additionally, stormwater management criteria consistent with water quality protection provisions of the *Virginia Stormwater Management Regulations* (§ 4 VAC 50-60) shall be satisfied.

The 1998 Federal Agencies' Chesapeake Ecosystem Unified Plan requires the signatories, including the DOD-USAF, to fully cooperate with local and state governments in carrying out voluntary and mandatory actions to comply with the management of stormwater. The agencies also committed to encouraging construction design that a) minimizes natural area loss on new and rehabilitated federal facilities; b) adopts low impact development and best management technologies for storm water, sediment and erosion control, and reduces impervious surfaces; and c) considers the Conservation Landscaping and Bay-Scapes Guide for Federal Land Managers. In addition, the Chesapeake 2000 Agreement committed the government agencies to a number of sound land use and stormwater quality controls. The signatories additionally committed the agencies to lead by example with respect to controlling nutrient, sediment and chemical contaminant runoff from government properties. In December 2001, the Executive Council of the Chesapeake Bay Program issued Directive No. 01-1, Managing Storm Water on State, Federal and District-owned Lands and Facilities, which includes specific commitments for agencies to lead by example with respect to stormwater control.

Provided adherence to the above requirements, the proposed activity would be consistent with the *Chesapeake Bay Preservation Act & Regulations*.

Division of Soil and Water Conservation

The Langley Air force Base and their authorized agents conducting regulated land disturbing activities on private and public lands in the state must comply with the Virginia Erosion and Sediment Control Law and Regulations (VESCL&R), Virginia Stormwater Management Law and Regulations including coverage under the general permit for stormwater discharge from construction activities, and other applicable federal nonpoint source pollution mandates (e.g. Clean Water Act-Section 313, Federal Consistency under the Coastal Zone Management Act). Clearing and grading activities, installation of staging areas, parking lots, roads, buildings, utilities, borrow areas, soil stockpiles, and related land-disturbance activities that result in the land-disturbance of 2,500 square feet would be regulated by VESCL&R. Accordingly, the Langley Air force Base must prepare and implement erosion and sediment control (ESC) plan to ensure compliance with state law and regulations. The ESC plan is submitted to the DCR Regional Office that serves the area where the project is located for review for compliance. Langley Air force Base is ultimately responsible for achieving project compliance through oversight of on site contractors, regular field inspection, prompt action against non-compliant sites, and other mechanisms consistent with agency policy. [Reference: VESCL §10.1-567;].

General Permit for Discharges of Stormwater from Construction Activities in CBPA:

The operator or owner of construction activities involving land disturbing activities equal to or greater than 2,500 square feet in areas designated as subject to the Chesapeake Bay Preservation Area Designation and Management Regulations adopted pursuant to the Chesapeake Bay Preservation Act are required to register for coverage under the General Permit for Discharges of Stormwater from Construction Activities and develop a project specific stormwater pollution prevention plan (SWPPP). The SWPPP must be prepared prior to submission of the registration statement for coverage under the general permit and the SWPPP must address water quality and quantity in accordance with the Virginia Stormwater Management Program (VSMP) Permit Regulations. General information and registration forms for the General Permit are available on DCR's website at http://www.dcr.virginia.gov/soil_&_water/vsmp.shtml

[Reference: Virginia Stormwater Management Law Act §10.1-603.1 et seq.; VSMP Permit Regulations §4VAC-50 et seq.]

The remaining DCR divisions have no comments regarding the scope of this project. Thank you for the opportunity to comment.

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR PROGRAM COORDINATION

ENVIRONMENTAL REVIEW COMMENTS APPLICABLE TO AIR QUALITY

TO: Julia H. Wellman

DEQ - OEIA PROJECT NUMBER: 08 - 175F

PROJECT TYPE: STATE EA / EIR FEDERAL EA / EIS SCC

X CONSISTENCY DETERMINATION

PROJECT TITLE: SELECTED CAPITAL IMPROVEMENT PLAN (CIP) PROJECTS

PROJECT SPONSOR: DEPARTMENT OF DEFENSE / U. S. AIR FORCE

PROJECT LOCATION: X OZONE MAINTENANCE AREA

REGULATORY REQUIREMENTS MAY BE APPLICABLE TO: X CONSTRUCTION
 OPERATION

STATE AIR POLLUTION CONTROL BOARD REGULATIONS THAT MAY APPLY:

1. 9 VAC 5-40-5200 C & 9 VAC 5-40-5220 E - STAGE I
2. 9 VAC 5-40-5200 C & 9 VAC 5-40-5220 F - STAGE II Vapor Recovery
3. 9 VAC 5-40-5490 et seq. - Asphalt Paving operations
4. X 9 VAC 5-40-5600 et seq. - Open Burning
5. X 9 VAC 5-50-60 et seq. Fugitive Dust Emissions
6. 9 VAC 5-50-130 et seq. - Odorous Emissions; Applicable to _____
7. 9 VAC 5-50-160 et seq. - Standards of Performance for Toxic Pollutants
8. 9 VAC 5-50-400 Subpart _____, Standards of Performance for New Stationary Sources, designates standards of performance for the _____
9. 9 VAC 5-80-10 et seq. of the regulations - Permits for Stationary Sources
10. 9 VAC 5-80-1700 et seq. Of the regulations - Major or Modified Sources located in PSD areas. This rule may be applicable to the _____
11. 9 VAC 5-80-2000 et seq. of the regulations - New and modified sources located in non-attainment areas
12. 9 VAC 5-80-800 et seq. Of the regulations - Operating Permits and exemptions. This rule may be applicable to _____

COMMENTS SPECIFIC TO THE PROJECT:

Being in an area of ozone maintenance, all precautions are necessary to restrict the emissions of volatile organic compounds (VOC) and oxides of nitrogen (NOX) during construction/demolition.

K. S. Narasimhan

(Kotur S. Narasimhan)
Office of Air Data Analysis

DATE: September 5, 2008

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DEQ-Office of Environmental
Impact Review



DEPARTMENT OF ENVIRONMENTAL QUALITY
TIDEWATER REGIONAL OFFICE
ENVIRONMENTAL IMPACT REVIEW COMMENTS

September 3, 2008

PROJECT NUMBER: 08-175F

PROJECT TITLE: Selected Capital Improvement Plan (CIP) Projects

As Requested, TRO staff has reviewed the supplied information and has the following comments:

Petroleum Storage Tank Cleanups:

There have been 150 petroleum releases reported at Langley Air Force Base (LAFB), 3 of which are currently active cases. Several of these releases are located at or adjacent to the proposed projects at LAFB. Also, there has been 1 petroleum release reported at the nearby Big Bethel Water Treatment Plant, where one of the projects is proposed. This closed case, PC#1999-2309 is associated with former USTs at the water treatment plant. If evidence of a petroleum release is discovered during implementation of these projects, it must be reported to DEQ. Contact Ms. Rebecca Gehring at (757) 518-2190 or Mr. Gene Siudyla at (757) 518-2117. Petroleum contaminated soils generated during construction of this project must be properly characterized and disposed of properly.

Petroleum Storage Tank Compliance/Inspections:

Langley AFB (CEDS # 5001910) currently operates 16 underground storage tanks (USTs) and 61 aboveground storage tanks (ASTs) at various locations throughout the facility. These tanks contain a variety of petroleum products including gasoline, diesel fuel, jet fuel, heating oil and lubrication oils. In addition to the currently operational tanks mentioned above, there are over 90 locations throughout the facility where former underground tanks were removed or closed in place. Based on my review of the CD some of the areas outlined for improvements will be located on or near existing and / or former tanks sites. Care should be taken to identify those areas where construction activities will impact petroleum storage tanks. The re-location or removal and closure of regulated petroleum storage tanks as part of these projects should be reported to the DEQ Tidewater Regional Office Petroleum Storage Tank Program. (see contact information below)

In addition to the above, if the construction of this project will include the use of portable AST storage (>660 gallons) for equipment fuel, the tank or tanks must be registered with DEQ using AST Registration form 7540-AST. This form is available at the **DEQ web site (deq.virginia.gov)** under "petroleum programs, download library, AST registration forms". Once the registration form is completed, it should be mailed to the DEQ address on the form along with the appropriate registration fee (also listed on the form). **Any questions concerning UST or AST registration should be directed to "Tom Madigan" at the Tidewater Regional Office 5636 Southern Boulevard, Virginia Beach, VA 23462, (757) 518-2115 or by e-mail at temadigan@deq.virginia.gov**

Virginia Water Protection Permit Program (VWPP):

The applicant should note that the Virginia Code Section referenced on Page B-3 of this document (62.1-44.15.5) does not exist. While §62.1-44.15:5 (note the colon) previously constituted the appropriate general Code reference for the Virginia Water Protection Permit program requirements, this section was repealed by the 2007 General Assembly and replaced by Section 62.1-44.15:20, et seq. The applicant should familiarize themselves with these revised statutes and correct references



DEPARTMENT OF ENVIRONMENTAL QUALITY
TIDEWATER REGIONAL OFFICE
ENVIRONMENTAL IMPACT REVIEW COMMENTS

September 3, 2008

PROJECT NUMBER: 08-175F

PROJECT TITLE: Selected Capital Improvement Plan (CIP) Projects

Accordingly. Furthermore, a description of proposed activities in table 2.1-1 indicates that the construction of a Conference Center/Bait shop will include a fishing pier and boat ramp. Given that our State Water Control Law (§62.1-44.2., et seq. defines "State Waters" as "all water, on the surface and under the ground, wholly or partially within or bordering the Commonwealth or within its jurisdiction, including wetlands", it is unclear how the consistency statement on page B-2, "No aspects of the proposed action or alternatives occur in state waters. There will be no dredge and fill operations" was developed. Construction of a boat ramp without dredge or fill operations in state waters would appear to present somewhat of a challenge. Having said that, provided that all necessary authorizations are obtained from the Virginia Water Protection Permit program prior to initiating impacts, and further, that these authorizations are complied with, this activity will be in compliance with this program's regulatory requirements.

Air Permit Program :

No comments.

Water Permit Program :

There does not appear to be any impact on permits administered by the TRO Water Permit Section from the construction activities described in this document.

Waste Permit Program :

The document adequately addresses the solid and hazardous waste management concerns previously identified in the Departments December 7, 2007 review letter. It is strongly advised that the DEQ's Federal Facilities Installation Restoration Program staff be involved in the siting and design of several of the proposed projects to minimize potential impacts.

The staff from the Tidewater Regional Office thanks you for the opportunity to provide comments.

Sincerely,

Michelle R. Hollis
Environmental Specialist
5636 Southern Blvd.
VA Beach, VA 23462
(757) 518-2146
(757) 518-2009 Fax
mrhollis@deq.virginia.gov



MEMORANDUM

TO: Julia Welman, Environmental Program Planner
JK

FROM: Paul Kohler, Waste Division Environmental Review Coordinator

DATE: September 10, 2008

COPIES: Sanjay Thirunagari, Waste Division Environmental Review Manager; file

SUBJECT: Environmental Impact Report: Selected Capitol Improvement Plan (CIP) Projects; 08-175F

The Waste Division has completed its review of the Environmental Impact report for the Selected Capitol Improvement Plan (CIP) Projects project in Hampton, Virginia. We have the following comments concerning the waste issues associated with this project:

Both solid and hazardous waste issues were addressed in the report. The report included a search of waste-related data bases. A GIS database search did not reveal any waste sites within a half mile radius that would impact or be impacted by the subject site. The Waste Division staff performed a cursory review of its data files and determined that there are several hazardous waste, solid waste, formerly used defense sites (FUDS) and voluntary remediation program (VRP) sites located within the same zip code(s), however their proximity to the subject site(s) is unknown. These are as follows.

CERCLA
VA2800005033 LANGLEY AIR FORCE BASE/NASA LANGLEY RESEARCH CENTER HAMPTON
VA Final NPL

HW
US AIR FORCE - LANGLEY AIR FORCE BASE, VA4570024477 LQG (ACTIVE) VA4570024477
TSD (ACTIVE)
INDUSTRIAL PLATING CORPORATION, VAD037426228 TSD (ACTIVE)

SW
USA Waste of Virginia Landfills - Bethel Landfill, SWP 268, Closed Sanitary Landfill
USA Waste of Virginia Landfills - Bethel Landfill, SWP 299, Closed Sanitary Landfill
USA Waste of Virginia Landfills - Bethel Landfill, SWP 336, Closed Sanitary Landfill
USA Waste of Virginia Landfills - Bethel Landfill, SWP 349, Closed Sanitary Landfill
USA Waste of Virginia Landfills - Bethel Landfill, SWP 521, Sanitary Landfill

FUDS

C03VA1039, VA9799F8457, LANGLEY AFB

VRP

VRP00126, Former Fashion Care Cleaners, Enrolled in Program

VRP00207, Williams Honda, Certificate Issued

The following websites may prove helpful in locating additional information for these identification numbers: <http://www.epa.gov/superfund/sites/cursites/index.htm> or http://caspub.epa.gov/enviro/ef_home2.waste. Paul Herman of DEQ's Federal Facilities Program has been contacted for his review of this determination and his reply is attached.

Any soil that is suspected of contamination or wastes that are generated during construction-related activities must be tested and disposed of in accordance with applicable Federal, State, and local laws and regulations. Some of the applicable state laws and regulations are: Virginia Waste Management Act, Code of Virginia Section 10.1-1400 *et seq.*; Virginia Hazardous Waste Management Regulations (VHWMR) (9VAC 20-60); Virginia Solid Waste Management Regulations (VSWMR) (9VAC 20-80); Virginia Regulations for the Transportation of Hazardous Materials (9VAC 20-110). Some of the applicable Federal laws and regulations are: the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Section 6901 *et seq.*, and the applicable regulations contained in Title 40 of the Code of Federal Regulations; and the U.S. Department of Transportation Rules for Transportation of Hazardous materials, 49 CFR, Part 107.

Also, all structures being demolished/renovated/ removed should be checked for asbestos-containing materials (ACM) and lead-based paint prior to demolition. If ACM or LBP are found, in addition to the federal waste-related regulations mentioned above, State regulations 9VAC 20-80-640 for ACM and 9VAC 20-60-261 for LBP must be followed.

Please note that DEQ encourages all construction projects and facilities to implement pollution prevention principles, including the reduction, reuse, and recycling of all solid wastes generated. All generation of hazardous wastes should be minimized and handled appropriately.

If you have any questions or need further information, please contact Paul Kohler at (804) 698-4208.

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WASTE DIVISION
Federal Facilities Restoration Program
629 E. Main Street P.O. Box 10009 Richmond, Virginia 23240

SUBJECT: Environmental Assessment – Langley Air Force Base
Select Capital Improvement Plan Projects

TO: Julia Wellman, OEIR

FROM: Paul E. Herman, P.E., FFR 

DATE: September 2, 2008

COPIES: Paul Kohler, ER Coordinator; File

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DEQ-Office of Environmental
Impact Review

The Langley Air Force Base report entitled *Draft Environmental Assessment – Select Capital Improvement Plan Projects* (Draft EA) dated August 2008 has been reviewed as requested by Paul Kohler, Waste Division Environmental Review Manager. The document presents the “No Action” alternative, the “Proposed Action”, and two alternatives which are located at Langley Air Force Base, at the Landings at Langley Housing Area, and at the Big Bethel Reservoir. Only those alternatives that impact the Langley Air Force Base have the potential to impact CERCLA Environmental Restoration Program (ERP) sites that are either active or closed.

Langley Air Force Base (LAFB) is on the National Priorities List (NPL) and is the party responsible for remediation of CERCLA sites on Base in order to be removed from the NPL. The LAFB ERP is charged with oversight of the CERCLA sites on Base. The Proposed Action and the other alternatives were considered relative to their impact to active and closed ERP sites is the subject of this review.

Section 3.9 of the Draft EA identifies the ERP sites that may be impacted by the alternatives under consideration are described. The Draft EA indicates attempts will be made to avoid ERP sites as much as possible. Section 4.9 of the Draft EA identifies those ERP sites that cannot be avoided. Section 4.9 does not identify ERP Site OT-64, Basewide Groundwater, which addresses the groundwater beneath each of the ERP sites on Base nor does it discuss any of the Military Munition Response Program (MMRP) Sites on Base.

In the process of implementing any of the alternatives identified in the Draft EA, the Federal Facilities Restoration Program recommends the facility contact Mr. John Tice, LAFB Environmental Restoration Program Manager at (757) 764-1082, for information concerning the CERCLA or MMRP obligations or hazards at or near the proposed Select Capital Improvement Plan Project sites prior to initiating any land, sediment, or ground water disturbing activities.

Wellman, Julia

From: Ewing, Amy (DGIF)
Sent: Tuesday, September 16, 2008 3:13 PM
To: Wellman, Julia
Subject: ESSlog# 25678_24603_08-175F_Langley_Big Bethel_CIP

We have reviewed the subject project that includes the construction, renovation or demolition of a number of facilities located at Langley Air Force Base and near Big Bethel Reservoir.

According to our records, state Endangered canebrake rattlesnake has been documented in the vicinity of both Langley Air Force Base and Big Bethel Reservoir. Based on the proposed scope and location of the projects, we do not anticipate that significant adverse impacts upon this species and/or its habitat are likely to result from the proposed work. We do recommend that, prior to the start of construction, all contractors are trained in the identification, basic natural history, and legal status of canebrake rattlesnakes. This could be accomplished via an appropriate information sheet distributed to those working on the project (see attached). Information also can be found on our website, <http://www.dgif.virginia.gov/wildlife/species/display.asp?id=030013>. If a canebrake rattlesnake is observed at any time during the development or construction of this project, the applicant should contact VDGIF herpetologist John Kleopfer (804-829-6580) or our Richmond office (804-367-8999) so that we may safely capture and relocate the animal to a suitable site.

State Threatened bald eagle has been documented on Langley Air Force Base. However, the proposed projects are located outside of the management zone for this nest. Therefore, impacts upon bald eagle are not likely to result from the proposed work.

To minimize overall impacts to wildlife and our natural resources, we recommend that the applicant avoid and minimize impacts to undisturbed forest, wetlands, and streams to the fullest extent practicable. We recommend maintaining undisturbed wooded buffers of at least 100 feet in width around all on-site wetlands and on both sides of all perennial and intermittent streams. We recommend that clearing of forested areas adhere to a time of year restriction protective of resident and migratory song birds from March 15 through July 31 of any year.

We recommend that the stormwater controls for this project be designed to replicate and maintain the hydrographic condition of the site prior to the change in landscape. This should include, but not be limited to, utilizing bioretention areas, and minimizing the use of curb and gutter in favor of grassed swales. Bioretention areas (also called rain gardens) and grass swales are components of Low Impact Development (LID). They are designed to capture stormwater runoff as close to the source as possible and allow it to slowly infiltrate into the surrounding soil. They benefit natural resources by filtering pollutants and decreasing downstream runoff volumes.

Assuming strict erosion and sediment controls are in place during construction, we find this project consistent with the Fisheries Management section of the CZMA.

Thanks, Amy

Amy M. Ewing
Environmental Services Biologist
Virginia Dept. of Game and Inland Fisheries
4010 West Broad Street
Richmond, VA 23230
804-367-2211
amy.ewing@dgif.virginia.gov



COMMONWEALTH of VIRGINIA

Department of Historic Resources

2801 Kensington Avenue, Richmond, Virginia 23221-0311

L. Preston Brant, Jr.
Secretary of Natural Resources

1 September 2008

Mr. Ryan Baie
1 CES/CECP
37 Sweeney Blvd.
Langley AFB Virginia 23665-2101

Re: Selected Capital Improvement Plan (CIP) Projects
Langley Air Force Base, City of Hampton
VDHR File No. 2008-1475

Dear Mr. Baie:

Through the Virginia Department of Environmental Quality (DEQ) we were made aware of the above referenced project.

We want to remind you that the Air Force, as a federal agency, must consider the effects of its actions on historic properties listed in or eligible for the National Register of Historic Places and provide the Advisory Council on Historic Preservation the opportunity to comment in accordance with Sections 106 of the National Historic Preservation Act, as amended, and its implementing regulation 36 CFR 800. The Section 106 review process begins when the federal agency provides a description of the undertaking and its Area of Potential Effect (APE) to the State Historic Preservation Officer (SHPO), which in Virginia is the Department of Historic Resources (DHR). For this reason we request that you consult with us directly on this undertaking. While 36 CFR 800.8 allows federal agencies to coordinate Section 106 compliance with the National Environmental Policy Act (NEPA), the agency must inform the applicable SHPO early in the process that it intends to do so. The agency must also take care that the environmental documentation prepared under NEPA does present information about historic properties and potential effects to such resources at a level of detail that allows the SHPO and other consulting parties to comment.

We look forward to working with you on this project. If you have any questions concerning our comments, please contact me at (804) 367-2323, ext. 114.

Sincerely,

Marc Holma, Manager
Office of Review and Compliance

Cc: Ms Julia H. Wellman, DEQ

Administrative Services
111 Courthouse Avenue
Petersburg, VA 23803
Tel: (804) 863-2624
Fax: (804) 862-6196

Capital Region Office
2801 Kensington Ave.
Richmond, VA 23221
Tel: (804) 667-2323
Fax: (804) 667-2310

Eastern Region Office
14415 Old Guilford Way, 2nd Floor
Newport News, VA 23606
Tel: (757) 586-2977
Fax: (757) 586-2978

Roanoke Region Office
7000 Bertie Avenue
Roanoke, VA 24012
Tel: (540) 857-7465
Fax: (540) 857-7466

Southwest Region Office
1117 Adams Street
Roanoke, VA
Stephensville, VA 22980
Tel: (800) 698-7800
Fax: (540) 968-7800

If you cannot meet the deadline, please notify JULIA H. WELLMAN at 804/698-4326 prior to the date given. Arrangements will be made to extend the date for your review if possible. An agency will not be considered to have reviewed a document if no comments are received (or contact is made) within the period specified.

REVIEW INSTRUCTIONS:


- A. Please review the document carefully. If the proposal has been reviewed earlier (i.e. if the document is a federal Final EIS or a state supplement), please consider whether your earlier comments have been adequately addressed.
- B. Prepare your agency's comments in a form which would be acceptable for responding directly to a project proponent agency.
- C. Use your agency stationery or the space below for your comments. **IF YOU USE THE SPACE BELOW, THE FORM MUST BE SIGNED AND DATED.**

Please return your comments to:

MS. JULIA H. WELLMAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL IMPACT REVIEW
629 EAST MAIN STREET, SIXTH FLOOR
RICHMOND, VA 23219
FAX #804/698-4319
jhwelldman@deq.virginia.gov

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JULIA H. WELLMAN
ENVIRONMENTAL PROGRAM PLANNER

COMMENTS

DEQ-Office of Environmental
Impact Review

Statements in the project document concerning endangered species were reviewed and compared to available information. No additional comments are necessary in reference to endangered plant and insect species regarding this project.

(signed) _____

Endangered Species Coordinator

(Keith R. Tignor)

(date) September 2, 2008

(title) _____

VDACS, Office of Plant and Pest Service

(agency) _____



COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1901 North Main Street
Richmond, Virginia 23218
Virginia DOT.gov

September 5, 2008

DAVID S. EKERN, P.E.
COMMISSIONER

MEMORANDUM

To: Christopher D. Adkins, Environmental Program Planner
From: Eric L. Stringfield, District Planning Engineer
Project: Langley Air Force Base (LAFB), Capital Improvement Plan (CIP)
Subject: Environmental Impact Review

This report was reviewed for impacts to the transportation network as it relates to the construction of new or replacement facilities on LAFB. The eleven new buildings provide facilities that meet the growing demands of the base. Since this report provides no specific data accounting for vehicle trips associated with the construction or operation of the new facilities, we conclude that any increase in traffic volumes will be temporary and occur during construction. The report notes a minimal increase in employment, with existing staff transferring to new locations. The Planning Office concludes that this facility does not adversely impact traffic operations in this area.

There are several projects either recently completed, under construction or proposed in the Six Year Plan and the 2030 Long Range Plan that improves traffic flow in this area. Impacts due to site activities should be minimal and result in negligible temporary impacts to traffic. We conclude the construction of this facility is consistent with its current use and will not have a negative impact on the transportation network within the region.

This maybe an excellent opportunity to implement or enhance pedestrian trails, sidewalks or bicycle accommodations in conjunction with the development of the outdoor areas mentioned in the CIP. If detours and road closures are expected to impact areas outside of the LAFB boundary, surrounding municipalities should be notified allowing an opportunity to coordinate or adjust traffic operations.

If any additional information is required notify Ray Hunt at 757-925-1595 or by e-mail ray.hunt@vdot.virginia.gov

ELS/arh
cc: Mr. Adam J. Jack, PE District Preliminary Engineer



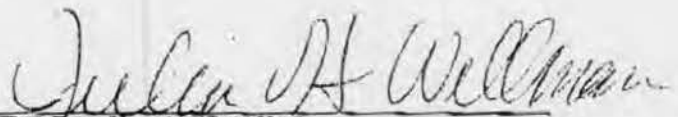
If you cannot meet the deadline, please notify JULIA H. WELLMAN at 804/698-4326 prior to the date given. Arrangements will be made to extend the date for your review if possible. An agency will not be considered to have reviewed a document if no comments are received (or contact is made) within the period specified.

REVIEW INSTRUCTIONS:

- A. Please review the document carefully. If the proposal has been reviewed earlier (i.e. if the document is a federal Final EIS or a state supplement), please consider whether your earlier comments have been adequately addressed.
- B. Prepare your agency's comments in a form which would be acceptable for responding directly to a project proponent agency.
- C. Use your agency stationery or the space below for your comments. **IF YOU USE THE SPACE BELOW, THE FORM MUST BE SIGNED AND DATED.**

Please return your comments to:

MS. JULIA H. WELLMAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL IMPACT REVIEW
629 EAST MAIN STREET, SIXTH FLOOR
RICHMOND, VA 23219
FAX #804/698-4319
jhwelldman@deq.virginia.gov


JULIA H. WELLMAN
ENVIRONMENTAL PROGRAM PLANNER

COMMENTS

Please be advised that the Marine Resources Commission, pursuant to Section 28.2-1204 of the Code of Virginia, has jurisdiction over any encroachments in, on, or over any State-owned rivers, streams, or creeks in the Commonwealth. Accordingly, if any portion of the subject projects involves any encroachments channelward of ordinary high water along natural rivers and streams, a permit may be required from our agency.

(signed) Eva Salje (date) 8/25/08
(title) Environmental Engineer
(agency) UMRC

6/08

PROJECT #08-175F

Wellman, Julia

From: Rucker, William (VDH)
Sent: Friday, August 29, 2008 1:12 PM
To: Pinion, Anne; Fisher, John; Wellman, Julia
Subject: OEIR-Environmental Review Request

Recent projects which have been reviewed for proximity to public drinking water *sources* (groundwater wells and surface water intakes) are summarized in the attached table. Potential impacts to public water distribution systems or sanitary sewage collection systems must be verified by the local utility.

W.C. Rucker, Jr
Office Services Assistant
Virginia Department of Health
Office of Drinking Water
109 Governor Street
Richmond, Virginia 23219
William.Rucker@vdh.virginia.gov
804-864-7495 Office

DEQ-OFFICE OF ENVIRONMENTAL IMPACT REVIEW

PROJECT #	PROJECT TITLE	SPONSOR	TYPE	REVIEWER	RECIPIENT (@deq.virginia.gov)	LOCALITY
08-175F	Selected Capital Improvement Plan (CIP) Projects	DOD/USAF	EA	WCR	jhwellman	City of Hampton
08-176S	Virginia War Memorial, Paul and Phyllis Galanti Ed	DCS	EIR	WCR	jefisher	Richmond City
08-178S	Alberta Rest Area Wastewater Treatment Plant	VDOT	EIR	WCR	anpinion	Brunswick Co
08-180S	Beaumeade-NIVO 230 kV Underground Transmission	SCC	Other	WCR	anpinion	Loudoun Co

DEQ-OFFICE OF ENVIRONMENTAL IMPACT REVIEW

PROXIMITY TO WELL OR INTAKE	DATE RECEIVED	REVIEW DEADLINE	RESPONSE DATE
037 03 35.57N 076 22 47.59W at 6'. No GW source within 1 mile. No SW intake within 5 miles.	8/25/2008	9/12/2008	8/29/2008
037 32 11.63N 077 26 56.38W at 159'. No GW source within 1 mile. 1 SW intake within 5 miles (Richmond City of)	8/26/2008	9/19/2008	8/29/2008
036 51 45.50N 077 50 16.70W at 319'. 3 GW sources within 1 mile. No SW intake within 5 miles (I-85 Rest Area South and Northbound Lane).	8/28/2008	9/25/2008	8/29/2008
039 01 29.61N 077 27 18.82W at 271'. No GW source within 1 mile. 1 SW intake within 5 miles (Fairfax City of)	8/28/2008	10/1/2008	8/29/2008



RECEIVED

SEP 22 2008

DEQ-Office of Environmental
Impact Review

September 15, 2008

Ms. Julia H. Wellman
Department of Environmental Quality
Office of Environmental Impact Review
629 East Main Street, Sixth Floor
Richmond, Virginia 23219

Re: Selected Capital Improvement Plan Projects
DEQ #08-175F (ENV:GEN)

Dear Ms. Wellman:

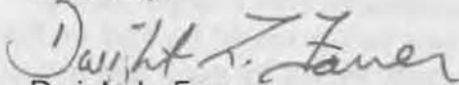
Pursuant to your request of August 20, 2008, the staff of the Hampton Roads Planning District Commission has reviewed the Environmental Assessment and Consistency Determination for selected Capital Improvement Plan projects at NASA Langley Research Center in Hampton. We have contacted the City of Hampton concerning the project

Based on this review, we offer the following comments. The proposed project involves the demolition of Hanger 753, a visually distinctive building that is also a contributing resource to the Langley Field Historic District. Alternatives One and Two include renovation of this facility instead of demolition; therefore, we recommend that the applicant choose one of these alternatives to avoid unnecessary impacts to cultural resources.

Additionally, the information provided in the applicant's EA indicates that the negative impacts to the Big Bethel Reservoir Water Treatment Plant and some impacts associated with the replacement of the Security Forces Operations Facility are unknown. We encourage the applicant to evaluate these sites for cultural significance and to share the results of these evaluations.

We appreciate the opportunity to review this project. If you have any questions, please do not hesitate to call.

Sincerely,


Dwight L. Farmer
Executive Director/Secretary

MLJ/ft

Copy: Mr. James Freas

Wellman,Julia

From: Parker, Amy [aparker@yorkcounty.gov]
Sent: Monday, September 22, 2008 10:53 AM
To: Wellman,Julia
Subject: RE: Langley AFB projects

Ms. Wellman:

Planning Staff have reviewed the projects and have no remarks. Thanks for the opportunity to comment.

Amy M. Parker
Senior Planner
York County Planning Division
P.O. Box 532
224 Ballard Street
Yorktown, VA 23690
(757) 890-3495

From: Wellman,Julia [mailto:jhwellman@deq.virginia.gov]
Sent: Monday, September 22, 2008 10:24 AM
To: Parker, Amy
Subject: Langley AFB projects

Hi Amy,

As we discussed on the phone, Langley Air Force Base submitted an environmental assessment (EA) and federal consistency determination (FCD) for 10 projects. Two projects—expanding a day care center and chapel—are within York County. I've included the project descriptions from the EA and FCD below.

2.1.3 Add/Alter Landings at Langley Chapel: Under the Proposed Action, the Landings at Langley Chapel sanctuary and social hall (Figure 2.1-2) would be expanded by 8,500 SF and alterations would be made to 11,000 SF of the existing facility. The Landings at Langley Chapel is located in the Landings at Langley Family Housing Area (Figure 2.1-2). Electrical, plumbing, structural, and mechanical systems would be upgraded to support the expansion. In addition, several parking spots, new vehicular access roads, sidewalks, storm drainage, exterior lighting, and landscaping would be added to the site.

2.1.9 Construct Landings at Langley Child Development Center: Under the Proposed Action, the existing 4,600 SF CDC (Building 1994), would be replaced with a larger facility (24,000 SF). The existing CDC would be torn down and the new facility would be built on the same location (Figure 2.1-2). The new CDC would include activity rooms for each age group, administrative offices, a reception area, a kitchen, a laundry area, an employee breakroom, bathrooms, a conference room, a resource room, a communications room, storage closets, and a janitor's room. Closed circuit television surveillance would be provided throughout the facility for security purposes. The housing area surrounding the CDC site has been privatized and will be redeveloped in the near future. The final CDC facility plan may require use of lands currently privatized, in which case additional negotiations with the privatization developer

would be required.

A link to the entire document is <http://www.deq.virginia.gov/eir/08.175F.LAFB.pdf>. A map of the proposed projects is on page 2-3.

If you would like to comment, please respond by **Friday, Sept. 26**. If you do not want to comment, please let me know that as well.

Thank you for your time, and if you have any questions, please feel free to contact me.

Julia Wellman
Environmental Impact Review Coordinator
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
Phone: (804) 698-4326
Fax: (804) 698-4319
E-mail: jhwellman@deq.virginia.gov

APPENDIX B
FEDERAL AGENCY COASTAL ZONE
MANAGEMENT ACT (CZMA)
CONSISTENCY DETERMINATION

APPENDIX B: FEDERAL AGENCY COASTAL ZONE MANAGEMENT ACT (CZMA) CONSISTENCY DETERMINATION

INTRODUCTION

This document provides the Commonwealth of Virginia with the U.S. Air Force's Consistency Determination under CZMA Section 307 and 15 C.F.R. Part 930 sub-part C. The information in this Consistency Determination is provided pursuant to 15 C.F.R. Section 930.39.

Pursuant to Section 307 of the Coastal Zone Management Act, 16 U.S.C. § 1456, as amended, its implementing regulations at 15 C.F.R. Part 930, this is a Federal Consistency Determination for activities described within the Langley AFB Selected Capital Improvement Plan (CIP) Projects Environmental Assessment (Chapter 2.0 of the document).

PROPOSED FEDERAL AGENCY ACTION

The proposed actions of the EA are to upgrade facilities and services associated within the CIP Langley AFB.

The U.S. Air Force has evaluated the proposed action and alternatives for potential effects to the land or water uses or natural resources of the Commonwealth's coastal zone within the context of the statutes listed in the Virginia Coastal Resources Management Program (below).

FEDERAL CONSISTENCY REVIEW

Statutes addressed as part of the Virginia Coastal Resources Management Program consistency review and considered in the analysis of the proposed actions are discussed in Table B-1.

**Statutes Addressed as Part of the Virginia Coastal Resources Management Program
(Page 1 of 4)**

<i>Statute</i>	<i>Scope</i>	<i>Consistency</i>
Fisheries Management Virginia Administrative Code 28.2-200 to 28.2-713 (Virginia Marine Resources Commission) and 29.1-100 to 29.1-570 (Department of Game and Inland Fisheries) State Tributyltin (TBT) Program. VAC 3.1-249.59 to 3.1-249.62	Stresses the conservation and enhancement of finfish and shellfish resources and the promotion of commercial and recreational fisheries to maximize food production and recreational opportunities.	Fisheries would not be affected by the proposed action or alternatives
Subaqueous Lands Management Virginia Administrative Code Section 28.2-1200 to 28.2-1213	Establishes the conditions for granting or denying permits to use state-owned bottomlands based on considerations of potential effects on marine and fisheries resources, wetlands, adjacent or nearby properties, anticipated public and private benefits and water quality standards established by the Virginia Department of Environmental Quality.	No aspects of the proposed action or alternatives occur in state waters. There will be no dredge and fill operations. The proposed action or alternatives would not involve the use of state submerged lands

B-2

Appendix B Federal Agency Coastal Zone Management Act (CZMA) Consistency Determination
Selected Capital Improvement Plan (CIP) Projects at Langley AFB

**Statutes Addressed as Part of the Virginia Coastal Resources Management Program
(Page 2 of 4)**

<i>Statute</i>	<i>Scope</i>	<i>Consistency</i>
<p>Wetlands Management The tidal wetlands program is administered by the Virginia Marine Resources Commission; Virginia Administrative Code 28.2-1301 to 28.2-1320. The Virginia Water Protection Permit program administered by VDEQ includes protection of wetlands - both tidal and non-tidal; Virginia Administrative Code 62.1-44:20, <i>et seq.</i> and Water Quality Certification pursuant to Section 401 of the Clean Water Act.</p>	<p>Preserves tidal wetlands, prevent their Destruction, and accommodate economic development in a manner consistent with wetlands preservation. Also, establishes a Water Quality Certification program consistent with Section 401 of the Clean Water Act.</p>	<p>The proposed action or alternatives would not conflict with the wetlands management program associated with the Virginia Coastal Zone Management Program. There would be no significant impacts to wetlands from the implementation of the proposed action since the majority of development would be in areas not delineated as wetlands. Standard construction and demolition practices would be applied to control sedimentation and erosion during construction, renovation, and demolition, thereby avoiding secondary effects to any nearby wetlands or freshwater aquatic communities.</p>
<p>Dunes Management Virginia Administrative Code 28.2-1400 through 28.2-1420 (Marine Resources Commission)</p>	<p>Provides for protection of primary dunes as contained in the Coastal Primary Sand Dune Protection Act</p>	<p>The proposed action and alternatives will not adversely affect beach and shore management, nor impact any primary dunes as defined by the Coastal Primary Sand Dune Act. There are no sand-covered beaches or sand dunes in the vicinity of this project.</p>

Statutes Addressed as Part of the Virginia Coastal Resources Management Program
(Page 3 of 4)

<i>Statute</i>	<i>Scope</i>	<i>Consistency</i>
Non-point Source Pollution Control Virginia Administrative Code Sections 10.1-560 <i>et seq.</i> (Department of Conservation and Recreation)	Virginia's Erosion and Sediment Control Law requires soil-disturbing projects to be designed to reduce soil erosion and to decrease inputs of chemical nutrients and sediments to the Chesapeake Bay, its tributaries, and other rivers and waters of the Commonwealth. This program is administered by the Department of Conservation and Recreation (Virginia Administrative Code Section 10.1-560 <i>et seq.</i>).	The proposed action and alternatives would result in minor soil erosion and increases in turbidity from soil erosion. Best management practices for preventing and controlling erosion would be necessary and are described in Chapter 2.1.6 of the document.
Point Source Pollution Control Virginia Administrative Code 62.1-44:20, <i>et seq.</i> (State Water Control Board)	The point source program is administered by the State Water Control Board pursuant to Virginia Administrative Code Section 62.1-44:20, <i>et seq.</i> Point source pollution control is accomplished through the implementation of the National Pollutant Discharge Elimination System (NPDES) permit program established pursuant to Section 402 of the federal Clean Water Act and administered in Virginia as the VPDES permit program.	No point source discharges into surface water or effects to public drinking water supplies would occur from the proposed action and the alternatives.
Shoreline Sanitation Virginia Administrative Code Sections 32.1-164 through 32.1-165 (Virginia Department of Health)	Regulates the installation of septic tanks, sets standards concerning soil types suitable for septic tanks, and specifies minimum distances for placement from streams, rivers and other State Waters	Installation of septic tank systems are not contained in this proposal. All sanitary sewage will be routed to an on-base central sewage collection system and treated at the Hampton Roads Sanitation District's regional wastewater treatment facility.

**Statutes Addressed as Part of the Virginia Coastal Resources Management Program
(Page 4 of 4)**

<i>Statute</i>	<i>Scope</i>	<i>Consistency</i>
Air Pollution Control Virginia Administrative Code Section 10-1.1300 to 10-1.1320 (State Air Pollution Control Board)	Implements the Federal Clean Air Act to provide the legally enforceable State Implementation Plan for the attainment of the National Ambient Air Quality Standards.	The proposed action and the alternatives would not result in significant air emissions.
Coastal Lands Management Virginia Administrative Code Sections 10.1-2100 to 10.1-2114 and Virginia Administrative Code 10-20-10 et seq. (Chesapeake Bay Local Assistance Department and 84 localities in Tidewater Virginia)	A state-local cooperative program pursuant to the Chesapeake Bay Preservation Act and Chesapeake Bay Preservation and Management Regulations to regulate activities in the Chesapeake Bay Resource Management Areas The main goal of this program is protect and restore coastal resources, habitats, and species of the Commonwealth. These include, but are not limited to, wetlands, subaqueous lands and vegetation, sand dune systems, barrier islands, underwater or maritime cultural resources, riparian forested buffers, and endangered or threatened species	The proposed action and alternatives, which occurs primarily on federal property, conforms to the maximum extent practicable with the requirements of the Chesapeake Bay Preservation and Management Regulations.

Pursuant to 15 C.F.R. § 930.41, the Commonwealth of Virginia Clearinghouse has 60 days from receipt of this document in which to concur with or object to this Consistency Determination, or to request an extension, in writing, under 15 C.F.R. § 930.41(b). Virginia's concurrence will be presumed if its response is not received by 1 CES/CEV on the 60th day from receipt of this determination.

APPENDIX C
STANDARD AIR FORCE LAND-USE
COMPATIBILITY MATRIX

APPENDIX C: STANDARD AIR FORCE LAND-USE COMPATIBILITY MATRIX

LAND USE COMPATIBILITY								
LAND USE		ACCIDENT POTENTIAL ZONES			NOISE ZONES			
SLUCM NO.	NAME	CLEAR ZONE	APZ I	APZ II	65-69 dB	70-74 dB	75-79 dB	80+ dB
10	Residential							
11	Household units							
11.11	Single units; detached	N	N	Y ¹	A ¹¹	B ¹¹	N	N
11.12	Single units; semidetached	N	N	N	A ¹¹	B ¹¹	N	N
11.13	Single units; attached row	N	N	N	A ¹¹	B ¹¹	N	N
11.21	Two units; side-by-side	N	N	N	A ¹¹	B ¹¹	N	N
11.22	Two units; one above the other	N	N	N	A ¹¹	B ¹¹	N	N
11.31	Apartments; walk up	N	N	N	A ¹¹	B ¹¹	N	N
11.32	Apartments; elevator	N	N	N	A ¹¹	B ¹¹	N	N
12	Group quarters	N	N	N	A ¹¹	B ¹¹	N	N
13	Residential hotels	N	N	N	A ¹¹	B ¹¹	N	N
14	Mobile home parks or courts	N	N	N	N	N	N	N
15	Transient lodgings	N	N	N	A ¹¹	B ¹¹	C ¹¹	N
16	Other residential	N	N	N ¹	A ¹¹	B ¹¹	N	N
20	Manufacturing							
21	Food & kindred products; manufacturing	N	N ²	Y	Y	Y ¹²	Y ¹³	Y ¹⁴
22	Textile mill products; manufacturing	N	N ²	Y	Y	Y ¹²	Y ¹³	Y ¹⁴
23	Apparel and other finished products made from fabrics, leather, and similar materials; manufacturing	N	N	N ²	Y	Y ¹²	Y ¹³	Y ¹⁴
24	Lumber and wood products (except furniture); manufacturing	N	Y ²	Y	Y	Y ¹²	Y ¹³	Y ¹⁴
25	Furniture and fixtures; manufacturing	N	Y ²	Y	Y	Y ¹²	Y ¹³	Y ¹⁴
26	Paper & allied products; manufacturing	N	Y ²	Y	Y	Y ¹²	Y ¹³	Y ¹⁴
27	Printing, publishing, and allied industries	N	Y ²	Y	Y	Y ¹²	Y ¹³	Y ¹⁴
28	Chemicals and allied products; manufacturing	N	N	N ²	Y	Y ¹²	Y ¹³	Y ¹⁴
29	Petroleum refining and related industries	N	N	N	Y	Y ¹²	Y ¹³	Y ¹⁴
30	Manufacturing							
31	Rubber and misc. plastic products; manufacturing	N	N ²	N ²	Y	Y ¹²	Y ¹³	Y ¹⁴
32	Stone, clay and glass products manufacturing	N	N ²	Y	Y	Y ¹²	Y ¹³	Y ¹⁴
33	Primary metal industries	N	N ²	Y	Y	Y ¹²	Y ¹³	Y ¹⁴
34	Fabricated metal products; manufacturing	N	N ²	Y	Y	Y ¹²	Y ¹³	Y ¹⁴
35	Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks manufacturing	N	N	N ²	Y	A	B	N
39	Miscellaneous manufacturing	N	Y ²	Y ²	Y	Y ¹²	Y ¹³	Y ¹⁴
40	Transportation, communications and utilities							
41	Railroad, rapid rail transit and street railroad transportation	N ³	Y ⁴	Y	Y	Y ¹²	Y ¹³	Y ¹⁴
42	Motor vehicle transportation	N ³	Y	Y	Y	Y ¹²	Y ¹³	Y ¹⁴
43	Aircraft transportation	N ³	Y ⁴	Y	Y	Y ¹²	Y ¹³	Y ¹⁴
44	Marine craft transportation	N ³	Y ⁴	Y	Y	Y ¹²	Y ¹³	Y ¹⁴

LAND USE		ACCIDENT POTENTIAL ZONES			NOISE ZONES			
SLUCM NO.	NAME	CLEAR ZONE	APZ I	APZ II	65-69 dB	70-74 dB	75-79 dB	80+ dB
45	Highway & street right-of-way	N ³	Y	Y	Y	Y ¹²	Y ¹³	Y ¹⁴
46	Automobile parking	N ³	Y ⁴	Y	Y	Y ¹²	Y ¹³	Y ¹⁴
47	Communications	N ³	Y ⁴	Y	Y	A ¹⁵	B ¹⁵	N
48	Utilities	N ³	Y ⁴	Y	Y	Y	Y ¹²	Y ¹³
49	Other transportation communications and utilities	N ³	Y ⁴	Y	Y	A ¹⁵	B ¹⁵	N
50	Trade							
51	Wholesale trade	N	Y ²	Y	Y	Y ¹²	Y ¹³	Y ¹⁴
52	Retail trade-building materials, hardware and farm equipment	N	Y ²	Y	Y	Y ¹²	Y ¹³	Y ¹⁴
53	Retail trade-general merchandise	N	N ²	Y ²	Y	A	B	N
54	Retail trade-food	N	N ²	Y ²	Y	A	B	N
55	Retail trade-automotive, marine craft, aircraft and accessories	N	Y ²	Y ²	Y	A	B	N
56	Retail trade-apparel and accessories	N	N ²	Y ²	Y	A	B	N
57	Retail trade-furniture, home furnishings and equipment	N	N ²	Y ²	Y	A	B	N
58	Retail trade-eating and drinking establishments	N	N	N ²	Y	A	B	N
59	Other retail trade	N	N ²	Y ²	Y	A	B	N
60	Services							
61	Finance, insurance and real estate services	N	N	Y ⁶	Y	A	B	N
62	Personal services	N	N	Y ⁶	Y	A	B	N
62.4	Cemeteries	N	Y ⁷	Y ⁷	Y	Y ¹²	Y ¹³	Y ^{14,21}
63	Business services	N	Y ⁸	Y ⁸	Y	A	B	N
64	Repair services	N	Y ²	Y	Y	Y ¹²	Y ¹³	Y ¹⁴
65	Professional services	N	N	Y ⁶	Y	A	B	N
65.1	Hospitals, nursing homes	N	N	N	A*	B*	N	N
65.1	Other medical facilities	N	N	N	Y	A	B	N
66	Contract construction services	N	Y ⁶	Y	Y	A	B	N
67	Governmental services	N	N	Y ⁶	Y*	A*	B*	N
68	Educational services	N	N	N	A*	B*	N	N
69	Miscellaneous services	N	N ²	Y ²	Y	A	B	N
70	Cultural, entertainment and recreational							
71	Cultural activities (including churches)	N	N	N ²	A*	B*	N	N
71.2	Nature exhibits	N	Y ²	Y	Y*	N	N	N
72	Public assembly	N	N	N	Y	N	N	N
72.1	Auditoriums, concert halls	N	N	N	A	B	N	N
72.11	Outdoor music shell, amphitheaters	N	N	N	N	N	N	N
72.2	Outdoor sports arenas, spectator sports	N	N	N	Y ¹⁷	Y ¹⁷	N	N
73	Amusements	N	N	Y ⁸	Y	Y	N	N
74	Recreational activities (including golf courses, riding stables, water recreation)	N	Y ^{8,9,10}	Y	Y*	A*	B*	N
75	Resorts and group camps	N	N	N	Y*	Y*	N	N
76	Parks	N	Y ⁸	Y ⁸	Y*	Y*	N	N
79	Other cultural, entertainment and recreation	N	Y ⁹	Y ⁹	Y*	Y*	N	N
80	Resources production and extraction							
81	Agriculture (except livestock)	Y ¹⁶	Y	Y	Y ¹⁸	Y ¹⁹	Y ²⁰	Y ^{20,21}
81.5 to 81.7	Livestock farming and animal breeding	N	Y	Y	Y ¹⁸	Y ¹⁹	Y ²⁰	Y ^{20,21}
82	Agricultural related activities	N	Y ⁵	Y	Y ¹⁸	Y ¹⁹	N	N

LAND USE		ACCIDENT POTENTIAL ZONES			NOISE ZONES			
SLUCM NO.	NAME	CLEAR ZONE	APZ I	APZ II	65-69 dB	70-74 dB	75-79 dB	80+ dB
83	Forestry activities and related services	N ⁵	Y	Y	Y ¹⁸	Y ¹⁹	Y ²⁰	Y ^{20,21}
84	Fishing activities and related services	N ⁵	Y ⁵	Y	Y	Y	Y	Y
85	Mining activities and related services	N	Y ⁵	Y	Y	Y	Y	Y
89	Other resources production and extraction	N	Y ⁵	Y	Y	Y	Y	Y

LEGEND

SLUCM - Standard Land Use Coding Manual, U.S. Department of Transportation.

Y - (Yes) - Land use and related structures are compatible without restriction.

N - (No) - Land use and related structures are not compatible and should be prohibited.

Y^X - (yes with restrictions) - Land use and related structures generally compatible; see notes indicated by the superscript.

N^X - (no with exceptions) - See notes indicated by the superscript.

NLR - (Noise Level Reduction) - NLR (outdoor to indoor) to be achieved through incorporation of noise attenuation measures into the design and construction of the structures.

A, B, or C - Land use and related structures generally compatible; measures to achieve NLR for A(DNL/CNEL 65-69), B(DNL/CNEL 70-74), C(DNL/CNEL 75-79), need to be incorporated into the design and construction of structures.

A*, B*, and C* - Land use generally compatible with NLR. However, measures to achieve an overall noise level reduction do not necessarily solve noise difficulties and additional evaluation is warranted. See appropriate footnotes.

* - The designation of these uses as "compatible" in this zone reflects individual federal agencies' and program considerations of general cost and feasibility factors, as well as past community experiences and program objectives. Localities, when evaluating the application of these guidelines to specific situations, may have different concerns or goals to consider.

NOTES

1. Suggested maximum density of 1-2 dwelling units per acre, possibly increased under a Planned Unit Development (PUD) where maximum lot coverage is less than 20 percent.
2. Within each land use category, uses exist where further deliberating by local authorities may be needed due to the variation of densities in people and structures. Shopping malls and shopping centers are considered incompatible use in any accident potential zone (CZ, APZ I, or APZ II).
3. The placing of structures, buildings, or above-ground utility lines in the clear zone is subject to severe restrictions. In a majority of the clear zones, these items are prohibited. See AFI 32-7060 (formerly AFR 19-9) and AFJM 32-8008 (formerly AFM 86-14) for specific guidance.
4. No passenger terminals and no major above-ground transmission lines in APZ I.
5. Factors to be considered: labor intensity, structural coverage, explosive characteristics, and air pollution.
6. Low-intensity office uses only. Meeting places, auditoriums, etc., are not recommended.
7. Excludes chapels.
8. Facilities must be low intensity.
9. Clubhouse not recommended.
10. Areas for gatherings of people are not recommended.
11.
 - A. Although local conditions may require residential use, it is discouraged in DNL/CNEL 65-69 dB and strongly discouraged in DNL/CNEL 70-74 dB. The absence of viable alternative development options should be determined and an evaluation indicating a demonstrated community need for residential use would not be met if development were prohibited in these zones should be conducted prior to approvals.
 - B. Where the community determines the residential uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) for DNL/CNEL 65-69 dB and DNL/CNEL 70-74 dB should be incorporated into building codes and considered in individual approvals
 - C. NLR criteria will not eliminate outdoor noise problems. However, building location and site planning, and design and use of berms and barriers can help mitigate outdoor exposure, particularly from near ground level sources. Measures that reduce outdoor noise should be used whenever practical in preference to measures which only protect interior spaces.
12. Measures to achieve the same NLR as required for facilities in DNL/CNEL 65-69 dB range must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
13. Measures to achieve the same NLR as required for facilities in DNL/CNEL 70-74 dB range must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
14. Measures to achieve the same NLR as required for facilities in DNL/CNEL 75-79 dB range must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
15. If noise sensitive, use indicated NLR; if not, the use is compatible.
16. No buildings.
17. Land use is compatible provided special sound reinforcement systems are installed.
18. Residential buildings require the same NLR as required for facilities in DNL/CNEL 65-69 dB range.
19. Residential buildings require the same NLR as required for facilities in DNL/CNEL 70-74 dB range.
20. Residential buildings are not permitted.
21. Land use is not recommended. If the community decides the use is necessary, hearing protection devices should be worn by personnel.

APPENDIX D
AIR QUALITY

APPENDIX D: AIR QUALITY

This appendix presents an overview of the Clean Air Act (CAA) and the State of Virginia air quality program. The appendix also discusses emission factor development and calculations including assumptions employed in the air quality analyses.

AIR QUALITY PROGRAM OVERVIEW

National Ambient Air Quality Standards:

In order to protect public health and welfare, the USEPA has developed numerical concentration-based standards or National Ambient Air Quality Standards (NAAQS) for six “criteria” pollutants (based on health related criteria) under the provisions of the Clean Air Act Amendments of 1970. There are two kinds of NAAQS: Primary and Secondary standards. Primary standards prescribe the maximum permissible concentration in the ambient air to protect public health including the health of “sensitive” populations such as asthmatics, children, and the elderly. Secondary standards prescribe the maximum concentration or level of air quality required to protect public welfare including protection against decreased visibility, damage to animals, crops, vegetation, and buildings (40 CFR Part 51).

The CAA gives states the authority to establish air quality rules and regulations. These rules and regulations must be equivalent to, or more stringent than, the Federal program. The Air Quality Division enforcement actions are governed by the Virginia Department of Environmental Quality’s Administrative Procedure for Enforcement (APFE) dated August 8, 2005 which sets for the basic tenets guiding the DEQ enforcement efforts.

Oklahoma has adopted the federal NAAQS. The federal/state ambient air quality standards are presented in Table D-1.

Based on measured ambient air pollutant concentrations, the USEPA designates areas of the U.S. as having air quality better than (attainment) or worse than (nonattainment) the NAAQS, and unclassifiable. Those that cannot be classified on the basis of available information as meeting or not meeting the NAAQS for a particular pollutant are “unclassifiable” and are treated as attainment until proven otherwise. Attainment areas can be further classified as “maintenance” areas. Maintenance areas are those areas previously classified as nonattainment and has successfully reduced air pollutant concentrations below the standard. Maintenance areas are under special maintenance plans and must operate under some of the nonattainment area plans to ensure compliance with the NAAQS. All areas of Oklahoma are in compliance with the NAAQS.

Each state is required to develop a state implementation plan (SIP) that sets forth how CAA provisions will be imposed within the state. The SIP is the primary means for the implementation, maintenance, and enforcement of the measures needed to attain and maintain the NAAQS within each state and includes control measures, emissions limitations, and other provisions required to attain and maintain the ambient air quality standards. The purpose of the SIP is twofold. First, it must provide a control strategy that will result in the attainment and maintenance of the NAAQS. Second, it must demonstrate that progress is being made in attaining the standards in each nonattainment area.

Table D-1. National and State Ambient Air Quality Standards

<i>Criteria Pollutant</i>	<i>Averaging Time</i>	<i>Federal Primary NAAQS(8)</i>	<i>Federal Secondary NAAQS (8)</i>	<i>Virginia Primary Standards</i>	<i>Virginia Secondary Standards</i>
Carbon Monoxide (CO)	8-hour(1)	9 ppm (10 mg/m ³)	No standard	9 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)
	1-hour(1)	35 ppm (40 mg/m ³)	No standard	35 ppm (40 mg/m ³)	35 ppm (40 mg/m ³)
Lead (Pb)	Quarterly	1.5 µg/m ³	1.5 µg/m ³	1.5 µg/m ³	1.5 µg/m ³
Nitrogen Dioxide (NO ₂)	Annual	0.053 ppm (100 µg/m ³)	0.053 ppm (100 µg/m ³)	0.053 ppm (100 µg/m ³)	0.053 ppm (100 µg/m ³)
Particulate Matter <10 Micrometers (PM ₁₀)	Annual(2)	Revoked	Revoked	50 µg/m ³	50 µg/m ³
	24-hour(3)	150 µg/m ³	150 µg/m ³	150 µg/m ³	150 µg/m ³
Particulate Matter <2.5 Micrometers (PM _{2.5})	Annual(4)	15 µg/m ³	15 µg/m ³	--	--
	24-hour(5)	35µg/m ³	35 µg/m ³	--	--
Ozone (O ₃)	1-hour(7)	0.12 ppm (235 µg/m ³)	0.12 ppm (235 µg/m ³)	--	--
	8-hour(6)	0.08 ppm (157 µg/m ³)	0.08 ppm (157 µg/m ³)	--	--
Sulfur Dioxide (SO ₂)	Annual	0.03 ppm (80 µg/m ³)	No standard	--	--
	24-hour(1)	0.14 ppm (365 µg/m ³)	No standard	0.03 ppm (80 µg/m ³)	--
	3-hour(1)	No standard	0.50 ppm (1300 µg/m ³)	0.14 ppm (365 µg/m ³)	0.50 ppm (1300 µg/m ³)

Source: USEPA, 2006 (Federal Standards) and VDEQ, 2007

ppm = parts per million

mg/m³ = milligrams per cubic meter

µg/m³ = micrograms per cubic meter

(1) Not to be exceeded more than once per year.

(2) Due to lack of evidence linking health problems to long-term exposure to coarse particle pollution, the agency revoked the annual PM₁₀ standard in 2006 (effective December 17, 2006).

(3) Not to be exceeded more than once per year on average over 3 years.

(4) To attain this standard, the 3-year average of the weighted annual mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³

(5) To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 mg/m³ (effective December 17, 2006)

(6) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

(7) (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is < 1.

(b) As of June 15, 2005 EPA revoked the 1-hour ozone standard in all areas except the fourteen 8-hour ozone nonattainment Early Action Compact (EAC) Areas.

(8) Concentration expressed first in the units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25° C and a reference pressure of 760 mm of mercury; ppm refers to parts per million by volume.

In attainment areas, major new or modified stationary sources of air emissions on and in the area are subject to Prevention of Significant Deterioration (PSD) review to ensure that these sources are constructed without causing significant adverse deterioration of the clean air in the area. A major new source is defined as one that has the potential to emit any pollutant regulated under the CAA in amounts equal to or exceeding specific major source thresholds: 100 or 250 tons/year based on the source's industrial category. A major modification is a physical change or change in the method of operation at an existing major source that causes a significant "net emissions increase" at that source of any regulated pollutant. Table D-2 provides a tabular listing of the PSD significant emissions rate (SER) thresholds for selected criteria pollutants (*USEPA Draft New Source Review Workshop Manual: Prevention of Significant Deterioration and Nonattainment Permitting*). (PSD SER and increment thresholds have been established for PM10, but not for PM2.5.). It should be noted that mobile source emissions as well as those associated with construction activities are excluded from the PSD applicability process.

The goal of the PSD program is to: 1) ensure economic growth while preserving existing air quality, 2) protect public health and welfare from adverse effects which might occur even at pollutant levels better than the NAAQS, and 3) preserve, protect, and enhance the air quality in areas of special natural recreational, scenic, or historic value, such as national parks and wilderness areas. Sources subject to PSD review are required by the CAA to obtain a permit before commencing construction. The permit process requires an extensive review of all other major sources within a 50-mile radius and all Class I areas within a 62-mile radius of the facility. Emissions from any new or modified source must be controlled using Best Available Control Technology. The air quality, in combination with other PSD sources in the area, must not exceed the maximum allowable incremental increase identified in Table D-3. National parks and wilderness areas are designated as Class I areas, where any appreciable deterioration in air quality is considered significant. Class II areas are those where moderate, well-controlled industrial growth could be permitted. Class III areas allow for greater industrial development.

Table D-2. Criteria Pollutant Significant Emissions Rate Increases Under PSD Regulations

<i>Pollutant</i>	<i>Significant Emissions Rate (tons/year)</i>
PM 10	15
Total Suspended Particulate (TSP)	25
SO ₂	40
NO _x	40
Ozone (VOC)	40
CO	100

Source: Title 40 CFR Part 51.

Table D-3. Federal Allowable Pollutant Concentration Increases Under PSD Regulations

<i>Pollutant</i>	<i>Averaging Time</i>	MAXIMUM ALLOWABLE CONCENTRATION (µG/M3)		
		<i>Class I</i>	<i>Class II</i>	<i>Class III</i>
PM10	Annual	4	17	34
	24-hour	8	30	60
SO2	Annual	2	20	40
	24-hour	5	91	182
	3-hour	25	512	700
NO2	Annual	2.5	25	50

Source: Title 40 CFR Part 51.

µg/m³ = Micrograms per cubic meter

Virginia runs an air sampling program as a combined effort of the Air Quality Monitoring Office (AQM), seven regional offices, the Fairfax County Health Department, the Alexandria Transportation and Environmental Services, the National Park Service and the US Department of Agriculture Forest Service. Air quality measurements are taken on the criteria pollutants with additional sampling is conducted for volatile organic compounds. Sampling sites are located across the Commonwealth, but tend to be concentrated in more populated areas. Virginia operates National Air Monitoring Sites (NAMS) which are augmented with additional State and Local Air Monitoring Sites (SLAMS) to provide additional air quality data for DEQ needs. Specific locations of these monitoring sites are determined by factors such as population density, emissions sources, permitting needs, modeling results, and site accessibility (VDEQ, 2007b).

REGULATORY COMPARISONS

In order to evaluate the air emissions and their impact to the overall region of influence (ROI). The emissions associated with the construction activities were compared to the total emissions on a pollutant-by-pollutant basis for the ROI's 2002 NEI data. Potential impacts to air quality are then identified as the total emissions of any pollutant that equals 10 percent or more of the ROI's emissions for that specific pollutant. The 10 percent criteria approach is used in the General Conformity Rule as an indicator for impact analysis for non-attainment and maintenance areas and although the entire Hampton Roads AQCR is considered attainment, the General Conformity Rule's impact analysis was utilized to provide a consistent approach to evaluating the impact of construction emissions.

To provide a conservative evaluation, the impacts screening in this analysis, used a more restrictive criteria than required in the General Conformity Rule. Rather than comparing emissions from construction activities to regional inventories (as required in the General Conformity Rule), emissions were compared to the individual counties potentially impacted, which are a smaller area.

Project Calculations:

Construction Emissions:

Construction emissions calculations were completed using the calculation methodologies described in the U.S. Air Force Air Conformity Applicability Model (ACAM). As previously indicated, a conformity determination is not required since Hampton Roads AQCR is designated "attainment", the ACAM was used to provide a level of consistency with respect to emissions factors and calculations.

The ACAM evaluates the individual emissions from different sources associated with the construction phases. These sources include grading activities, asphalt paving, construction worker trips, stationary equipment (e.g. saws and generators), non-residential architectural coatings and mobile equipment emissions (USAF ACAM Technical Document).

As a result of limited information, certain assumptions were made to develop the air quality analysis. The sizes of the buildings to be constructed or demolished were described in the proposed action and were used in the analysis of emissions. Only a few of the projects required the addition of parking areas in which it was assumed 10 percent of the building size would be paved unless otherwise stated; the facilities requiring parking areas included Security Forces Operations Center, Combat Skills Training, Dorms, and Big Bethel Reservoir. Based on these assumptions, the construction emissions were calculated using the calculation methodology expressed below.

Grading Activities:

Grading activities are divided into grading equipment emissions and grading operation emissions. Grading equipment calculations are combustive emissions from equipment engines and are ascertained in the following manner:

$$\text{VOC} = .22 \text{ (lbs/acre/day)} * \text{Acres} * \text{DPY}_1 / 2000$$

$$\text{NO}_x = 2.07 \text{ (lbs/acre/day)} * \text{Acres} * \text{DPY}_1 / 2000$$

$$\text{PM}_{10} = .17 \text{ (lbs/acre/day)} * \text{Acres} * \text{DPY}_1 / 2000$$

$$\text{CO} = .55 \text{ (lbs/acre/day)} * \text{Acres} * \text{DPY}_1 / 2000$$

$$\text{SO}_2 = .21 \text{ (lbs/acre/day)} * \text{Acres} * \text{DPY}_1 / 2000$$

Where Acres = number of gross acres to be graded during Phase I construction.

DPY₁ = number of days per year during Phase I construction which are used for grading

2000 = conversion factor from pounds to tons

All emissions are represented as tons per year.

Grading operations are calculated using a similar equation from the Sacramento Air Quality Management District and the South Coast Air Quality Management Districts (Air Quality Thresholds of Significance and CEQA Air Quality Handbook). These calculations include grading and truck hauling emissions.

$$\text{PM}_{10} (\text{tons}/\text{yr}) = 60.7 (\text{lbs}/\text{acre}/\text{day}) * \text{Acres} * \text{DPY}_1 / 2000$$

Where Acres = number of gross acres to be graded during Phase I construction.

DPY₁ = number of days per year during Phase I construction which are used for grading

2000 = conversion factor from pounds to tons

Calculations used in the EA assumed that there were no controls used to reduce fugitive emissions. Also, it was assumed that construction activities would occur within 730 days and grading activities would represent 25% of that total. Therefore, 182 days was the duration established for grading operations. Also, it was assumed that ten percent of the total area would be graded. Emissions factors were derived from the Sacramento Air Quality Management District and the South Coast Air Quality Management District (Air Quality Thresholds of Significance and CEQA Air Quality Handbook).

Architectural Coatings:

Non-residential architectural coating emissions are released through the evaporation of solvents that are contained in paints, varnishes, primers and other surface coatings.

$$\text{VOC}_{\text{SF}} (\text{lbs}/\text{yr}) = (\text{SQR_GRSQF} * 1.63) / 2000$$

Where: SQR_GRSQF = square root of gross square feet of non-residential building space to be constructed in the given year of construction.

1.63 = Emissions factor

2000 = conversion factor from pounds to tons

It was assumed that construction activities would occur within 730 days. After subtracting the grading activities from the estimated overall construction time, the actual construction period was reduced to 548 days. Additionally, it was assumed that the one building was constructed over the period of one year at the specified square footage. Emissions factors were derived from the Sacramento Air Quality Management District and the South Coast Air Quality Management District (Air Quality Thresholds of Significance and CEQA Air Quality Handbook).

Asphalt Paving:

VOC emissions are released during asphalt paving and are calculated using the following methodology:

$$\text{VOC}_{\text{PT}} (\text{tons}/\text{yr}) = (2.62 \text{ lbs}/\text{acre}) * \text{Acres Paved} / 2000$$

Acres Paved = total number of acres to be paved at the site.

2000 = conversion factor from pounds to tons

It was assumed that a minimum of 10% of the construction site to be developed would be paved with asphalt unless otherwise specified. The specific emissions factors used in the calculations were available through Sacramento Air Quality Management and the South Coast Air Quality Management Districts (Air Quality Thresholds of Significance and CEQA Air Quality Handbook).

Construction Worker Trips:

Construction worker trips during the construction phases of the project are calculated and represent a function of the square feet of commercial construction.

Trips (trips/day) = .42 (trip/unit/day) * Area of training facilities

Total daily trips are the applied to the following factors depending on the corresponding years.

Year 2005 through 2009:

$VOC_E = .016 * \text{Trips}$

$NO_{x_E} = .015 * \text{Trips}$

$PM_{10_E} = .0022 * \text{Trips}$

$CO_E = .262 * \text{Trips}$

Year 2010 and beyond:

$VOC_E = .012 * \text{Trips}$

$NO_{x_E} = .013 * \text{Trips}$

$PM_{10_E} = .0022 * \text{Trips}$

$CO_E = .262 * \text{Trips}$

To convert from pounds per day to tons per year:

$VOC \text{ (tons/yr)} = VOC_E * DPY_{II} / 2000$

$NO_x \text{ (tons/yr)} = NO_{x_E} * DPY_{II} / 2000$

$PM_{10} \text{ (tons/yr)} = PM_{10_E} * DPY_{II} / 2000$

$CO \text{ (tons/yr)} = CO_E * DPY_{II} / 2000$

Where: Commercial construction = total square footage of the construction site

2000 = conversion factor from pounds to tons

DPY_{II} = number of days per year during Phase II construction activities.

Emissions factors were derived from the Sacramento Air Quality Management District and the South Coast Air Quality Management District (Air Quality Thresholds of Significance and CEQA Air Quality Handbook).

Stationary Equipment:

Emissions from stationary equipment occur when gasoline powered equipment (e.g. saws, generators, etc.) is used at the construction site.

$VOC = .198 * (GRSQFT) * DPY_{II} / 2000$

$NO_x = .137 * (GRSQFT) * DPY_{II} / 2000$

$PM_{10} = .004 * (GRSQFT) * DPY_{II} / 2000$

$$\text{CO} = 5.29 * (\text{GRSQFT}) * \text{DPY}_{\text{II}} / 2000$$

$$\text{SO}_2 = .007 * (\text{GRSQFT}) * \text{DPY}_{\text{II}} / 2000$$

Where GRSQF = Gross square feet of commercial buildings to be constructed during phase II

DPY_{II} = number of days per year during Phase II construction

2000 = conversion factor from pounds to tons

It Emissions factors were derived from the Sacramento Air Quality Management District and the South Coast Air Quality Management District (Air Quality Thresholds of Significance and CEQA Air Quality Handbook).

Mobile Equipment:

Mobile equipment emissions include pollutant releases associated with forklifts, dump trucks, etc. used during Phase II construction.

$$\text{VOC} = .17 * (\text{GRSQFT}) * \text{DPY}_{\text{II}} / 2000$$

$$\text{NO}_x = 1.86 * (\text{GRSQFT}) * \text{DPY}_{\text{II}} / 2000$$

$$\text{PM}_{10} = .15 * (\text{GRSQFT}) * \text{DPY}_{\text{II}} / 2000$$

$$\text{CO} = .78 * (\text{GRSQFT}) * \text{DPY}_{\text{II}} / 2000$$

$$\text{SO}_2 = .23 * (\text{GRSQFT}) * \text{DPY}_{\text{II}} / 2000$$

Where: GRSQF = Gross square feet of training area to be constructed during Phase II

DPY_{II} = number of days per year during Phase II construction

2000 = conversion factor from pounds to tons

Emissions factors were derived from the Sacramento Air Quality Management District and the South Coast Air Quality Management District (Air Quality Thresholds of Significance and CEQA Air Quality Handbook).

Demolition Emissions:

Demolition calculations for this EIS were completed using guidance from GAP Filling PM₁₀ Emission Factors for Selected Open Dust Sources (USEPA Gap Filling PM₁₀ Emission Factors for Selected Open Area Dust Sources). Demolition of structures involves two primary sources of emissions: destruction of the building and site removal of debris. Emissions calculations from mechanical dismemberment, debris loading, and on-site truck traffic to remove debris have been individually developed.

Dismemberment of a structure can be estimated using the AP-42 equation for batch drop operations:

$$\text{ED} = k (.0032) * ((U/5)^{1.3} / (M/2)^{1.4}) \text{ lb/ton}$$

Where

k = .35 for PM₁₀

U = mean wind speed (default = 5 mph)

M = material moisture content (Default = 2%)

And ED = .0011 lbs/ton (with default parameters)

This factor can be modified for waste tonnage related to structural floor space. The following relationships were determined from a 1976 analysis by Murphy and Chatterjee (1976) of the demolition of 12 commercial brick, concrete and steel buildings:

Where: 1 ft² floor space = 10 ft³ original building volume

1 ft³ building volume = .25 ft³ waste volume

1 yard³ building waste = .5 ton weight

Mean truck capacity = 30 yard³ haulage volume

From these data, 1 ft² of floor space represents .046 tons of waste material, and a revised emission factor related to structural floor space can be obtained:

$$ED = .0011 \text{ lbs/ton} * .046 \text{ ton/ft}^2 = .000051 \text{ lbs/ft}^2$$

The proposed emission factor for debris loading is based on two tests of the filling of trucks with crushed limestone using front end loader, part of the test basis for the batch drop equation in AP-42, 11.2.3. Crushed limestone was considered closest in composition to the broken brick and plaster found in demolished commercial buildings. The measured emission factors for crushed limestone were .053 and .063 lbs/TSP. To convert the average TSP factor, .058 lbs/ton, to a PM10 factor with source extent of structural floor space the previously determined estimate of .046 ton/ ft² and particle size multiplier must be used. The result is the emission factor for debris loading:

$$\begin{aligned} EL &= k(.058) \text{ lb/ton} * .046 \text{ ton/ ft}^2 \\ &= .00093 \text{ lbs/ ft}^2 \end{aligned}$$

where k is .35 is derived from the recommended particle size multipliers developed by Muleski (1987).

The emissions factor used for on-site truck traffic is based on the unpaved road equation:

$$E = k (5.9) * (s/12)(S/30)(W/30) .7 * (w/4).5 * (365-P/365) \text{ lb/VMT}$$

Where

k= .36 for PM10

s = silt content (default = 12%)

S = truck speed (default = 10 mph)

W = truck weight (default = 22 tons)

w = truck wheels (default = 10 wheels)

p = number of days with precipitation (default = 0 days)

For a demolition site, 10-wheel trucks of mean 22-ton gross weight are estimated to travel a quarter mile on-site for each round trip to remove dry debris. With this information and default values for the unpaved road equation, the emission factor for on-site truck traffic becomes:

$$ET = (.36) (5.9) * (12/12)(10/30)(22/30) .7 * (10/4).5 * (365-0/365) \text{ lb/VMT} = 4.5 \text{ lb/VMT}$$

To convert this emissions factor from lb/VMT to lb/ ft² of structural floor space, it is necessary to use the previously described relationships obtained from Murphy and Chatterjee (1976).

$$.25\text{mi}/30 \text{ yd}^3 \text{ waste} * \text{yd}^3/ 4 \text{ yd}^3 \text{ volume} * 10 \text{ yd}^3 \text{ volume}/\text{yd}^2 \text{ floor space} * \text{yd}^2/ 9 \text{ ft}^2 \\ = .0023 \text{ mi}/ \text{ft}^2$$

$$\text{and } ET = 4.5 \text{ lb/VMT} * .0023 \text{ mi}/\text{ft}^2 = .01 \text{ lb}/\text{ft}^2$$

Combining each of the aforementioned factors for building demolition, debris loading, and truck traffic provides a recommend factor of:

$$E_{10} = E_D + E_L + E_T \\ = .000051 + .00093 + .01 \text{ lb}/\text{ft}^2 \\ = .011 \text{ lb}/\text{ft}^2$$

This value was then multiplied by the gross square footage to be demolished to ascertain the PM₁₀ emissions for the demolition activities.

National Emissions Inventory

The National Emissions Inventory (NEI) is operated under EPA's Emission Factor and Inventory Group, which prepares the national database of air emissions information with input from numerous State and local air agencies, from tribes, as well as from industry. The database contains information on stationary and mobile sources that emit criteria air pollutants and hazardous air pollutants (HAPs). The database includes estimates of annual emissions, by source, of air pollutants in each area of the country, on an annual basis. The NEI includes emission estimates for all 50 States, the District of Columbia, Puerto Rico, and the Virgin Islands. Emission estimates for individual point or major sources (facilities), as well as county level estimates for area, mobile and other sources, are available currently for years 1996, 1999 and 2002 for criteria pollutants, and HAPs.

Criteria air pollutants are those for which EPA has set health-based standards. Four of the six criteria pollutants are included in the NEI database:

- Carbon Monoxide (CO)
- Nitrogen Oxides (NO_x)
- Sulfur Dioxide (SO₂)
- Particulate Matter (PM₁₀ and PM_{2.5})

The NEI also includes emissions of Volatile Organic Compounds (VOCs), which are ozone precursors, emitted from motor vehicle fuel distribution and chemical manufacturing, as well as

other solvent uses. VOCs react with nitrogen oxides in the atmosphere to form ozone. The NEI database defines three classes of criteria air pollutant sources:

Point sources - stationary sources of emissions, such as an electric power plant, that can be identified by name and location. A "major" source emits a threshold amount (or more) of at least one criteria pollutant, and must be inventoried and reported. Many states also inventory and report stationary sources that emit amounts below the thresholds for each pollutant.

Area sources - small point sources such as a home or office building, or a diffuse stationary source, such as wildfires or agricultural tilling. These sources do not individually produce sufficient emissions to qualify as point sources. Dry cleaners are one example, i.e., a single dry cleaner within an inventory area typically will not qualify as a point source, but collectively the emissions from all of the dry cleaning facilities in the inventory area may be significant and therefore must be included in the inventory.

Mobile sources - any kind of vehicle or equipment with a gasoline or diesel engine; airplane; or ship.

The main sources of criteria pollutant emissions data for the NEI are:

For electric generating units - EPA's Emission Tracking System / Continuous Emissions Monitoring Data (ETS/CEM) and Department of Energy fuel use data.

For other large stationary sources - state data and older inventories where state data was not submitted.

For on-road mobile sources - the Federal Highway Administration's (FHWA's) estimate of vehicle miles traveled and emission factors from EPA's MOBILE Model.

For non-road mobile sources - EPA's NONROAD Model.

For stationary area sources - state data, EPA-developed estimates for some sources, and older inventories where state or EPA data was not submitted.

State and local environmental agencies supply most of the point source data. EPA's Clean Air Market program supplies emissions data for electric power plants.

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UST	underground storage tank
VAC	Virginia Administrative Code
VDEQ	Virginia Department of Environmental Quality
VDHR	Virginia Department of Historic Resources
VMRC	Virginia Marine Resources Commission
VOC	Volatile Organic Compound
VPDES	Virginia Pollutant Discharge Elimination System
WTP	Water Treatment Plant