
ENVIRONMENTAL ASSESSMENT FOR BRAC 05 REALIGNMENT AT LETTERKENNY ARMY DEPOT, PENNSYLVANIA



April 2007

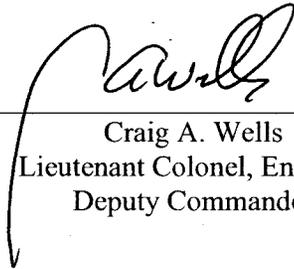
Prepared for
Letterkenny Army Depot, Pennsylvania

Prepared by
U.S. Army Corps of Engineers
Mobile District
P.O. Box 2288
Mobile, AL 36628

**ENVIRONMENTAL ASSESSMENT
IMPLEMENTATION OF BRAC 05 REALIGNMENT AT
Letterkenny Army Depot, Pennsylvania**

Prepared by:

U.S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT



Craig A. Wells
Lieutenant Colonel, Engineer
Deputy Commander

Approved by:

LETTERKENNY ARMY DEPOT



Robert A. Swenson
Colonel, Commander Letterkenny Army Depot, Pennsylvania

ENVIRONMENTAL ASSESSMENT

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

TITLE OF PROPOSED ACTION: Environmental Assessment for Implementation of BRAC 05 Realignment at Letterkenny Army Depot, Pennsylvania

AFFECTED JURISDICTION: Franklin County, Pennsylvania

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

TECHNICAL ASSISTANCE FROM: The Louis Berger Group, Inc.

APPROVED BY: Colonel Robert A. Swenson, Commander, Letterkenny Army Depot, Pennsylvania

ABSTRACT: On September 8, 2005, the Defense Base Closure and Realignment Commission (“BRAC Commission”) recommended that certain realignment actions occur at Letterkenny Army Depot (LEAD). These recommendations were approved by the President on September 23, 2005, and forwarded to Congress. The Congress did not alter any of the BRAC Commission’s recommendations, and on November 9, 2005, the recommendations became law. The BRAC Commission recommendations must now be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), as amended.

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

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

REVIEW PERIOD: Interested parties are invited to review and comment on the EA and draft FNSI within 30 days of publication. Comments and requests for copies of the EA and draft FNSI should be addressed to the Mr. Alan Loessy, Public Affairs Office, at 717-267-5102.

The EA and draft FNSI are available for review on the World Wide Web at:
http://www.hqda.army.mil/acsim/brac/env_ea_review.htm

The EA and draft FNSI are also available for review at the Coyle Free Library, 102 North Main Street, Chambersburg, PA 17201

EXECUTIVE SUMMARY

ES.1 INTRODUCTION

On May 13, 2005, the Secretary of Defense recommended that certain realignment actions occur at Letterkenny Army Depot (LEAD), Pennsylvania. After review of the Secretary of Defense's recommendations, the Defense Base Closure and Realignment Commission ("BRAC Commission") submitted its final recommendations to the President on September 8, 2005. These recommendations were approved by the President on September 23, 2005, and forwarded to Congress. Congress did not alter any of the BRAC Commission's recommendations, and on November 9, 2005, the recommendations became law. The BRAC Commission recommendations must now be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), as amended.

The following highlights the BRAC Commission recommendation for LEAD: Realign Red River Army Depot, relocate the depot maintenance of Tactical Missiles to Letterkenny Army Depot, PA; Realign Marine Corp Logistics Base Barstow, CA, consolidate depot maintenance of Tactical Missiles at Letterkenny Army Depot, PA; Realign Rock Island Arsenal, IL, by relocating the depot maintenance of Combat Vehicles and Other to Anniston Army Depot, AL, and the depot maintenance of Other Equipment and Tactical Vehicles to Letterkenny Army Depot, PA.

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

This EA was prepared by the U.S. Army Corps of Engineers, Mobile District, with technical assistance from the Louis Berger Group, Inc. This document has been printed on recycled paper.

ES.2 BACKGROUND AND SETTING

LEAD is located approximately 5 miles north of Chambersburg in Franklin County in the Cumberland Valley of south-central Pennsylvania. Chambersburg, the county seat, is the nearest community to LEAD. LEAD is regionally situated among the metropolitan areas of Pittsburgh, Pennsylvania, 130 miles to the northwest; Philadelphia, Pennsylvania, 135 miles to the east; Washington, D.C., 90 miles to the south; and Baltimore, Maryland, 75 miles to the southeast.

ES.3 PROPOSED ACTION

The proposed actions' overall purpose is to implement the Commission's recommendation as mandated by BRAC legislation (PL 101-510). The proposed action involves constructing new facilities to accommodate the personnel and functions of organizations realigning and relocating to LEAD, which includes:

- Realign Red River Army Depot. Relocate the depot maintenance of Tactical Missiles to Letterkenny Army Depot, PA.
- Realign Marine Corp Logistics Base Barstow, CA. Consolidate depot maintenance of Tactical Missiles at Letterkenny Army Depot, PA.
- Realign Rock Island Arsenal, IL, by relocating the depot maintenance of Combat Vehicles and Other to Anniston Army Depot, AL, and the depot maintenance of Other Equipment and Tactical Vehicles to Letterkenny Army Depot, PA.

The site-specific BRAC-related projects are defined by existing DD Form 1391s (LEAD, 2006) and the BRAC 2005 Implementation Plan for LEAD (LEAD, 2005). The DD Form 1391 is used by the Department of Defense to submit requirements and justifications in support of funding requests for military construction to Congress. The following presents the proposed action, or BRAC-related projects assessed in this EA.

Theater Readiness Monitoring Facility (PN 63366)

Certification for Theater Readiness of PATRIOT and HAWK missiles is currently performed at Red River Army Depot, Texas. The decision by the DoD to close Red River munitions operations and relocate missile certification to LEAD requires the construction of a Theater Readiness Monitoring Facility (TRMF). Due to the nature of the operation, this facility must be located within the Ammunition Storage Area, and quantity-distance safety requirements must apply. There are no existing facilities within the Ammunition Area that have all the capabilities required to accomplish this mission, nor are there facilities that can be converted from existing uses and modified to meet this requirement. As a result, new construction is the only viable option for the relocation of this mission to LEAD.

To support this realignment, it is necessary to construct a TRMF. Square footage (SF) of the TRMF is identified on existing DD1391 as 40,000 SF but has been further refined to approximately 35,000 SF (LEAD, 2005; Leonard, 2006). Facility includes substantial dividing walls, can and decan areas, loading dock, test bays, operation bays, Electromagnetic Radio Frequency (RF) shielding, grounding, raised floor areas, controlled humidity, clean room, administrative area, break room, rest room, explosion proof lighting, cold storage area, inert gas lines, cranes, storage areas, Chemical Agent Resistant Coating (CARC) paint area, fire protection to include alarm, sprinkler system, fire pump, intrusion detection, emergency generator and building information systems. Supporting facilities include lighting protection, external security lighting, paved access road, 0.75-acre (~ 80 spaces) operational parking, and security fence.

Covered Missile Storage Facility. Construct a 2,000 SF storage facility for Tactical Missiles. Storage of missiles to be worked through the TRMF require quantity-distance compliant storage that may not be available in existing earth-covered magazines depending on the conventional storage requirements imposed upon the Letterkenny Munitions Center (LEMC). This project is needed to ensure that adequate storage space for the new mission is available.

Hazardous Materials Storage Facility. Construction of a new 2,000 SF covered hazardous materials storage pad is required to classify, store, and hold for disposal hazardous materials that will be generated by the transferred mission. These materials include lubricants, cleaning agents, and other liquids along with solid wastes generated by blasting and painting operations.

Health Clinic Addition. Construction of a 690 SF addition to building 332, the existing Health Clinic (located adjacent to building 331), is required to accommodate increased BRAC staffing and provide storage area for additional employee health records. The increase in staff and records volume is necessary to provide health services to the additional personnel associated with the new missions.

ES.4 REALIGNMENT PROCESS

Under the BRAC law, the Army must initiate all realignments not later than September 15, 2007, and complete all realignments not later than September 15 2011¹. This BRAC EA examines the environmental impact from efforts that will take place within the 6-year BRAC implementation window.

ES.5 ALTERNATIVES

No Action Alternative

CEQ regulations require inclusion of the No Action alternative. The No Action alternative serves as a baseline against which the impacts of the proposed action and alternatives can be evaluated.

Under the No Action alternative, LEAD would not implement the proposed action. No units would relocate from other locations. LEAD would use its current inventory of facilities, though routine replacement or renovation actions could occur, through normal military maintenance and construction procedures, as circumstances independently warrant. LEAD could not comply with BRAC Law if the realignment actions were not completed. The No Action alternative is evaluated in detail in this EA.

Realignment (Preferred) Alternative

LEAD has identified 4 facilities projects required to support the proposed action. All the projects involve new construction that would provide approximately 40,000 SF of built space. Siting of these new facilities follows existing land use at LEAD.

LEAD seeks generally to collocate like uses and to separate incompatible uses, according to the installation's three land use areas. Siting of the proposed BRAC facilities, which is also based on this precept as shown below, locates facilities in a way to support mission goals and objectives as efficiently and effectively as possible.

The first three projects, the Theater Readiness Monitoring Facility (TRMF), Covered Missile Storage Facility, and Hazardous Materials Storage Facility are collocated and would be located within the Ammunition Storage Area. The Health Clinic addition would be added to building 332, the existing Health Clinic, which is located in the Cantonment Area.

While variations of the present proposal for siting of facilities could be developed, the locations reflected in the Realignment (Preferred) Alternative reflect a sound comprehensive approach, already taken in developing the Requirement Analysis (R&K Engineering, 2006a), which is an integral part of the development of a Real Property Master Plan for LEAD, that limits environmental impacts while assuring efficient support to mission goals and objectives. Alternative siting of facilities would neither reduce impacts nor provide more efficient or effective support to mission goals and objectives. Therefore, alternative siting of facilities is not further evaluated in this EA.

¹ Section 2904(a), Public Law 101-510, as amended, provides that the Army must "... initiate all closures and realignments no later than two years after the date on which the President transmits a report [by the BRAC Commission] to the Congress ... containing the recommendations for such closures or realignments; and ... complete all such closures and realignments no later than the end of the six year period beginning on the date on which the President transmits the report" The President took the specified action on September 15, 2005.

ES.6 ENVIRONMENTAL CONSEQUENCES

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

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
Land Use			
<i>Regional Geographic Setting and Location</i>	No effect.	No effect.	No effect.
<i>Installation Land</i>	No effect.	Effects would not be significant; all proposed projects occur within LEAD boundary.	Effects would not be significant; all proposed projects occur within LEAD boundary.
<i>Surrounding Land</i>	No effect.	No effect.	No effect.
<i>Current and Future Development in the Region of Influence</i>	No effect.	Effects would not be significant; all projects occur within LEAD boundary; short-term construction requirements add financial capital to local and regional economy.	Effects would not be significant; all projects occur within LEAD boundary; increase in personnel living off-post adds financial capital to the local and regional economy.
Aesthetic and Visual Resources	No effect.	Effects would not be significant.	Effects would not be significant.
Air Quality			
<i>Ambient Air Quality Conditions</i>	No effect.	Effects would not be significant - temporary emissions during construction do not exceed <i>de minimis</i> levels.	Effects would not be significant- operational emissions would not exceed <i>de minimis</i> levels.
<i>Air Pollutant Emissions at Installation</i>	No effect.	Effects would not be significant; emissions during construction are temporary.	Effects would not be significant; emissions would not <i>exceed de minimis</i> levels.
<i>Regional Air Pollutant Emissions Summary</i>	No effect.	Effects would not be significant; temporary emissions would not exceed 10% of the allowable limits laid out by the SIP.	Effects would not be significant; emissions would not exceed 10% of the allowable limits laid out by the SIP.
Noise	No effect.	Effects would not be significant; noise from construction of the Health Clinic addition would be temporary, the TRMF, Hazmat Storage Facility would be located in an open area.	Effects would not be significant; the Health Clinic addition would not generate significant noise levels, there are no sensitive receptors in proximity to the TRMF, Hazmat Storage Facility and OSHA standards would be followed to protect the workers.

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
Geology and Soils			
<i>Geologic and Topographic Conditions</i>	No effect.	Effects would not be significant; minor leveling and grading required.	No effect.
<i>Soils</i>	No effect.	Effects would not be significant; majority of soils are already disturbed or modified.	No effect.
<i>Prime Farmland</i>	No effect.	No effect; no lands suitable for classification as prime farmland.	No effect; no lands suitable for classification as prime farmland.
Water Resources			
<i>Surface Water/Wetlands</i>	No effect.	Effects would not be significant. Minor, long-term impacts to jurisdictional wetland area and unnamed tributary to Muddy Creek. Erosion control and mitigation measures as stipulated in Pennsylvania State and federal water quality permits required under Section 404 of the CWA from the U.S. Army Corps of Engineers and LEADs General National Pollutant Discharge Elimination System (NPDES) permit, Erosion Sediment Pollution Control Plan (ESPCP), and Spill Prevention, Control and Countermeasure Plan (SPCC) would minimize impacts.	Effects would not be significant. Potential impacts to jurisdictional wetland area and unnamed tributaries to Muddy Creek would be controlled and minimized through adherence to Federal and state regulations as well as LEAD's NPDES permit stipulations, Stormwater Pollution Prevention Plan and SPCC Plan.

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
<i>Hydrogeology/ Groundwater</i>	No effect.	Effects would not be significant. Possible impacts due to the potential for minor oil and antifreeze spills, leaks from vehicles, and pollutant leaching as a result of construction activities. Potential contamination sources would be controlled and minimized by implementation of LEAD's Spill Prevention, Control and Countermeasure Plan and by meeting the requirements of the General NPDES Permit for storm water discharges associated with construction activities.	Effects would not be significant. Possible impacts due to the potential for minor oil and antifreeze spills, leaks from vehicles, etc.
<i>Floodplains</i>	No effect.	No effect.	No effect.
<i>Coastal Zone</i>	No effect.	No effect.	No effect.
Biological Resources			
<i>Vegetation</i>	No effect.	Effects would not be significant from removal of vegetation.	No effect.
<i>Wildlife</i>	No effect.	Effects would not be significant to wildlife. Construction activities could temporarily disturb wildlife in the immediate area.	No effect.
<i>Threatened & Endangered Species</i>	No effect.	No effect.	No effect.
<i>Aquatic Habitat</i>	No effect.	Effects would not be significant.	Effects would not be significant.
Cultural Resources			
<i>Built Environment</i>	No effect.	Effects would not be significant.	Effects would not be significant.
<i>Archaeology</i>	No effect.	No effect.	No effect.
<i>Native American Resources</i>	No effect.	No effect.	No effect.
Socioeconomics			

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
<i>Economic Development</i>	No effect.	Effects would not be significant; approximately 70 construction related jobs would be created, most of which will be temporary.	Effects would not be significant; minor increases in jobs, sales volume, and personal income.
<i>Demographics</i>	No effect.	Effects would not be significant; insignificant increases in the Region of Influence population of a temporary nature.	Effects would not be significant; minor increases in the Region of Influence population.
<i>Housing</i>	No effect.	No effect.	Effects would not be significant; minor increase in demand for housing.
<i>Quality of Life</i>	No effect.	No effect.	Effects would not be significant; small number of additional children to be absorbed by ROI school system.
<i>Environmental Justice</i>	No effect.	No effect.	No effect.
<i>Protection of Children</i>	No effect.	No effect.	No effect.
Transportation			
<i>Roadways and Traffic</i>	No effect.	Effects would not be significant; transitory increase in traffic due to construction vehicles.	Effects would not be significant; increased traffic from additional workforce.
<i>Installation Transportation</i>	No effect.	Effects would not be significant	Effects would not be significant
<i>Public Transportation</i>	No effect.	Effects would not be significant	Effects would not be significant
Utilities			
<i>Potable Water Supply</i>	No effect.	Effects would not be significant. Requires normal short-term disruptions from utility extensions.	Effects would not be significant; comparatively small demand would not be cause for system or regulatory limits to be exceeded.
<i>Wastewater System</i>	No effect.	Effects would not be significant. Requires normal short-term disruptions from utility extensions.	Effects would not be significant; comparatively small discharges would not be cause for system or regulatory limits to be exceeded.

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
<i>Stormwater System</i>	No effect.	Effects would not be significant. Requires normal short-term disruptions from utility extensions.	Effects would not be significant; compliance with all State and Federal guidelines.
<i>Energy Sources</i>	No effect.	Effects would not be significant. Requires normal short-term disruptions from utility extensions.	Effects would not be significant; comparatively small demand would not cause system overloads or shortages.
<i>Communications</i>	No effect.	Effects would not be significant. Requires normal short-term disruptions from utility extensions.	Effects would not be significant; communication requirements can be provided.
<i>Solid Waste</i>	No effect.	Effects would not be significant. Requires normal short-term disruptions from utility extensions.	Effects would not be significant; required landfill space not large comparatively; adherence to approved solid waste handling procedures prevents adverse effects during operations.
Hazardous and Toxic Substances			
<i>Hazardous Materials Use, Handling and Storage</i>	No effect.	Effects would not be significant.	Effects would not be significant with proper handling; The operation of the TRMF would require hazardous materials additional to the current requirements in the installation.
<i>Hazardous Waste Generation, Storage, and Disposal</i>	No effect.	Effects would not be significant; little hazardous waste from construction.	Effects would not be significant with proper disposal.
<i>Site Contamination Issues</i>	No effect.	Effects would not be significant; site contamination issues unlikely but would be handled according to the applicable operating procedures if encountered.	No effect.

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
Human Health and Safety	No effect.	Not applicable as the QD arcs are applicable once the facilities are in operation.	Effects would not significant; East Patrol Road is used only by the LEAD security personnel; the railroad is part of the operations of the Ammunition Storage Area, used solely for transporting munitions Building 3254 will become a storage building; the QD arcs do not encompass the access road to be upgraded.
Cumulative Impacts			
<i>Land Use</i>	No effect.	Effects would not be significant; projects are consistent with the Requirement Analysis, which supports the Real Property Master Plan.	Effects would not be significant; projects are consistent with the Requirement Analysis, which supports the Real Property Master Plan.
<i>Aesthetic and Visual Resources</i>	No effect.	Effects would not be significant.	Effects would not be significant.
<i>Air Quality</i>	No effect.	Effects would not be significant; increase in annual emissions would not exceed <i>de minimis</i> thresholds.	Effects would not be significant; increase in annual emissions would not exceed <i>de minimis</i> thresholds.
<i>Noise</i>	No effect.	Effects would not be significant; minimal increase in noise levels that would not exceed applicable noise standards.	Effects would not be significant; minimal increase in noise levels that would not exceed applicable noise standards.
<i>Geology and Soils</i>	No effect.	Effects would not be significant; majority of soil have been previously disturbed.	Effects would not be significant; majority of soil have been previously disturbed.
<i>Water Resources</i>	No effect.	Effects would not be significant; impacts minimized through use of required BMPs and adherence to existing installation policies	Effects would not be significant; impacts minimized through use of required BMPs and adherence to existing installation policies
<i>Biological Resources</i>	No effect.	Effects would not be significant.	Effects would not be significant.
<i>Cultural Resources</i>	No effect.	No effect	No effect
<i>Socioeconomics</i>	No effect.	Effects would not be significant; increase in sales volume and temporary jobs	Effects would not be significant; creation of jobs, increase in sales volume and increase in permanent population and improved quality of life.

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
<i>Transportation</i>	No effect.	Effects would not be significant.	Effects would not be significant.
<i>Utilities</i>	No effect.	Effects would not be significant; requires normal short-term disruptions from utility extensions.	Effects would not be significant; relatively small utility requirements compared to other projects.
<i>Hazardous and Toxic Substances</i>	No effect.	Effects would not be significant with adherence to applicable standards and regulations.	Effects would not be significant with adherence to applicable standards and regulations.
<i>Human Health & Safety</i>	No effect.	Effects would not be significant following OSHA and other standards.	Effects would not be significant following OSHA and other standards.

ES.7 MITIGATION RESPONSIBILITY AND PERMIT REQUIREMENT

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

- **Best Management Practices (BMPs):** Use of BMPs for controlling runoff, erosion, and sedimentation during construction activities. BMPs could include, but are not limited to, erosion control matting, silt fencing, brush barriers, storm drain outlet protection, stone check dams, rock filter dams, construction exits, temporary and permanent seeding, and the application of mulch.
- **Erosion and Sediment Control, and Stormwater Management:** An erosion and sediment control plan would be required prior to any land disturbances. The proposed projects would also require coverage under Pennsylvania Department of Environmental Protection (PADEP) General National Pollutant Discharge Elimination System (NPDES) Permit for storm water discharges associated with construction activities.
- **Wetlands:** The expected impact on wetlands would require a Pennsylvania State Programmatic General Permit 3 under Section 404 of the Clean Water Act.

TABLE OF CONTENTS

ES	EXECUTIVE SUMMARY	ES-1
ES.1	Introduction	ES-1
ES.2	Background and Setting	ES-1
ES.3	Proposed Action	ES-1
ES.4	Realignment Process	ES-3
ES.5	Alternatives	ES-3
ES.6	Environmental Consequences	ES-4
ES.7	Mitigation Responsibility and Permit Requirement	ES-10
1.0	PURPOSE, NEED, AND SCOPE	1-1
1.1	Introduction.....	1-1
1.2	Purpose and Need	1-4
1.3	Scope.....	1-4
1.4	Public Involvement	1-5
1.5	Impact Analysis Performed.....	1-6
1.6	Framework for Analysis	1-6
1.6.1	BRAC Procedural Requirements.....	1-6
1.6.2	Relevant Statutes and Executive Orders	1-6
2.0	DESCRIPTION OF THE PROPOSED ACTION	2-1
2.1	Introduction.....	2-1
2.2	Proposed Action / Implementation Proposed.....	2-1
2.2.1	LEAD Mission and Vision.....	2-1
2.2.2	Personnel Loading.....	2-1
2.2.3	Proposed Action – BRAC Related Projects	2-2
2.2.4	Schedule	2-5
3.0	ALTERNATIVES	3-1
3.1	Introduction.....	3-1
3.2	No Action Alternative.....	3-2
3.3	Realignment (Preferred) Alternative.....	3-2
3.4	Additional Alternatives	3-2
3.4.1	Alternatives to the Proposed Actions	3-2
4.0	AFFECTED ENVIRONMENT AND CONSEQUENCES	4-1
4.1	Introduction.....	4-1
4.2	Land Use	4-1
4.2.1	Affected Environment	4-1
4.2.1.1	Regional Geographic Setting and Location	4-1
4.2.1.2	Installation Land	4-1
4.2.1.3	Surrounding Land	4-3
4.2.1.4	Current and Future Development in the Region of Influence.....	4-4
4.2.2	Environmental Consequences	4-4
4.2.2.1	No Action Alternative.....	4-4
4.2.2.2	Realignment (Preferred) Alternative.....	4-4
4.3	Aesthetics and Visual Resources	4-4
4.3.1	Affected Environment	4-4
4.3.1.1	Site Character	4-5
4.3.1.2	View Sheds.....	4-6
4.3.2	Environmental Consequences	4-6
4.3.2.1	No Action Alternative.....	4-7
4.3.2.2	Realignment (Preferred) Alternative.....	4-7

4.4	Air Quality	4-9
4.4.1	Affected Environment	4-10
	4.4.1.1 Ambient Air Quality Conditions.....	4-10
	4.4.1.2 Meteorology/Climate	4-11
	4.4.1.3 Air Pollutant Emissions at Installation.....	4-11
	4.4.1.4 Regional Air Pollutant Emissions Summary	4-12
4.4.2	Environmental Consequences	4-12
	4.4.2.1 No Action Alternative.....	4-12
	4.4.2.2 Realignment (Preferred) Alternative.....	4-13
4.5	Noise	4-14
4.5.1	Affected Environment	4-14
	4.5.1.1 Construction.....	4-14
	4.5.1.2 Facility Operations.....	4-15
4.5.2	Environmental Consequences	4-15
	4.5.2.1 No Action Alternative.....	4-16
	4.5.2.2 Realignment (Preferred) Alternative.....	4-16
4.6	Geology and Soils.....	4-16
4.6.1	Affected Environment	4-16
	4.6.1.1 Geologic and Topographic Conditions	4-16
	4.6.1.2 Soils	4-17
	4.6.1.3 Prime Farmland.....	4-18
4.6.2	Environmental Consequences	4-19
	4.6.2.1 No Action Alternative.....	4-19
	4.6.2.2 Realignment (Preferred) Alternative.....	4-19
4.7	Water Resources	4-20
	4.7.1.1 Surface Water.....	4-20
	4.7.1.2 Hydrogeology/Groundwater	4-26
	4.7.1.3 Floodplains.....	4-26
	4.7.1.4 Coastal Zone	4-26
4.7.2	Environmental Consequences	4-27
	4.7.2.1 No Action Alternative.....	4-27
	4.7.2.2 Realignment (Preferred) Alternative.....	4-27
4.8	Biological Resources	4-30
4.8.1	Affected Environment	4-30
	4.8.1.1 Vegetation	4-30
	4.8.1.2 Wildlife	4-30
	4.8.1.3 Threatened and Endangered Species.....	4-31
	4.8.1.4 Aquatic Habitat	4-32
4.8.2	Environmental Consequences	4-32
	4.8.2.1 No Action Alternative.....	4-33
	4.8.2.2 Realignment (Preferred) Alternative.....	4-33
4.9	Cultural Resources	4-34
4.9.1	Affected Environment	4-35
	4.9.1.1 Prehistoric and Historic Background	4-35
	4.9.1.2 Status of Cultural Resource Inventories and Section 106 Consultations.	4-36
	4.9.1.3 Native American Resources.....	4-38
4.9.2	Environmental Consequences	4-38
	4.9.2.1 No Action Alternative.....	4-39
	4.9.2.2 Realignment (Preferred) Alternative.....	4-39
4.10	Socioeconomics	4-40
4.10.1	Affected Environment	4-40

4.10.1.1	Economic Development	4-40
4.10.1.2	Demographics	4-41
4.10.1.3	Housing	4-41
4.10.1.4	Quality of Life.....	4-42
4.10.1.5	Environmental Justice	4-43
4.10.1.6	Protection of Children.....	4-43
4.10.2	Environmental Consequences	4-44
4.10.2.1	No Action Alternative.....	4-44
4.10.2.2	Realignment (Preferred) Alternative.....	4-45
4.11	Transportation	4-46
4.11.1	Affected Environment	4-46
4.11.1.1	Roadways and Traffic	4-46
4.11.1.2	Installation Transportation	4-46
4.11.1.3	Public Transportation.....	4-47
4.11.2	Environmental Consequences	4-47
4.11.2.1	No Action Alternative.....	4-47
4.11.2.2	Realignment (Preferred) Alternative.....	4-47
4.12	Utilities.....	4-49
4.12.1	Affected Environment	4-49
4.12.1.1	Potable Water Supply	4-49
4.12.1.2	Wastewater System.....	4-49
4.12.1.3	Storm Water System	4-49
4.12.1.4	Energy Sources	4-50
4.12.1.5	Communications	4-50
4.12.1.6	Solid Waste	4-50
4.12.2	Environmental Consequences	4-50
4.12.2.1	No Action Alternative.....	4-51
4.12.2.2	Realignment (Preferred) Alternative.....	4-51
4.13	Hazardous and Toxic Substances.....	4-52
4.13.1	Affected Environment	4-52
4.13.1.1	Hazardous Materials Use, Handling, and Storage	4-52
4.13.1.2	Hazardous Waste Generation, Storage, and Disposal.....	4-52
4.13.1.3	Site Contamination Issues.....	4-52
4.13.1.4	PCBs, Radon, Asbestos, and Lead-based Paint	4-53
4.13.1.5	Underground/Aboveground Storage Tanks.....	4-53
4.13.2	Environmental Consequences	4-53
4.13.2.1	No Action Alternative.....	4-53
4.13.2.2	Realignment (Preferred) Alternative.....	4-54
4.14	Human Health and Safety	4-54
4.14.1	Affected Environment	4-54
4.14.2	Environmental Consequences	4-55
4.14.2.1	No Action Alternative.....	4-55
4.14.2.2	Realignment (Preferred) Alternative.....	4-55
4.15	Cumulative Effects Summary	4-56
4.15.1	No Action Alternative	4-57
4.15.2	Realignment (Preferred) Alternative	4-57
4.16	Mitigation Summary	4-60
5.0	FINDINGS AND CONCLUSIONS	5-1
5.1	Findings	5-1
5.1.1	Consequences of No Action Alternative.....	5-1
5.1.2	Consequences of Realignment (Preferred) Alternative.....	5-1

5.2	Conclusions.....	5-1
6.0	LIST OF PREPARERS	6-1
7.0	DISTRIBUTION LIST	7-1
8.0	REFERENCES	8-1
9.0	PERSONS CONSULTED	9-1
10.0	ACRONYMS AND ABBREVIATIONS	10-1

LIST OF TABLES

Table ES-1: Summary of Effects of the No Action Alternative and the Realignment (Preferred) Alternative	ES-4
Table 1-1: Compliance with Federal Environmental Statutes, Regulations, and Executive Orders.....	1-1
Table 2-1. Letterkenny Army Depot 2005 BRAC Actions – Incoming Activities.....	2-2
Table 2-2. Schedule for LEAD 2005 BRAC Projects.....	2-5
Table 4-1. Land Use Areas at LEAD.....	4-2
Table 4-2. National Ambient Air Quality Standards	4-10
Table 4-3. Existing Monitoring Data within Franklin County, Pennsylvania	4-11
Table 4-4: Annual Emissions for LEAD (2005).....	4-11
Table 4-5. Summary of Annual Emissions	4-13
Table 4-6. Emissions Inventory Summary for the 2009 Maintenance Year (tons per summer day)..	4-14
Table 4-7: Typical Noise Levels (dBA) of Typical Construction Equipment	4-15
Table 4-8: Soils Series Located within the Project Area	4-17
Table 4-9. Wetland Areas in the TRMF Project Site.....	4-24
Table 4-10. LEAD ROI County Population Growth 1980 -2005	4-41
Table 4-11. Housing Characteristics for the 3-County ROI	4-41
Table 4-12. Additional Trips Generated by Preferred Alternative.....	4-48
Table 4-13. Traffic Impacts by Alternative at Gates.....	4-49
Table 4-14. Trips Generated by Cumulative Projects at the ACPs.....	4-60
Table 5-1: Summary of Effects of the Proposed Action and the No Action Alternative.....	5-1

LIST OF FIGURES

Figure 1-1. Regional and Vicinity Map	1-3
Figure 2-1. Proposed Locations for BRAC –Related Actions	2-4
Figure 4-1. Land use Areas at LEAD	4-2
Figure 4-2. View of Igloo Structure at LEAD.	4-5
Figure 4-3. View of the Proposed TRMF Site	4-8
Figure 4-4. Aerial View of the Cantonment Area.....	4-9
Figure 4-5. View of Portions of the Cantonment Area	4-9
Figure 4-6. Water Resources at LEAD	4-22
Figure 4-7. Wetland Areas in the TRMF Project Site.....	4-25
Figure 4-8. Buffers Around Water Resources.....	4-29
Figure 4-9. Location of Historic Resources at LEAD.....	4-37

LIST OF APPENDICES

APPENDIX A
Realignment Actions at Letterkenny Army Depot A-1

APPENDIX B
General Conformity Applicability AnalysisB-1
General Conformity – Record of Non-ApplicabilityB-11

APPENDIX C
Wetland Delineation Letterkenny Army Depot Theater Readiness Monitor FacilityC-1

APPENDIX D
Flora and Fauna Found at LEAD D-1

APPENDIX E
Agency Consultation.....E-1

APPENDIX F
Phase I Cultural Resource Investigation, Theater Readiness Monitoring Facility F-1

APPENDIX G
Economic Impact Forecast System (EIFS) Model..... G-1
EIFS REPORT: Letterkenny Army Depot..... G-3

1.0 PURPOSE, NEED, AND SCOPE

1.1 INTRODUCTION

On September 8, 2005, the Defense Base Closure and Realignment Commission (“BRAC Commission”) recommended that certain realignment actions occur at Letterkenny Army Depot (LEAD), Pennsylvania (see Figure 1-1). These recommendations were approved by the President on September 23, 2005, and forwarded to Congress. The Congress did not alter any of the BRAC Commission’s recommendations, and on November 9, 2005, the recommendations became law (see Appendix A). The BRAC Commission recommendations must now be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), as amended (hereinafter BRAC Law).

The BRAC Commission recommendations, which are included as part of BRAC law, as quoted², are to:

- *Realign Red River Army Depot. Relocate the depot maintenance of Tactical Missiles to Letterkenny Army Depot, PA.*
- *Realign Marine Corp Logistics Base Barstow, CA. Consolidate depot maintenance of Tactical Missiles at Letterkenny Army Depot, PA.*
- *Realign Rock Island Arsenal, IL, by relocating the depot maintenance of Combat Vehicles and Other to Anniston Army Depot, AL, and the depot maintenance of Other Equipment and Tactical Vehicles to Letterkenny Army Depot, PA.*

The BRAC Commission recommendations considered the Secretary of Defense’s justifications for recommended realignment actions at LEAD. The Secretary’s justifications, as quoted, are contained in Appendix A.

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

In accordance with the National Environmental Policy Act of 1969 (NEPA), as amended (Title 42, U.S. Code [USC], 4321-4370f) and regulations of the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] 1500-1508), this EA was prepared concurrently with and integrated with environmental impact analyses and related surveys and studies required by the Fish and Wildlife Coordination Act (16 U.S. Code [USC] 661 *et seq.*), the National Historic Preservation Act of 1966 (NHPA, 16 USC 470 *et seq.*), the Endangered Species Act of 1973 (ESA, 16 USC 1531 *et seq.*), and other environmental review laws (and their implementing regulations), and Executive Orders (EOs) outlined in Table 1-1.

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

Environmental Resources	Statute, Regulation, or Executive Order
Air	Clean Air Act (CAA) of 1970 (PL 95-95), as amended in 1977 and 1990 (PL 91-604); U.S. Environmental Protection Agency (USEPA), Subchapter C-Air Programs (40 CFR 52-99)

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

Environmental Resources	Statute, Regulation, or Executive Order
Noise	Noise Control Act of 1972 (PL 92-574) and Amendments of 1978 (PL 95-609); USEPA, Subchapter G-Noise Abatement Programs (40 CFR 201-211)
Water	Federal Water Pollution Control Act (FWPCA) of 1972 (PL 92-500) and Amendments; Clean Water Act (CWA) of 1977 (PL 95-217); USEPA, Subchapter D-Water Programs (40 CFR 100-145); Water Quality Act of 1987 (PL 100-4); USEPA, Subchapter N-Effluent Guidelines and Standards (40 CFR 401-471); Safe Drinking Water Act (SDWA) of 1972 (PL 95-923) and Amendments of 1986 (PL 99-339); USEPA, National Drinking Water Regulations and Underground Injection Control Program (40 CFR 141-149)
Biological Resources	Migratory Bird Treaty Act of 1918; Fish and Wildlife Coordination Act of 1958 (PL 85-654); Sikes Act of 1960 (PL 86-97) and Amendments of 1986 (PL 99-561) and 1997 (PL 105-85 Title XXIX); Endangered Species Act of 1973 (PL 93-205) and Amendments of 1988 (PL 100-478); Fish and Wildlife Conservation Act of 1980 (PL 96-366); Lacey Act Amendments of 1981 (PL 97-79); Responsibilities of Federal Agencies to Protect Migratory Birds (EO 13186)
Wetlands and Floodplains	Section 401 and 404 of the Federal Water Pollution Control Act of 1972 (PL 92-500); USEPA, Subchapter D-Water Programs 40 CFR 100-149 (105 ref); Floodplain Management-1977 (EO 11988); Protection of Wetlands-1977 (EO 11990); Emergency Wetlands Resources Act of 1986 (PL 99-645); North American Wetlands Conservation Act of 1989 (PL 101-233)
Cultural Resources	NHPA (16 USC 470 et seq.) (PL 89-865) and Amendments of 1980 (PL 96-515) and 1992 (PL 102-575); Protection and Enhancement of the Cultural Environment-1971 (EO 11593); Indian Sacred Sites-1966 (EO 13007); American Indian Religious Freedom Act (AIRFA) of 1978 (PL 94-341); Antiquities Act of 1906; Archaeological Resources Protection Act (ARPA) of 1979 (PL 96-95); Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (PL 101-601); Protection of Historic and Cultural Properties (36 CFR 800)
Solid/Hazardous Materials and Waste	Resource Conservation and Recovery Act (RCRA) of 1976 (PL 94-5800), as Amended by PL 100-582; USEPA, subchapter I-Solid Wastes (40 CFR 240-280); Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (42 USC 9601) (PL 96-510); Toxic Substances Control Act (TSCA) (PL 94-496); USEPA, Subchapter R-Toxic Substances Control Act (40 CFR 702-799); Federal Insecticide, Fungicide, and Rodenticide Control Act (40 CFR 162-180); Emergency Planning and Community Right-to-Know Act (40 CFR 355, 370, and 372); Federal Compliance with Pollution Control Standards-1978 (EO 12088), Superfund Implementation (EO 12580); Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition (EO 13101), Greening the Government Through Efficient Energy Management (EO 13123), Greening the Government Through Leadership in Environmental Management (EO 13148)
Environmental Justice	Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations (EO 12898); Protection of Children from Environmental Health Risks and Safety Risks (EO 13045)
Human Health and Safety	Safety and Health Regulations for General Industry (29 CFR 1910); Safety and Health Regulations for Construction (29 CFR 1926)

Figure 1-1. Regional and Vicinity Map



1.2 PURPOSE AND NEED

The purpose of the proposed action is to implement those elements of BRAC law that contain the BRAC Commission's recommendation pertaining to LEAD.

The need for the proposed action is to improve the ability of the Nation to respond rapidly to challenges of the 21st century. The Army's mission is to defend the United States and its territories, support national policies and objectives, and defeat nations responsible for aggression that endangers the peace and security of the United States. To carry out these tasks, the Army must adapt to changing world conditions and improve its capabilities to respond to a variety of circumstances across the full spectrum of military operations. The following discusses three major initiatives that contribute to the Army's need for the proposed action.

Base Realignment and Closure. In previous rounds of BRAC, the explicit goal was to save money and downsize the military to reap a "peace dividend." In the 2005 BRAC round, DoD sought to reorganize its installation infrastructure to support its forces efficiently, increase operational readiness and facilitate new ways of doing business. Thus, BRAC represents more than cost savings. It supports advancing the goals of transformation, improving military capabilities, and enhancing military value. The Army needs to carry out the BRAC recommendations at LEAD to achieve the objectives for which Congress established the BRAC process.

Army Transformation and the Army Modular Force. On October 12, 1999, the Secretary of the Army and the Chief of Staff articulated a vision about people, readiness, and transformation of the Army to meet challenges emerging in the 21st century and the need to be able to respond more rapidly to different types of operations requiring military action. The strategic significance of land forces continues to lie in their ability to fight and win the Nation's wars and in their providing options to shape the global environment to the benefit of the United States and its allies. Transformation responds to the Army's need to become more strategically responsive and dominant at every point on the spectrum of operations. In March 2002, the Army published its *Programmatic Environmental Impact Statement for Army Transformation* for its proposal to conduct a multiyear, phased, and synchronized program of transformation. Over a 30-year period, the Army will conduct a series of transformation activities affecting virtually all aspects of Army doctrine, training, leader development, organizations, installations, materiel, and Soldiers. On April 11, 2002, the Army issued a Record of Decision reflecting its intent to transform the Army. This EA evaluates a proposed action that supports the transformation process, which is designed to provide the Nation with combat forces that are more responsive, deployable, agile, versatile, lethal, survivable, and sustainable.

Installation Sustainability. On October 1, 2004, the Secretary of the Army and the Chief of Staff issued *The Army Strategy for the Environment*. The strategy focuses on the interrelationships of mission, environment, and community. A sustainable installation simultaneously meets current and future mission requirements, safeguards human health, improves quality of life, and enhances the natural environment. A sustained natural environment is necessary to allow the Army to train and maintain military readiness.

1.3 SCOPE

This EA has been developed in accordance with the National Environmental Policy Act of 1969 (NEPA) and implementing regulations issued by the President's Council on Environmental Quality (CEQ) and the

Army.³ Its purpose is to inform decision makers and the public of the likely environmental consequences of the proposed action and alternatives.

This EA identifies, documents, and evaluates environmental effects of realignments at LEAD, Pennsylvania. Environmental effects of realignment would include those related to construction and operation of the proposed action as well as impacts of increased personnel to LEAD. An interdisciplinary team of environmental scientists, biologists, planners, economists, engineers, archaeologists, historians, and military technicians has analyzed the proposed action and alternatives in light of existing conditions and has identified relevant beneficial and adverse effects associated with the action. The proposed action is described in Section 2.0, and alternatives, including the no action alternative, are described in Section 3.0. Conditions existing as of 2005, considered to be the “baseline” conditions, are described in Section 4.0, Affected Environment and Environmental Consequences. The expected effects of the proposed action, also described in Section 4.0, are presented immediately following the description of baseline conditions for each environmental resource addressed in the EA. Section 4.0 also addresses the potential for cumulative effects, and mitigation measures are identified where appropriate. Findings and conclusions are presented in Section 5.0.

The BRAC Law specifies that NEPA does not apply to actions of the President, the Commission, or the Department of Defense, except “(i) during the process of property disposal, and (ii) during the process of relocating functions from a military installation being closed or realigned to another military installation after the receiving installation has been selected but before the functions are relocated (BRAC Law).” The law further specifies that in applying the provisions of NEPA to the process, the Secretary of Defense and the secretaries of the military departments concerned do not have to consider “(i) the need for closing or realigning the military installation which has been recommended for closure or realignment by the Commission, (ii) the need for transferring functions to any military installation which has been selected as the receiving installation, or (iii) military installations alternative to those recommended or selected (BRAC Law). The Commission’s deliberation and decision, as well as the need for closing or realigning a military installation, are exempt from NEPA. Accordingly, this EA does not address the need for realignment. For instance, locations for incoming organizations other than at LEAD are not considered.

1.4 PUBLIC INVOLVEMENT

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

Public participation opportunities with respect to this EA and decision making on the proposed action are guided by 32 CFR Part 651. Upon completion, the EA will be made available to the public for 30 days, along with a draft Finding of No Significant Impact (FNSI). At the end of the 30-day public review period, the Army will consider any comments submitted by individuals, agencies, or organizations on the proposed action, the EA, or draft FNSI. As appropriate, the Army may then execute the FNSI and proceed with implementation of the proposed action. If it is determined prior to issuance of a final FNSI that implementation of the proposed action would result in significant impacts, the Army will publish in the *Federal Register* a notice of intent to prepare an environmental impact statement, commit to mitigation actions sufficient to reduce impacts below significance levels, or not take the action.

³ Council on Environmental Quality *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*, 40 Code of Federal Regulations (CFR) Parts 1500–1508, and *Environmental Analysis of Army Actions*, 32 CFR Part 651.

Throughout this process, the public may obtain information on the status and progress of the proposed action and the EA through the LEAD Public Affairs Office by calling Mr. Alan Loessy at 717-267-5102.

1.5 IMPACT ANALYSIS PERFORMED

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

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

The EA provides the best available information as of June 2006, and includes guidance by Installation personnel. Data presented in the EA reflect the current conditions at LEAD using references to the most recent available data sources, including management plans, EAs, and Installation-provided Geographic Information System (GIS) data.

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

1.6 FRAMEWORK FOR ANALYSIS

A decision on whether to proceed with the proposed action rests on numerous factors such as mission requirements, schedule, availability of funding, and environmental considerations. In addressing environmental considerations, LEAD is guided by relevant statutes (and their implementing regulations) and Executive Orders that establish standards and provide guidance on environmental and natural resources management and planning.

1.6.1 BRAC Procedural Requirements

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

1.6.2 Relevant Statutes and Executive Orders

Relevant statutes and Executive Orders include the Clean Air Act, Clean Water Act, Noise Control Act, Endangered Species Act, National Historic Preservation Act, Archaeological Resources Protection Act, Resource Conservation and Recovery Act, and Toxic Substances Control Act. Executive Orders bearing on the proposed action include EO 11988 (Floodplain Management), EO 11990 (Protection of Wetlands), EO 12088 (Federal Compliance with Pollution Control Standards), EO 12580 (Superfund Implementation), EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations), EO 13045 (Protection of Children from Environmental Health Risks and Safety Risks), EO 13101 (Greening the Government Through Waste Prevention, Recycling, and Federal

Acquisition), EO 13123 (Greening the Government Through Efficient Energy Management), EO 13423 (Strengthening Federal Environmental, Energy, and Transportation Management), EO 13175 (Consultation and Coordination with Indian Tribal Governments), and EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds). These authorities are addressed in various sections throughout this EA when relevant to particular environmental resources and conditions. The full text of the laws, regulations, and EOs is available on the Defense Environmental Network & Information Exchange Web site at <http://www.denix.osd.mil>.

THIS PAGE INTENTIONALLY LEFT BLANK

2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 INTRODUCTION

This section describes the Army's proposed action for carrying out the BRAC Commission's recommendations contained in BRAC law. The BRAC Commission recommended the realignment of the following agencies/activities with relocation to LEAD, Pennsylvania. These include:

- Realign Red River Army Depot. Relocate the depot maintenance of Tactical Missiles from Red River Army Depot, TX to Letterkenny Army Depot, PA.
- Realign Marine Corp Logistics Base Barstow, CA. Consolidate depot maintenance of Tactical Missiles at Letterkenny Army Depot, PA.
- Realign Rock Island Arsenal, IL, by relocating the depot maintenance of Combat Vehicles and Other to Anniston Army Depot, AL, and the depot maintenance of Other Equipment and Tactical Vehicles to Letterkenny Army Depot, PA

2.2 PROPOSED ACTION / IMPLEMENTATION PROPOSED

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

2.2.1 LEAD Mission and Vision

The mission of LEAD is to *"To provide the Army and other Armed Forces with worldwide, reliable, responsive, and cost-effective Depot level maintenance, field support, systems integration, and product support integration for weapon systems, components, and ancillary equipment to ensure the readiness, sustainability, and safety of these forces during the full spectrum of operational environments."*

The vision of LEAD *"To provide modern, responsive and effective Depot-level maintenance capabilities, nationally and forward deployed, that ensure flexible and focused support to the warfighter."*

2.2.2 Personnel Loading

The BRAC Commission recommendations for relocating these organizations would result in the arrival of about 174 workforce personnel (0 Military, 174 Civilian, and 0 Contractors) to LEAD. LEAD employs 2,048 people (Sgroi, 2007a), whom are divided among the depot and forward repair areas, the Letterkenny Munitions Center (LEMC), the Defense Logistics Agency (DLA), the US Army Industrial Logistics System Center (ILSC), US Army District Test, Measurement and Diagnostic Equipment (TMDE) Support Center, US Army TMDE Management Office-Region 1, Regional Support Activity, and the US Army Health Clinic. The BRAC realignment action would result in a workforce increase of about 8 percent. The potential direct, indirect, and/or cumulative impacts to the environment from the increase in personnel will be considered in this EA. The breakout of personnel by mission is listed in **Table 2-1**.

Table 2-1. Letterkenny Army Depot 2005 BRAC Actions – Incoming Activities

Action	Organization	From	Total Estimated Incoming Personnel
Incoming	Realign Red River Army Depot. Relocate the depot maintenance of Tactical Missiles to Letterkenny Army Depot, PA.	TX – Red River Army Depot	112
Incoming	Realign Marine Corp Logistics Base Barstow, CA. Consolidate depot maintenance of Tactical Missiles at Letterkenny Army Depot, PA.	CA - Marine Corp Logistics Base Barstow	35
Incoming	Realign Rock Island Arsenal, IL, by relocating the depot maintenance of Combat Vehicles and Other to Anniston Army Depot, AL, and the depot maintenance of Other Equipment and Tactical Vehicles to Letterkenny Army Depot, PA.	IL - Rock Island Arsenal	27
		TOTAL	174

(Source: LEAD, 2005; Resau, 2006)

2.2.3 Proposed Action – BRAC Related Projects

The following presents the proposed action, or BRAC-related projects assessed in this EA. The site-specific BRAC related projects are defined by existing DD Form 1391s (LEAD, 2006). The DD Form 1391 is used by the Department of Defense to submit requirements and justifications in support of funding requests for military construction to Congress. The following describes the BRAC-related projects assessed in this EA. Figure 2-1 identifies the project locations.

Theater Readiness Monitoring Facility (PN 63366)

Certification for Theater Readiness of PATRIOT and HAWK missiles is currently performed at Red River Army Depot, Texas. The decision by the DoD to close Red River munitions operations and relocate missile certification to LEAD requires the construction of a TRMF. No industrial operations would occur at this facility, only the possible need to complete small-scale touch up painting (Quinn, 2007a). Due to the nature of the operation, this facility must be located within the Ammunition Storage Area, and quantity-distance safety requirements must apply. There are no existing facilities within the Ammunition Area that have all the capabilities required to accomplish this mission, nor are there facilities that can be converted from existing uses and modified to meet this requirement. As a result, new construction is the only viable option for the relocation of this mission to LEAD.

To support this realignment, it is necessary to construct a Theater Readiness Monitoring Facility (TRMF). Square footage (SF) of the TRMF is identified on existing DD1391 as 40,000 SF but has been further refined to approximately 35,000 SF (LEAD, 2005; Leonard, 2006). Facility includes substantial dividing walls, can and decan areas, loading dock, test bays, operation bays, Electromagnetic Radio Frequency (RF) shielding, grounding, raised floor areas, controlled humidity, clean room, administrative area, break room, rest room, explosion proof lighting, cold storage area, inert gas lines, cranes, storage areas, CARC paint area, fire protection to include alarm, sprinkler system, fire pump, intrusion detection, emergency generator and building information systems. Supporting facilities include lighting protection, external security lighting, paved access road, 0.75-acre (~ 80 spaces) operational parking, and security fence

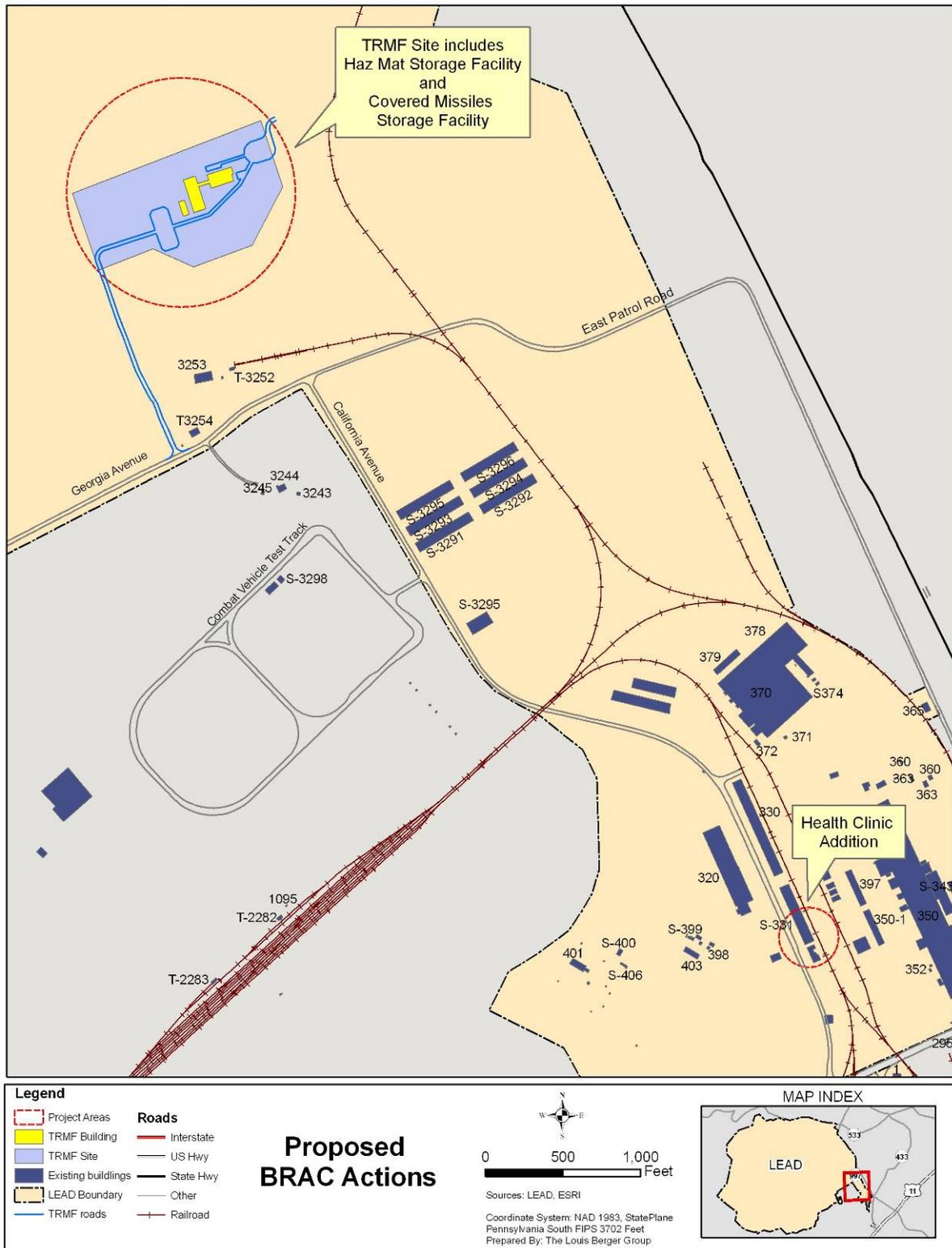
Covered Missile Storage Facility. Construct a 2,000 SF storage facility for Tactical Missiles. Storage of missiles to be worked through the TRMF require quantity-distance compliant storage that may not be

available in existing earth-covered magazines depending on the conventional storage requirements imposed upon LEMC. This project is needed to ensure that adequate storage space for the new mission is available.

Hazardous Materials Storage Facility. Construction of a 2,000 SF new covered hazardous materials storage pad is required to classify, store, and hold for disposal hazardous materials that will be generated by the transferred mission. These materials include lubricants, cleaning agents, and other liquids along with solid wastes generated by small-scale blasting and painting operations.

Health Clinic Addition. Construction of a 690-square-foot addition to building 332, the existing Health Clinic (located adjacent to building 331), is required to accommodate increased BRAC staffing and provide storage area for additional employee health records. The increase in staff and records volume is necessary to provide health services to the additional personnel associated with the new missions.

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



2.2.4 Schedule

Under the BRAC law, the Army must initiate all realignments not later than September 15, 2007, and complete all realignments not later than September 15, 2011.⁴ All BRAC-related projects at LEAD are scheduled to be completed by September 15, 2011.

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

Table 2-2. Schedule for LEAD 2005 BRAC Projects

Project Number	Project Title	Project Cost (\$000)	Estimated Construction Start	Estimated Construction Completion
63366	Theater Readiness Monitoring Facility	\$11,600	March 2008	September 2009
	Covered Storage Facility for Tactical Missiles	\$700	March 2008	September 2009
	Hazardous Materials Storage Facility	\$450	March 2008	September 2009
	Health Clinic Addition	\$450	March 2008	September 2009

(Sources: LEAD, 2006; LEAD 2005)

⁴ Section 2904(a), Public Law 101-510, as amended, provides that the Army must "... initiate all closures and realignments no later than two years after the date on which the President transmits a report [by the BRAC Commission] to the Congress ... containing the recommendations for such closures or realignments; and ... complete all such closures and realignments no later than the end of the six year period beginning on the date on which the President transmits the report" The President took the specified action on September 15, 2005.

THIS PAGE INTENTIONALLY LEFT BLANK

3.0 ALTERNATIVES

3.1 INTRODUCTION

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

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

Considering alternatives helps to avoid unnecessary impacts and allows analysis of reasonable ways to achieve the stated purpose. To warrant detailed evaluation, an alternative must be reasonable. To be considered reasonable, an alternative must be "ripe" for decision making (any necessary preceding events having taken place), affordable, capable of implementation, and satisfactory with respect to meeting the purpose of and need for the action. The following discussion identifies alternatives considered by the Army and identifies whether they are feasible and, hence, subject to detailed evaluation in this EA. The section also describes the No Action alternative

The following details criteria for alternatives:

Means to Accommodate Realigned Units. Relocation of units and establishment of new units involves ensuring that the installation has adequate physical accommodations for personnel and their operational requirements. The Army considers four means of meeting increased space requirements.

- Use of existing facilities
- Modernization or renovation of existing facilities
- Leasing of off-post facilities
- Construction of new facilities

Army Regulation (AR) 210-20, *Master Planning for Army Installations*, establishes Army policy to maximize use of existing facilities. The regulation directs that new construction will not be authorized to meet a mission that can be supported by existing underutilized adequate facilities, provided that the use of such facilities does not degrade operational efficiency. Under this policy, selection and use of facilities to support mission requirements adheres to the foregoing four choices in the order in which they are listed.

Siting of New Construction. The Army considers new construction of facilities when use of existing facilities, renovation, or leasing would fail to provide for adequate accommodations of realigned functions. The Army considers both general and specific siting criteria for construction of new facilities.

General siting criteria include consideration of compatibility between the functions to be performed and the installation land use designation for the site, adequacy of the site for the function required, proximity to related activities, distance from incompatible activities, availability and capacity of roads, efficient use of property, development density, potential future mission requirements, and special site characteristics, including environmental incompatibilities.

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

Schedule. Alternatives for scheduling of proposed realignment actions are principally affected by three factors: the availability of facilities to house realigned personnel and functions, efforts to minimize potential disruption of mission activities based on the number of personnel involved in the relocation or the amount of work to be performed, and early realization of benefits to be gained by completion of the realignments. In most cases, minor shifts in schedule would not produce different environmental results.

3.2 NO ACTION ALTERNATIVE

CEQ regulations require inclusion of the No Action alternative. The No Action alternative serves as a baseline against which the impacts of the proposed action and alternatives can be evaluated.

Under the No Action alternative, LEAD would not implement the proposed action. No units would relocate from other locations. LEAD would use its current inventory of facilities, though routine replacement or renovation actions could occur, through normal military maintenance and construction procedures, as circumstances independently warrant. LEAD could not comply with BRAC Law if the realignment actions were not completed. The No Action alternative is evaluated in detail in this EA.

3.3 REALIGNMENT (PREFERRED) ALTERNATIVE

LEAD has identified four facilities projects required to support the proposed action. All the projects involve new construction that would provide approximately 40,000 SF of built space. Siting of these new facilities follows existing land use at LEAD.

LEAD seeks generally to collocate like uses and to separate incompatible uses, according to the installation's 3 land use areas. Siting of the proposed BRAC facilities, which is also based on this precept as shown below, locates facilities in a way to support mission goals and objectives as efficiently and effectively as possible.

Three projects, the Theater Readiness Monitoring Facility (TRMF), Covered Missile Storage Facility, and Hazardous Materials Storage Facility are collocated and would be located within the Ammunition Storage Area. The Health Clinic addition would be added to building 332, the existing Health Clinic, which is located in the Cantonment Area.

While variations of the present proposal for siting of facilities could be developed, the locations reflected in the Realignment (Preferred) Alternative reflect a sound comprehensive approach, already taken in developing the Requirement Analysis (R&K Engineering, 2006a), which is an integral part of the development of a Real Property Master Plan for LEAD, that limits environmental impacts while assuring efficient support to mission goals and objectives. Alternative siting of facilities would neither reduce impacts nor provide more efficient or effective support to mission goals and objectives. Therefore, alternative siting of facilities is not further evaluated in this EA.

3.4 ADDITIONAL ALTERNATIVES

3.4.1 Alternatives to the Proposed Actions

Use of Existing Facilities at LEAD - Construction of new facilities is driven by the need to ensure adequate space is available for mission requirements. LEAD's existing 3.5 million SF of space is, with very minor exception, fully utilized for current mission requirements. Evaluation of all facilities at LEAD

shows a substantial shortfall in built space to accommodate the additional personnel and their equipment. Overall, however, the post requires approximately 40,000 SF of additional space to meet the needs of the realigned depot maintenance workload. The units and functions being evaluated under this EA require a substantial amount of additional and adequate space for new missions that could not be provided efficiently by existing facilities. In addition, the functions being evaluated under this EA require space that meets modern standards. For these reasons, use of existing built space is not considered feasible and is not carried forward for analysis in this EA.

Off-Post Leasing of Facilities - Use of off-post leased space to meet LEAD's requirements would involve several major drawbacks. Force protection policies specify certain facilities characteristics, such as physical security features, set-back from roadways, and "hardened" construction. The introduction of explosives into private sector leased space is not feasible and is an additional drawback. Use of leased space in the private sector – having personnel and equipment both on-post and off-post – would adversely affect command and control functions, result in higher operational costs, and impair efficient use of resources. It is directly contrary to the purpose for the BRAC actions at LEAD, which are consolidating like functions for mission effectiveness. For these reasons, use of leased space is not feasible and is not carried forward for analysis in this EA.

Construction of New Facilities - Construction of new facilities is driven by the need to ensure adequate space is available for mission requirements. LEAD's existing 3.5 million SF of space are, with very minor exception, fully utilized for current mission requirements. Accordingly, new construction is required and is evaluated as the preferred alternative in this EA.

LEAD has identified 4 facilities projects required to support the proposed action. All the projects involve new construction that would provide approximately 40,000 SF of built space.

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

Schedule - The schedule for implementation of the proposed action must balance facilities construction time frames and planned arrival dates of inbound units and stand-up dates of newly-established units, all within the 6-year limitation of the BRAC law (see Section 2.2.4). Realignment earlier than that shown in the schedule in Section 2.2.4 is not feasible in light of the time required to build facilities. Shifting of schedules to accomplish realignment at a later date would unnecessarily delay realization of benefits to be gained. In addition, Congress requires completion by September 15, 2011. Since earlier implementation is not possible, and since delay is avoidable and unnecessary, alternative schedules are not further evaluated in this EA.

THIS PAGE INTENTIONALLY LEFT BLANK

4.0 AFFECTED ENVIRONMENT AND CONSEQUENCES

4.1 INTRODUCTION

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

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

4.2 LAND USE

4.2.1 Affected Environment

4.2.1.1 Regional Geographic Setting and Location

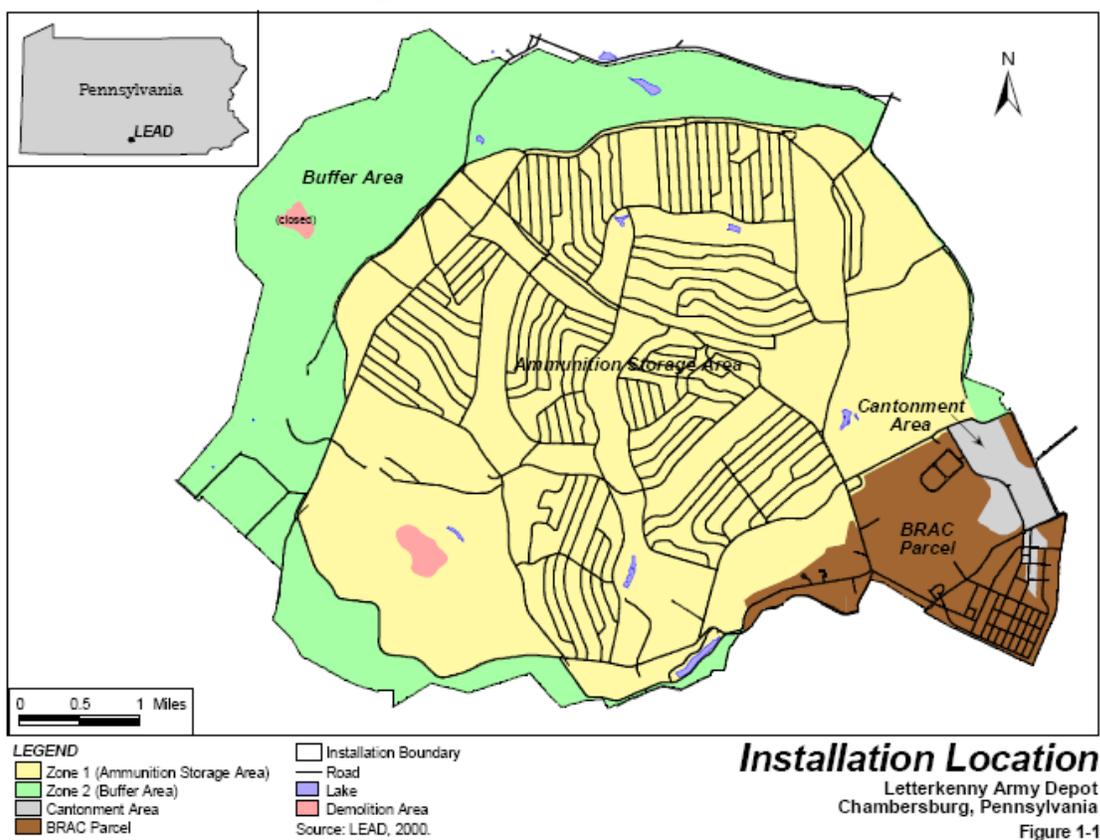
LEAD consists of 17,793 acres located approximately 5 miles north of Chambersburg in Franklin County, in the Cumberland Valley of south-central Pennsylvania. Chambersburg is the nearest community to LEAD and also serves as the county seat. Major metropolitan areas surrounding LEAD include Pittsburgh, 130 miles to the northwest, and Philadelphia, 135 miles to the east. Washington D.C. is located 90 miles to the south and Baltimore, Maryland is approximately 75 miles to the southeast (Tetra Tech, 2001). Nearby highways include Interstate 81 and U.S. Route 11; both located less than 5 miles from LEAD. Direct access to LEAD is by State Route (SR) 997 and SR 433 (USACE, 2001).

4.2.1.2 Installation Land

LEAD was acquired in 1942. In the early 1940s, 380 parcels of land, encompassing 20,508 acres were purchased for the depot. Acquisition of land for dams and easements and sale of excess land over the years have resulted in the current acres available for depot activities. Prior to the establishment of LEAD, the land was used for grazing and cropland.

LEAD is one of the U.S. Army’s largest depots on the East Coast, consisting of 17,793 acres of land, most of which is dedicated to ammunition storage. The other primary function of the depot is to provide supply and maintenance support to the U.S. Army, Navy, Air Force, and Marine Corps. LEAD is a non-distribution depot for the supply of major end items, and is a distribution depot for ammunition. The installation is divided into three areas - ammunition storage (Zone I), safety zones (Zone II), and cantonment (Figure 4-1). Other land use activities at LEAD include some administrative and maintenance functions, outdoor recreation, and agricultural outleasing. Table 4-1 shows the land use activities at LEAD and its associated acreages.

Figure 4-1. Land Use Areas at LEAD



(Source: Tetra Tech, 2001)

Table 4-1. Land Use Areas at LEAD

Land Use Areas	Associated Activities	Acres	Percent of Total
Ammunition Storage	<ul style="list-style-type: none"> - Conventional ammunition storage - Tactical missile storage & assembly - Open burning/open detonation (OB/OD) area - Function firing range - Agricultural outleasing - Outdoor recreation (hunting & fishing) 	11,822	66.4%
Safety Zones	<ul style="list-style-type: none"> - Agricultural outleasing - Forestry management - Outdoor recreation (hunting & fishing) 	4,792	26.9%
Cantonment	<ul style="list-style-type: none"> - light industrial activities - Maintenance activities - Administrative functions - Tenant organizations 	1,179	6.6%
TOTAL		17,793	100.0%

(Source: Tetra Tech 2001)

Ammunition Storage – Approximately 2/3 of LEAD’s total acreage is designated for the supply and storage of ammunition. This area contains more than 900 storage igloos and is served by an extensive road network and railway. The Ammunition Storage Area is completely secure, and access is strictly controlled (Tetra Tech, 2001).

Safety Zones – About 27 percent of LEAD is composed of open space that makes up the buffer zones between the ammunition activities and off-post adjacent lands. The safety zone is a mix of open fields and woodlands, and is used for controlled hunting and fishing and agricultural outleasing (Tetra Tech, 2001).

Cantonment Area – This area makes up almost 7 percent of LEAD. The Cantonment Area is used for supply and storage (warehousing and open storage), industrial (repair and maintenance of military vehicles), administrative (office buildings, facilities compound, helipad) (Tetra Tech, 2001).

Approximately 10,000 acres of land distributed throughout the depot can be outleased to local farmers under LEAD’s Agricultural Outleasing Program. Approximately 3,300 acres of the 10,000 acres are kept as cropland. The remaining land is used for erosion control, wildlife management, maintenance, economics, and the enhancement of the environmental quality of the depot (USACE, 2001).

Tenant organization located in the cantonment area include the U.S. Army Test Measurement and Diagnostic Equipment Activity (USATA), U.S. Army Materiel Command Engineering Activity (AMC), Defense Reutilization and Marketing Office (DRMS), U.S. Army Missile Command (AMCOM), Defense Information Systems Agency Western Hemisphere (DISA WESTHEM), and U.S. Army Industrial Logistics System Center (ILSC).

The local reuse authority is developing the 1,450 acres of property in the cantonment area that was excessed following the 1995 BRAC Commission recommendations. The community’s reuse plan consists of a mixture of land use activities similar to the activities performed by the Army. The excess area will consist of several land use “districts” that can accommodate the following types of uses: industrial, office, administrative, community/open space; warehouse/distribution; light industrial; and highway-oriented industrial distribution. The plan has been developed to ensure that future uses of the excess property will be compatible with LEAD’s remaining mission. The build-out for the property is planned to occur over a period of 20 years or more (Tetra Tech, 2001).

4.2.1.3 Surrounding Land

Off-post land uses in surrounding lands are primarily agricultural with some low-density residential communities nearby. Several scattered unincorporated residential and commercial developments are located to the south and east of the Installation. State Forest and State Game lands are located to the west of the installation (USACE, 2001). Forty percent of the land in Franklin County is wooded (Tetra Tech, 2001).

Land uses adjacent to the depot are expected to transition slowly from existing agricultural/open space to single-family residential, industrial, and commercial land. Low-density, single-family residential development is projected to the northeast of the depot along SR 997; east of the depot along SR 997 between SR 433 and US 11, with agricultural land to the north; and north of the depot. The predominant projected land use immediately east of the depot along SR 433 will be industrial with limited commercial development at the intersection of SR 433 and SR 997. The property in the vicinity of Gate 1 is projected to remain in an Agricultural Security Overlay Zone, and the area surrounding Chambersburg Municipal Airport is scheduled to become an industrial area (Tetra Tech, 2001).

4.2.1.4 Current and Future Development in the Region of Influence

The Region of Influence (ROI) for LEAD includes Franklin, Cumberland, and Huntingdon Counties; these Counties are also defined as the ROI for this study. The ROI is described in greater detail in Section 4.10, Socioeconomics.

4.2.2 Environmental Consequences

Impacts to land use were determined by the following criteria:

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

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

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

4.2.2.1 No Action Alternative

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

4.2.2.2 Realignment (Preferred) Alternative

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

Installation Land – Effects would be not significant. All four proposed projects would occur within the LEAD boundary. Siting of the new construction is consistent with the land use area at LEAD. The TRMF Site, which includes the Theater Readiness Monitoring Facility, Covered Missile Storage, and Hazardous Material Storage Facilities, would be located within the Ammunition Storage Area. The Health Clinic addition would be added to building 332, the existing Health Clinic, which is located in the Cantonment Area. Siting of the proposed facilities locates facilities in a way to support mission goals and objectives.

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

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

4.3 AESTHETICS AND VISUAL RESOURCES

4.3.1 Affected Environment

LEAD is located in south-central Pennsylvania, in rural Franklin County. The predominant adjacent land uses are primarily agricultural with some low-density residential communities. LEAD occupies 17,793

acres, which are divided into three main areas: a complex of warehouses, maintenance, and administration facilities at the eastern edge of the depot; a 12,000-acre Ammunition Storage Area containing more than 900 igloos; and ammunition demolition and Buffer Area.

The area around LEAD is served by Interstate 81, US Highway No. 11 (US 11) and US Highway No. 30 (US 30). Direct access to installation is provided by State Route (SR) 997 and SR 433. The intersection of these two routes occurs at the primary entrance to LEAD. In addition, the Pennsylvania Turnpike (Exit 15 [Blue Mountain]; Lurgan Township; mile marker 201) is located 14 miles north of the facility via SR 997. The depot boundaries are marked by a non-deer proof chain-link and wire fence

The building styles at LEAD vary depending on the particular use and function within the Installation. The bulk of the built structures at LEAD reside in the Ammunition Storage Area. This area holds above-ground structures as well as earth-covered structures. The buildings in the Cantonment Area include one- and two-story prefabricated industrial structures with simple shed roofs to concrete storage tanks. There are no buildings in the Safety/ Buffer area, as this open space area is reserved for safety purposes. The forested land acts as a barrier from any potential ammunition risks and hazards from the neighboring residential areas.

The four project sites constituting the proposed action are located in two separate areas of the Installation. Three of the four projects are clustered within the Ammunition Storage Zone. These three projects include the Theater Readiness Monitoring Facility, the Covered Missile Storage Facility, and the Hazardous Material Storage Facility. The fourth project site is the Health Clinic Facility Addition, which would be added to the existing Health Clinic (Buildings 332), and is located in the Cantonment Area.

4.3.1.1 Site Character

Ammunition Storage (Zone I)

The Ammunition Storage Area (Zone I) comprises LEAD's ammunition mission, which occupies 12,000 acres, with 902 earth-covered igloos, 10 above-ground igloos, and 100 inert storage locations (Global Security, 2006). This area containing the "igloos" is accessed by an extensive road network and railway. The igloos are constructed with a concrete entrance façade and a metal barrel type interior. The entire igloo structure is covered with a sod planting that serves as camouflage to disguise it from an aerial perspective (Figure 4-2). The Ammunition Storage Area is completely secured, and access is strictly controlled.

The discreet storage facilities disrupt the viewsheds across this portion of LEAD; however the igloos are consistent in regard to structural continuity on the base. The functionality of the ammunition storage structure dictates the style.

Figure 4-2. View of Igloo Structure at LEAD.



Safety/ Buffer Zones (Zone 2)

Open space makes up the buffer zone between the ammunition activities and the off-post adjacent land uses. The safety zone is a mix of open fields, agricultural fields and woodlands with stands of mature trees. The areas of mature forest provide filtered views both into and out of the LEAD property. Activities occurring in the safety zone include controlled hunting and fishing and agricultural outleasing.

Cantonment Area

The Cantonment area is used for administrative and maintenance activities. There is an overall lack of significant architectural value and visual continuity throughout the Cantonment area. The structures within the Cantonment area are mostly pre-fabricated, modular buildings with aluminum siding and an industrial appearance. The lack of any historical or period-significant architecture diminishes any visual interest within the Cantonment Area. The structures in the Cantonment include the Health Clinic complex, several storage tanks, a large brick smokestack among the industrial, modular structures serving the majority of the Cantonment portion of LEAD.

4.3.1.2 View Sheds

Theater Readiness Monitoring Facility- The existing site will have direct visual access to both Bayonet and Booster Roads, as they provide site boundaries to the north and west respectively. The views to bordering agriculturally disturbed lands will remain. There will be no adverse impacts to existing viewsheds, as the grounds are currently disturbed and undeveloped among the hundreds of surrounding ammunition igloos.

Hazardous Materials Storage Facility- The existing site will have direct visual access to both Bayonet and Booster Roads, as they provide site boundaries to the north and west respectively. The views to bordering agriculturally disturbed lands will remain. There will be no adverse impacts to existing viewsheds, as the grounds are currently disturbed and undeveloped among the hundreds of surrounding ammunition igloos.

Covered Missile Storage Facility- The existing site will have direct visual access to both Bayonet and Booster Roads, as they provide site boundaries to the north and west respectively. The views to bordering agriculturally disturbed lands will remain. There will be no adverse impacts to existing viewsheds, as the grounds are currently disturbed and undeveloped among the hundreds of surrounding ammunition igloos.

Health Clinic Addition- The existing site will have limited visual access to the east of East Patrol Road. There will be no adverse impacts to the existing viewsheds, as this area is currently a dense campus of industrial structures.

4.3.2 Environmental Consequences

To evaluate the alternatives, the following criteria were used established to define the level of impacts to visual resources:

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

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

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

4.3.2.1 No Action Alternative

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

4.3.2.2 Realignment (Preferred) Alternative

No significant impacts would be expected. Under the realignment alternative, LEAD would accommodate the four new projects by constructing new facilities.

Precise footprints have not been specified for all four projects; therefore, the areas proposed for each project will be assessed. While variations of the present proposal for citing of facilities might be possible, the locations shown in Figure 2-1 (Proposed Locations for BRAC – Related Actions) must be coordinated with other development in the same area and needed adjacencies for mission efficiency. Their placement reflects a sound, compatible set of solutions dictated by current land uses and/or necessary adjacencies with other facilities. Alternative citing schemes would produce different layouts but would neither reduce impacts nor provide more efficient or effective support to mission goals and objectives.

Theater Readiness Monitoring Facility- The proposed site for the Theater Readiness Monitoring Facility is north-west of the Cantonment Area, on what is being called the TRMF site, within the Ammunition Storage Zone. The site lies east of Booster Road, south of Bayonet Road, south-east of the Florida Avenue extension, west of Patrol Road and north of Georgia Avenue. The site is currently undeveloped, disturbed, agricultural fields with borders of forest stands (see Figure 4-3). The proposed Covered Storage Facility will have no significant impact on the visual and aesthetic resources due to its location in previously undeveloped, disturbed land within the Ammunition Storage Zone.

Figure 4-3. View of the Proposed TRMF Site



Covered Missile Storage Facility - The proposed site for the Covered Missile Storage Facility is north-west of the Cantonment Area, on what is being called the TRMF site, within the Ammunition Storage Zone. The site lies east of Booster Road, south of Bayonet Road, south-east of the Florida Avenue extension, west of Patrol Road and north of Georgia Avenue. The site is currently undeveloped, disturbed, agricultural fields with borders of mature forest stands (see Figure 4-3). The proposed Covered Storage Facility will have no significant impact on the visual and aesthetic resources due to its location in previously undeveloped, disturbed land within the Ammunition Storage Zone.

Hazardous Material Storage Facility - The proposed site for the Hazardous Material Storage Facility is north-west of the Cantonment Area, on what is being called the TRMF site, within the Ammunition Storage Zone. The site lies east of Booster Road, south of Bayonet Road, south-east of the Florida Avenue extension, west of Patrol Road and north of Georgia Avenue. The site is currently undeveloped, disturbed, agricultural fields with borders of mature forest stands (see Figure 4-3). The proposed Hazardous Materials Storage Facility will have no significant impact on the visual and aesthetic resources due to its location in previously undeveloped, disturbed land within the Ammunition Storage Zone.

Health Clinic Addition - The proposed construction or citing of the Health Clinic Addition is within the Cantonment Area; east of California Avenue, west of East Patrol Road, and north of Coffey Avenue. The Health Clinic Addition would supplement the existing Health Clinic (see Figures 4-4 and 4-5). This area of the Cantonment Area of the Installation is currently developed. The Health Clinic Addition will have no significant impacts on the visual and aesthetic resources if the design is complimentary to the existing surrounding structures.

Figure 4-4. Aerial View of the Cantonment Area



Figure 4-5. View of Portions of the Cantonment Area



4.4 AIR QUALITY

The U.S. Environmental Protection Agency (USEPA) defines ambient air in 40 CFR Part 50 as “that portion of the atmosphere, external to buildings, to which the general public has access.” In compliance with the 1970 Clean Air Act (CAA) and the 1977 and 1990 Clean Air Act Amendments (CAAA), the USEPA has promulgated ambient air quality standards and regulations. The National Ambient Air Quality Standards (NAAQS) were enacted for the protection of the public health and welfare, allowing for an adequate margin of safety. To date, the USEPA has issued NAAQS for six criteria pollutants: carbon monoxide (CO), sulfur oxides (SO_x), particles with a diameter less than or equal to a nominal 10 micrometers (PM₁₀), particles with a diameter less than or equal to a nominal 2.5 micrometers (PM_{2.5}), ozone (O₃), nitrogen dioxide (NO₂), and lead (Pb). There are both primary and secondary standards for each pollutant. Primary standards set limits to protect public health, including the health of ‘sensitive’ populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against visibility impairment, damage to animals, crops, vegetation, and buildings (USEPA, 2006c).

Areas that do not meet NAAQS are called non-attainment areas. Table 4-2 displays the primary and secondary standards for NAAQS pollutants.

Table 4-2. National Ambient Air Quality Standards

Pollutant	Primary	Secondary
Carbon Monoxide (CO)		
1-hour Average	35 ppm	--
8-hour Average	9 ppm	--
Sulfur Dioxide (SO₂)		
3-hour Average	--	1300 µg/m ³
24-hour Average	365 µg/m ³	--
Annual Arithmetic Mean	80 µg/m ³	--
Particulates (PM₁₀)		
24-hour	150 µg/m ³	--
Annual Arithmetic Mean	50 µg/m ³	50 µg/m ³
Particulates (PM_{2.5})*		
24-hour	65 µg/m ³	--
Annual Arithmetic Mean	15 µg/m ³	15 µg/m ³
Ozone (O₃)		
1-hour Average	0.12 ppm	0.12 ppm
8-hour Average**	0.08 ppm	0.08 ppm
Nitrogen Dioxide (NO₂)		
Annual Arithmetic Mean	100 µg/m ³	100 µg/m ³
Lead (Pb)		
Quarterly Average	1.5 µg/m ³	1.5 µg/m ³
Notes: ppm = parts per million µg/m ³ = micrograms per cubic meter Annual Standards never to be exceeded; short-standards not to be exceeded more than once a year. *: Standards attained when the 3-year average of the 98 th percentile of 24-hour concentration at each population-oriented monitor within an area is below 65 µg/m ³ . **: Standards attained when the 3-year average of 4 th -highest maximum 8-hour concentration is below 0.08 ppm Source: 40 CFR 50, July 1991, revised July 1997 and march 26, 2002 EPA Announcement, Ambient Air Quality Standards. (USEPA 2006c)		

4.4.1 Affected Environment

The USEPA has classified the Franklin County area as in basic non-attainment for ozone. The county is in attainment for all other criteria air pollutants.

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

4.4.1.1 Ambient Air Quality Conditions

Ozone is monitored in Franklin County at one site located at SR 1857 and US 301. This ozone monitor recorded a peak of 27 exceedances (days in which area ozone levels exceeded the NAAQS standard) in 2002. In 2003, there were 3 days above the standard. Since 2003, there have been zero days when the monitor has recorded ozone levels above the NAAQS standard. Table 4-3 shows the existing ozone monitoring data within Franklin County, PA (USEPA, 2006b).

LEAD operates under a Title V permit (permit number 28-05002) effective 1 August 2005 through 31 July 2010. Any emissions increases from the Proposed Action will need to be covered under the current Title V permit or a modification of the permit may be necessary.

Table 4-3. Existing Monitoring Data within Franklin County, Pennsylvania

Monitoring Station Site ID# - Location- Pollutant	Year				
	2002	2003	2004	2005	2006
#420550001 – SR1857/US301 – Ozone	0.108/0.106	0.095/0.090	0.076/0.072	0.076/0.075	0.071/0.069
Values are in parts per million (ppm), 1 st /2 nd highest data NAAQS: Ozone 8-hr avg = 0.08 ppm (0.085 is an exceedance) Source: USEPA, 2006b					

4.4.1.2 Meteorology/Climate

Temperature is a parameter used in calculations of emissions for air quality applicability. Chambersburg, Pennsylvania is typically characterized by cold winters and warm summers with periods of high humidity. The average annual temperature in Chambersburg is 52 degrees Fahrenheit (°F). The average maximum temperature is 84.4 °F, with the hottest temperatures typically recorded in July. The average minimum temperature is 19.8 °F, with the coldest weather occurring in January.

Precipitation in the Chambersburg region is relatively stable throughout the year. Precipitation averages approximately 40.4 inches per year (World Climate, No date).

4.4.1.3 Air Pollutant Emissions at Installation

LEAD's operational emissions, as well as any hazardous air pollutant (HAPs) emissions for 2005 are displayed in Table 4-4.

Table 4-4: Annual Emissions for LEAD (2005)

Pollutant	Post Emissions (TPY)
VOC	17.9
NO _x	9.9
CO	20.2
SO ₂	18.5
PM ₁₀	82
Lead	4.5
HAPs	TPY
Methyl Isobutyl Ketone	2.9
Xylene	0.9
Ethylbenzene	0.1
Toluene	0.1
Hydrochloric Acid	11.6
Antimony Compounds	0.1
Manganese Compounds	0.4

HAPs	TPY
Nickel Compounds	0.1
Styrene	0.1
Hydrogen Cyanide	0.8

(Source: Johnson, 2007a)

4.4.1.4 Regional Air Pollutant Emissions Summary

The USEPA calculates the Air Quality Index (AQI) for five major air pollutants regulated by the CAA: ground-level ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide. Data collected for Franklin County, PA are released in the form of the AQI, which ranges from zero to 300, with zero being no air pollution and 300 representing severely unhealthy air pollution levels. An AQI value between 101 and 150 indicates that air quality is unhealthy for sensitive groups, who may be subject to negative health effects. Sensitive groups may include those with lung or heart disease, who will be more negatively affected by lower levels of ground level ozone and particulate matter than the rest of the general public. An AQI value between 151 and 200 is considered to be unhealthy and may result in negative health effects for the general public, with more severe effects possible for those in sensitive groups. AQI values above 200 are considered to be very unhealthy (AIRNow, 2007).

According to the USEPA's AQI Report for Franklin County, PA, in 2002 the county experienced 27 days where air quality was considered unhealthy for sensitive groups and 2 unhealthy days. In 2003, zero days were considered unhealthy on the AQI scale and there were 3 days that were unhealthy for sensitive groups. From 2004 through 2006, the area experienced zero days above moderate. These data indicate a significant improvement in air quality. (USEPA, 2006a).

4.4.2 Environmental Consequences

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

Not Significant Effect – Impacts to air quality do not exceed the de minimis⁵ levels for a pollutant or exceed 10 % of the daily limits laid out in the 2006 State Implementation Plan Revision: Maintenance Plan and Base Year Inventory: Franklin 8-Hour Ozone Non-attainment Area (PADEP, 2006)

Significant Effect – Impact on air quality exceeds the de minimis levels for a pollutant or exceed 10% of the daily limits laid out in the 2006 State Implementation Plan Revision: Maintenance Plan and Base Year Inventory: Franklin 8-Hour Ozone Non-attainment Area (PADEP, 2006).

4.4.2.1 No Action Alternative

Implementation of the No Action Alternative would not change current conditions and also is not expected to significantly impact the current air quality conditions in the region.

⁵De minimis emission levels for a pollutant are established by the USEPA, and are used to determine whether requirements would apply under USEPA's General Conformity rules.

4.4.2.2 Realignment (Preferred) Alternative

No significant impacts would be expected. Table 4-5 summarizes the total emissions associated with the construction and operation phases of the proposed construction at LEAD. Construction related emissions would be temporary and only occur during the 18-month development period for all buildings; however, a conservative approach was initially employed in the applicability analysis to assure that construction scheduling would not result in higher levels of emissions than predicted. The analysis first assumed that the construction emissions for all of the buildings would occur concurrently over the same 1-year period. These results were further added to a year of operations, bounding the potential emissions that might result for any overlap between construction and operations emissions. An analysis was also conducted to estimate the contribution that an increase in daily commuters would have on the region. Calculations for these emissions can be found in Appendix B.

Table 4-5. Summary of Annual Emissions

Activity	Construction Emissions (TPY)		Operation Emissions (TPY)		Combined Emissions (TPY)	
	NO _x	VOC	NO _x	VOC	NO _x	VOC
Heavy Equipment (building/parking)	6.54	0.93			6.54	0.93
Construction Crew Commuting Vehicles	0.80	0.81			0.80	0.81
Painting	NA	0.16			NA	0.16
Stationary Heating Unit (boiler and water heater)			1.87	0.09	1.87	0.09
Daily Commuter Traffic			2.51	2.52	2.51	2.52
Totals					16.11	4.51

The results in Table 4-5 show that the emissions associated with constructing and operating the proposed facilities at LEAD, when compared to the *de minimis* values for this basic ozone non-attainment area, fall well below the *de minimis* levels of 100 TPY for NO_x and VOCs even under the initial conservative assumptions that were employed. As a result, the Proposed Action is not subject to the General Conformity Rule requirements.

In addition to *de minimis* levels, air emissions were also evaluated to determine regional significance. The 2006 State Implementation Plan Revision: Maintenance Plan and Base Year Inventory: Franklin 8-Hour Ozone Non-attainment Area (PADEP, 2006) sets forth daily target levels for the 2009 maintenance year emissions inventory. The inventory is broken down by major source category. Emissions inventory and the sources applicable to this proposed action are displayed in Table 4-6. The increase in annual emissions from the Proposed Action would not make up 10 percent or more of the available State Implementation Plan (SIP), and would therefore not be regionally significant. Air quality impacts are therefore not considered to be significant.

Table 4-6. Emissions Inventory Summary for the 2009 Maintenance Year (tons per summer day)

Major Source Category	NOx Emissions	VOC Emissions
Stationary Area Sources	0.7	7.8
Highway Vehicles	12.7	7.3
Nonroad Engines/Vehicles	3.4	2.2

4.5 NOISE

Noise is generally perceived as unwanted sound that interferes with normal activities or in some way reduces the quality of the environment. It may consist of intermittent or continuous sources. Noise can be nondescript, involving a broad range of sound sources and frequencies, or it can have a specific, clearly identifiable sound source. The characteristics of sound include such physical parameters as intensity, frequency, and duration.

The Noise Control Act of 1972 was enacted to establish noise control standards and to regulate noise emissions from commercial products such as transportation and construction equipment. The Noise Control Act exempts noise from military weapons or equipment designated for combat use.

The standard measurement unit of noise is the decibel (dB), which represents the acoustical energy present. Noise levels are measured in A-weighted decibels (dBA), a logarithmic scale which approaches the sensitivity of the human ear across the frequency spectrum. A 3-dB increase is equivalent to doubling the sound pressure level, but is barely perceptible to the human ear.

According to their regulatory setting, many federal agencies have developed their own standards, which are often used to determine acceptable noise levels. For example, the EPA has established both indoor and outdoor levels, which aim to protect public health and welfare by taking into account levels that will prevent hearing damage, sleep disturbance, and communication disruption. An outdoor limit of 55 dB and an indoor limit of 45 dB will protect against speech interference and sleep disturbance for residential, educational, and health care areas. The Occupational Safety and Health Administration (OSHA) has developed a noise exposure standard in the workplace of 90 dBA for the duration of an 8-hour period, with a maximum of 140 dBA for impulsive noise, such as a siren or gunshot.

4.5.1 Affected Environment

An Installation Compatible Use Zone (ICUZ) analysis was performed for LEAD to identify noise levels generated on the facility. An ICUZ analysis evaluates noise conditions produced by activities at a military installation and identifies incompatible land uses on or adjacent to the installation as a result of those noise conditions. The sources of noise originating from LEAD include demolition activities, firing ranges, vehicular traffic, rail equipment operations, the combat vehicle test track, the helipad, and miscellaneous equipment operations. According to the ICUZ program approved in January 1989 and updated in July 1993, Zone II (normally unacceptable) noise zone do not extend beyond LEAD boundary (USACE, 2001). Three Zone II noise zones were identified at LEAD: the functional firing range, inactive demolition ground on the mountain, and demolition ground.

4.5.1.1 Construction

For construction sites, OSHA standards for occupational noise exposure associated with construction (29 CFR 1926.52) would be applicable for the protection of the construction workers. Typical construction equipment noise levels are presented in Table 4-7.

Table 4-7: Typical Noise Levels (dBA) of Typical Construction Equipment

Clearing		Grading and Compacting	
Bulldozer	80	Grader	80-93
Front-end loader	72-84	Roller	73-75
Dump Truck	83-94		
Jack Hammer	81-98		
Excavation and Earth Moving		Paving	
Bulldozer	80	Paver	86-88
Backhoe	72-93	Truck	83-94
Front-end loader	72-84	Tamper	74-77
Dump Truck	83-94		
Jack Hammer	81-98		
Scraper	80-93		
Structure Construction		Landscaping and Cleanup	
Crane	75-77	Bulldozer	80
Welding generator	71-82	Backhoe	72-93
Concrete Mixer	74-88	Truck	83-94
Concrete Pump	81-84	Front end loader	72-84
Concrete Vibrator	76	Dump Truck	83-94
Air Compressor	74-87		
Pneumatic tools	81-98		
Bulldozer	80		
Cement and dump trucks	83-94		
Front end Loader	72-84		
Dump Truck	83-94		
Note: Noise Level is in dBA at 50 Feet			
Source: USEPA, 1971			

4.5.1.2 Facility Operations

The TRMF Site, which includes the Theater Readiness Monitoring Facility Building, Covered Missile Storage, and Hazardous Material Storage Facilities, would be located within the Ammunition Storage Area. The site is currently an open area without any buildings in close proximity and the railroad is the main source of noise in the area.

The Health Clinic addition would be added to building 332, the existing Health Clinic, which is located in the Cantonment Area. The land use in the area is designated as Industrial and is in close proximity to the railroad tracks.

4.5.2 Environmental Consequences

The following criteria were used to assess noise impacts:

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

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

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

4.5.2.1 No Action Alternative

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

4.5.2.2 Realignment (Preferred) Alternative

Noise from Construction – Effects would not be significant. Construction activities would involve the use of heavy equipment such as backhoes and trucks. These activities typically generate a noise level of 85 dBA 50 feet (15 meters) from the source. The TRMF Site is currently an open area without any buildings in close proximity; therefore, it is unlikely that the construction activities would have any effect on the surrounding area.

Construction activities related to the addition of the Health Clinic to building 332, the existing Health Clinic would generate noise levels similar to the ones in Table 4-7. Nevertheless, no significant effect from noise impact would be anticipated as the activities would be on a temporary basis and would be mitigated by confining construction activities to normal working hours and employing noise-controlled construction equipment to the greatest extent possible. Furthermore, arrival of heavy equipment and materials would be scheduled to occur during normal work hours to the greatest extent possible to avoid disturbing personnel on post and the surrounding communities.

Noise from Facility Operations - Effects would not be significant. The normal operation activities at the Covered Missile Storage and Hazardous Materials Storage Facilities would include ingress/egress of the vehicles transporting the materials for storage and the equipments for loading and unloading. However, the noise levels from those operations are not anticipated to be significant as the facilities would be located within Ammunition Area, away from noise sensitive receptors. In addition, OSHA standards for occupational noise exposure per 29 CFR 1926.95 would be applicable for the protection of the workers at the facilities.

The addition to the Health Clinic would accommodate the increased BRAC staffing and provide storage area for additional employee health records and therefore is not anticipated to generate significant noise levels.

4.6 GEOLOGY AND SOILS

This subsection describes the local and regional geologic, topographic and soil resources occurring in the proposed project areas. The assessment of the existing geology, topography, and soils is based on U.S. Geological Survey (USGS) topographic maps, U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Web Soil Survey for Franklin County, Pennsylvania, and various other documents provided by the Installations.

4.6.1 Affected Environment

4.6.1.1 Geologic and Topographic Conditions

LEAD straddles two major geologic structural features; the South Mountain Anticlinorium to the east and the Massanutten Synclinorium to the west (Tetra Tech, 2001). The eastern section of the depot is underlain primarily by carbonate rocks (limestones and dolomites) and is part of the South Mountain Anticlinorium. The western section of the depot is underlain primarily by shales and is part of the Massanutten Synclinorium. These regional geologic structures were formed as a result of folding that

occurred during the Paleozoic era (225 million to 570 million years ago). In the eastern section of the depot, high-angle reverse faulting accompanied the folding. As a result, several major faults, which strike north to northeast and dip to the southeast at fairly steep angles, occur on the depot (Tetra Tech, 2001).

Surface elevations throughout LEAD range from approximately 600 to 800 feet above mean sea level, except for the northwest portion of the installation, where the elevation increases abruptly to more than 2,300 feet above mean sea level in the vicinity of Broad Mountain (Tetra Tech, 2001). A portion of the depot includes 2,900 acres of mountainous wooded land along Blue or North Mountain with elevations ranging from 700 feet to 2,300 feet above sea level; the majority of the area is only about 700 feet to 800 feet above mean sea level. Slopes rising in excess of 40 feet per 100 feet are found in the mountainous areas (Tetra Tech, 2001). Surface elevations within the proposed TRMF site and proposed Health Clinic Addition range from 720 feet to 680 feet above mean sea level.

4.6.1.2 Soils

Based on the NRCS Web Soil Survey for Franklin County, 24 soil mapping units occur on LEAD. The dominant soils found within the Installation include the Weikert, Berks, and Beddington soil series which cover most of LEAD. These soils are characterized as shallow to deep and well-drained. These acidic soils are weathered from shale, siltstone, and acid sandstone. They are prevalent in valley bottoms. Within the proposed TRMF site there are eight soil mapping units, which include: (1) Beddington channery silt loam, (2) Berks channery silt loam, (3) Clearbrook channery silt loam, (4) Ernest silt loam, (5) Maurertown silt loam, (6) Urban land-Udorthents complex, (7) Weikert channery silt loam, and (8) Weikert very channery silt loam (USDA 2006). The site of the proposed Health Clinic Addition contains only one soil mapping unit, which is Urban land-Udorthents. Table 4-8 below provides the general descriptions of the specific soils found within the project area.

Table 4-8: Soils Series Located within the Project Area

Mapping Unit	General Description
Beddington channery silt loam, 3 to 8 percent slopes	This soil is well drained. The depth to a restrictive feature is greater than 60 inches. The slowest soil permeability within a depth of 60 inches is moderate. Available water capacity to a depth of 60 inches is moderate, and shrink swell potential is low. Annual flooding is none, and annual ponding is none. The minimum depth to a water table is greater than 6 feet. It is nonirrigated land capability subclass 2e. This soil has medium potential productivity for cultivated crops. This soil is prime farmland. This component is not a hydric soil. The assigned K erodibility factor is .28.
Berks channery silt loam, 3 to 8 percent slopes	This soil is well drained. The depth to a restrictive feature is 20 to 40 inches to bedrock (lithic). The slowest soil permeability within a depth of 60 inches is moderate. Available water capacity to a depth of 60 inches is very low, and shrink swell potential is low. Annual flooding is none, and annual ponding is none. The minimum depth to a water table is greater than 6 feet. It is nonirrigated land capability subclass 2e. This soil has low potential productivity for cultivated crops. This soil is farmland of statewide importance. This component is not a hydric soil. The assigned K erodibility factor is .20.
Clearbrook channery silt loam, 0 to 8 percent slopes	This soil is somewhat poorly drained. The depth to a restrictive feature is 20 to 40 inches to bedrock (lithic). The slowest soil permeability within a depth of 60 inches is moderately slow. Available water capacity to a depth of 60 inches is low, and shrink swell potential is moderate. Annual flooding is none, and annual ponding is none. The minimum depth to the top of the seasonal high water table is at 18 inches. It is nonirrigated land capability subclass 3w. This soil has low potential productivity for cultivated crops. This soil is farmland of statewide importance. This component is not a hydric soil. The assigned K erodibility factor is .28.
Ernest silt loam, 3 to 8 percent	This soil is moderately well drained. It has a very firm and brittle fragipan at 20 to 36 inches. The slowest soil permeability within a depth of 60 inches is slow. Available

Mapping Unit	General Description
slopes	water capacity to a depth of 60 inches is low, and shrink swell potential is moderate. Annual flooding is none, and annual ponding is none. The minimum depth to the top of the seasonal high water table is at 27 inches. It is nonirrigated land capability subclass 2w. This soil has medium potential productivity for cultivated crops. This soil is farmland of statewide importance. This component is not a hydric soil. The assigned K erodibility factor is .43.
Maurertown silt loam	This soil is poorly drained. The depth to a restrictive feature is greater than 60 inches. The slowest soil permeability within a depth of 60 inches is slow. Available water capacity to a depth of 60 inches is moderate, and shrink swell potential is moderate. Annual flooding is frequent, and annual ponding is frequent. The minimum depth to the top of the seasonal high water table is at 0 inches. It is nonirrigated land capability subclass 4w. This soil has low potential productivity for cultivated crops. This component is a hydric soil. The assigned K erodibility factor is .43.
Urban land-Udorthents complex, 0 to 25 percent slopes	The depth to a restrictive feature is greater than 60 inches to bedrock. The slowest soil permeability within a depth of 60 inches is moderate. Available water capacity to a depth of 60 inches is very low, and shrink swell potential is low. Annual flooding is none, and annual ponding is none. The minimum depth to a water table is greater than 6 feet. It is nonirrigated land capability subclass. This soil is not suitable for cultivated crops. This component is not a hydric soil. The assigned K erodibility factor is .28.
Weikert channery silt loam, 3 to 8 percent slopes	This soil is well drained. The depth to a restrictive feature is 10 to 20 inches to bedrock (lithic). The slowest soil permeability within a depth of 60 inches is moderately rapid. Available water capacity to a depth of 60 inches is very low, and shrink swell potential is low. Annual flooding is none, and annual ponding is none. The minimum depth to a water table is greater than 6 feet. It is nonirrigated land capability subclass 3e. This soil has very low potential productivity for cultivated crops. This soil is farmland of statewide importance. This component is not a hydric soil. The assigned K erodibility factor is .20.
Weikert very channery silt loam, 3 to 8 percent slopes	This soil is well drained. The depth to a restrictive feature is 10 to 20 inches to bedrock (lithic). The slowest soil permeability within a depth of 60 inches is moderately rapid. Available water capacity to a depth of 60 inches is very low, and shrink swell potential is low. Annual flooding is none, and annual ponding is none. The minimum depth to a water table is greater than 6 feet. It is nonirrigated land capability subclass 3e. This soil has very low potential productivity for cultivated crops. This soil is farmland of statewide importance. This component is not a hydric soil. The assigned K erodibility factor is .20.
Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. Source: USDA, 2006	

4.6.1.3 Prime Farmland

Of the soil series described above, six of eight are considered either prime farmland soils, or farmland soils of statewide importance, as determined by the USDA NRCS (USDA 2006). Prime farmland, as defined by the USDA, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas (USDA, 2004). While there are soils within the Installation classified as Prime Farmland soils, acquisition or use of farmland by a Federal agency for national defense purposes is exempted by section 1547(b) of the Farmland Protection Policy Act, and as a result, it is not regarded as prime farmland (USDA, 1994).

4.6.2 Environmental Consequences

This subsection describes the geology, topography, and soils occurring in the proposed project areas. The assessment of the existing geology, topography, and soils is based on USGS topographic maps and the NRCS Web Soil Survey for Franklin County, Pennsylvania.

The following criteria were used to assess impacts to geology and soils:

No Effect - Geology, topography, or soils would not be impacted or the impact to these resources would be below or at the lower levels of detection. Any impacts would be slight.

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

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

4.6.2.1 No Action Alternative

No effects would be expected. Implementation of the no action alternative would not alter the existing landscapes at the sites being considered under the proposed action. There would be no new construction, and as a result, there would be no impacts to geology, topography, or soils.

4.6.2.2 Realignment (Preferred) Alternative

No significant impacts would be expected. The realignment alternative would call for the construction of a 35,000 SF (0.80-acres) TRMF with paved access road and 32,670 SF (0.75-acres) of operational parking, a 2,000 SF (0.05-acres) Tactical Missiles storage facility, a 2,000 SF (0.05-acres) hazardous materials storage pad, and the construction of a 690 SF (0.02-acres) addition to the existing Health Clinic to building 332 (located adjacent to building 331). The TRMF, paved access road and operational parking, the Tactical Missile storage facility, and the hazardous materials storage pad would all be located in close proximity of each other on the site north of Georgia Avenue. The 690 SF addition to building 332 is located just east of California Avenue, adjacent to building 331. Due to the small footprint of the proposed addition to building 332, and the fact that the site has been previously built upon, and there would be no net changes and no new impacts to geology, topography, or soils on that particular site.

The terrain of the project area north of Georgia Avenue is gently rolling, and would likely require only minor leveling and grading to prepare the site for construction of the proposed TRMF facility, associated buildings, and infrastructure. As a result, no significant impacts to the general geologic or topographic character of the site would occur.

There would be a total of approximately 71,670 SF (1.65-acres) of new ground disturbance within the project area north of Georgia Avenue from construction activities proposed under this alternative. In preparing the site for construction, heavy machinery would be used to remove vegetative cover to prepare the site for construction (i.e., grading and leveling), construction of the access road and parking facility, and the digging of trenches for the necessary utility lines. As a result, soils would be compacted, soil layer structure would be disturbed and modified, and soils would be exposed, increasing the overall potential for erosion. Soil productivity, (i.e., the capacity of the soil to produce vegetative biomass), would decline in disturbed areas and be completely eliminated for those areas within the footprint of building structures, access road, and parking facilities.

Adverse impacts to soils from the proposed construction activities would be minimized by proper construction management and planning, and the use of appropriate site-specific Best Management Practices (BMPs) for controlling runoff, erosion, and sedimentation during construction activities. Site-specific BMPs would be developed based on proper design, run-off calculation, slope factors, soil type, topography, construction activities involved, and proximity to water bodies. As part of these BMPs, LEAD would install sedimentation and erosion control devices and would implement practices sufficient to retain sediment generated by land-disturbing activity within the boundaries of construction area. BMPs could include, but are not limited to, erosion control matting, silt fencing, brush barriers, storm drain outlet protection, stone check dams, rock filter dams, construction exits, temporary and permanent seeding, and the application of mulch. The application of any or all of these BMPs, or other appropriate BMPs, would depend upon precise, specific ground conditions in the areas disturbed by construction. Gravel exits, or similar measures, could be used at construction exits to reduce transport of mud from construction vehicles traveling from the site to existing paved roads.

Areas disturbed outside of the footprints of the new construction would be aerated and reseeded, replanted, and/or re-sodded following construction activities, which would decrease the overall erosion potential of the site and improve soil productivity. Because the area impacted from the actions proposed under this alternative would be relatively small, when compared to the overall size of the Installations, and appropriate BMPS would be implemented as part of this alternative, adverse impacts to soils resulting from the actions proposed under this alternative would be considered non-significant.

4.7 WATER RESOURCES

The following sections provide a summary of the general condition and character of water resources found at LEAD as well as more specific descriptions of the water resources in the immediate vicinity of the proposed BRAC 05 Realignment at LEAD. Types of water resources investigated include surface water, groundwater, and floodplains. Each topic is discussed briefly in this section.

The proposed projects would require coverage under PADEP General National Pollutant Discharge Elimination System (NPDES) Permit for storm water discharges associated with construction activities. This NPDES permit regulates water quality as required by the Clean Water Act (CWA). An erosion and sediment control plan would be required prior to any land disturbances. Implementation of the proposed project may require coverage under the Section 404 permits administered by the USACE.

4.7.1.1 Surface Water

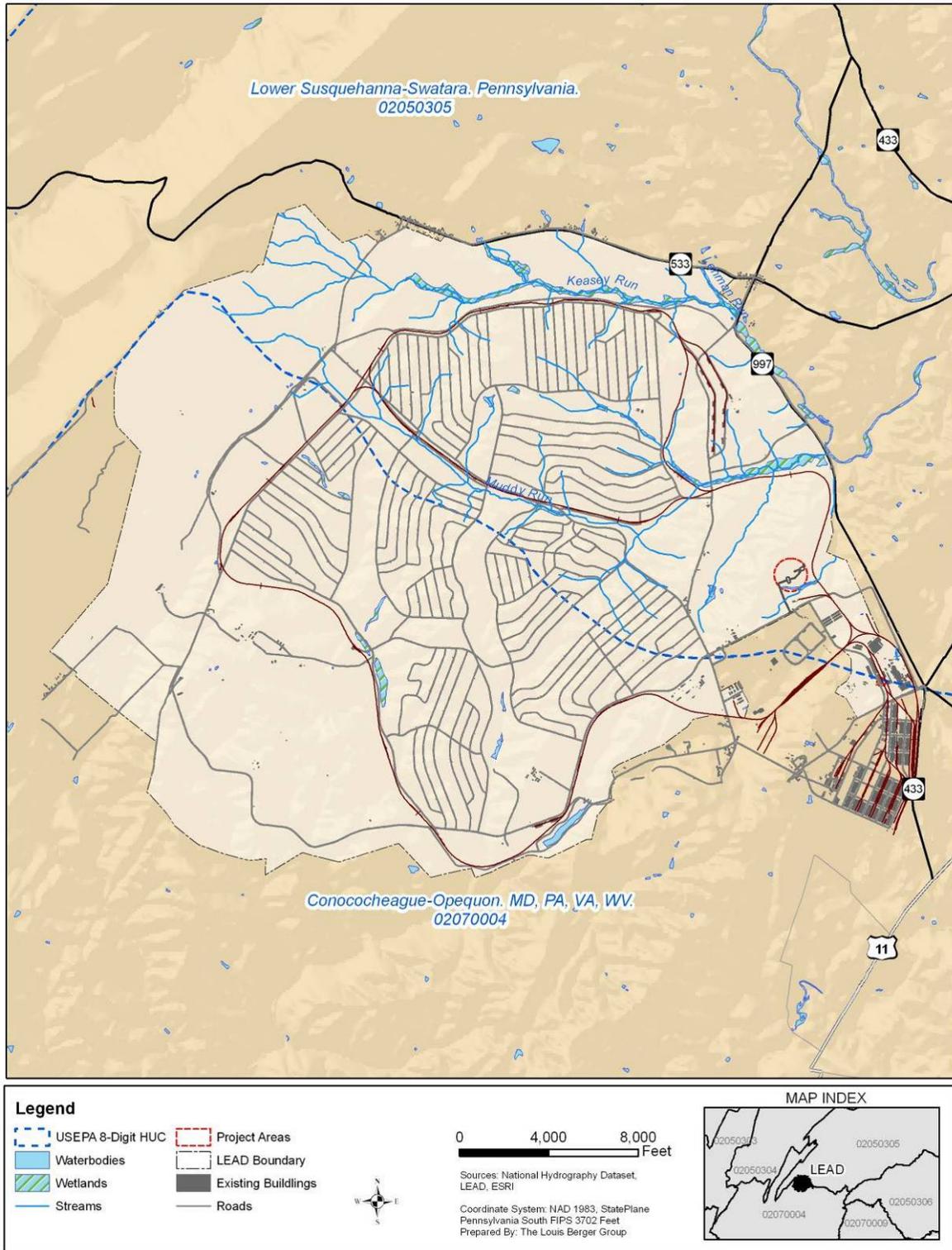
Watersheds

Surface water drainage at LEAD is divided into two watersheds: the Susquehanna River (USEPA 8-digit HUC⁶: 02050305) to the northeast and the Potomac River (USEPA 8-digit HUC: 02070004) to the southwest. Both the Susquehanna and the Potomac eventually drain into the Chesapeake Bay (Tetra Tech, 2001). Since LEAD is in the Chesapeake Bay Region, it is subject to the 1987 Chesapeake Bay Agreement (DoD and USEPA, 1990). Surface water runoff from the northeast portions of LEAD discharge directly or indirectly to Lehman Run, Keasey Run (a tributary of Lehman Run), Muddy Run or Rowe Run, all contained in the Susquehanna River watershed. Surface water runoff from the southwest portion of the depot discharges to Dennis Creek, Back Creek, Rocky Spring Branch, or Conococheague Creek, all contained in the Potomac River watershed. Because of the headwaters location, drainages on

⁶ **Hydrologic Unit Codes (HUC):** Watersheds are organized into a system that divides and subdivides the United States into successively smaller watersheds. These levels of subdivision, used for organization of hydrologic data, are called "hydrologic units". Hydrologic Unit Codes are given to each of these units in a manner that preserves watershed hierarchy. This is done by adding additional digits to a watershed's HUC to designate

the depot area are ephemeral or intermittent, with the stream channels carrying water only in winter and spring or after heavy rains. The main channels of Lehman Run, Keasey Run, Muddy Run and Rocky Spring Branch are permanent. In addition to named streams, a number of small unnamed runs dissect LEAD (Tetra Tech, 2001). (See Figure 4-6)

Figure 4-6. Water Resources at LEAD



The proposed TRMF Site, including the Theater Readiness Monitoring Facility, Covered Storage Facility for Tactical Missiles and Hazardous Storage Facility, lies in the Lower Susquehanna River-Swatara basin (USEPA HUC: 02050305) and is considered by the PADEP to occur in sub basin 07B of the state water plan. The proposed Health Clinic Addition lies within the Conococheague-Opequon basin (USEPA HUC: 02070004).

Watershed management practices at LEAD are aimed at establishing more comprehensive characterization of the aquatic habitats, determining the present ecological conditions of the habitats, establishing buffer zones of intact terrestrial vegetation to protect streams and lakes, and actively managing aquatic habitats to reduce problems related to excess aquatic vegetation and beaver dam construction. Measures for managing aquatic habitat in LEAD include:

- Conduct opportunistic surveys of vernal pools on the installation and store data on GIS;
- Evaluate the quality of the physical habitat and condition of lakes, ponds, and stream reaches, as well as riparian areas (qualitative assessment only), which are vital to protecting water bodies from non-point source runoff;
- Develop management plans for each water body;
- Conduct work in streams only after obtaining the necessary Federal and/or State permits;
- Limit tree cutting within 100-feet of streams to activities that maintain or improve habitat quality;
- Maintain tree canopy over streams to reduce mean summer stream temperatures and to provide a source of organic matter for aquatic biota;
- Implement soil erosion BMPs to reduce sediment loads to nearby water bodies;
- Monitor nutrient loading and assess compliance with agricultural track management plans;
- Use BMPs to limit growth of aquatic vegetation or algae blooms. Water level manipulation and chemical herbicides are potential tools for control or undesirable aquatic vegetation. Control methods should be weighed against potential negative impacts on water quality and existing fish and wildlife populations.
- Regularly inspect outfalls from ponds and lakes to ensure that flows are not obstructed from beaver activity or other problems. Inspect streams to evaluate the extent of beaver activity. Take corrective measures to control significant impacts to stream hydrology and water levels (e.g., trapping beaver, clearing debris from outfalls and streams) (Tetra Tech, 2001).

Rivers/Streams/Tributaries/Other Water Bodies

Natural surface water features at LEAD include seven named streams and numerous unnamed streams. Lehman Run, Keasey Run (a tributary of Lehman Run), Muddy Run, and Rowe Run occur within the northeastern portion of LEAD and drain to the Susquehanna River (Tetra tech 2001). Dennis Creek, Back Creek, Rocky Spring Branch, and Conococheague Creek lie within the southwest portion of the installation, and drain to the Potomac River (USACE, 2006). In addition to named streams, a number of small unnamed runs dissect LEAD. There are no 303(d) listed streams or other water bodies occurring within the installation. The 303(d) list is a product of the Clean Water Act, which requires states to identify those waters that do not meet water quality standards or which have impaired uses.

An intermittent tributary to Muddy Run occurs approximately 438 linear feet south of the proposed TRMF Site. This stream is bordered on all sides by palustrine forested wetland.

Lakes on the installation include Bud’s Lake, Rocky Spring Lake, and Lake Letterkenny; ponds include Shirley’s Pond, Cole’s Pond, and Henry’s Pond (USACE, 2006). Shirley’s Pond is located southwest of and approximately 3,514 linear feet from the proposed TRMF Site.

Eight wetland types are present at LEAD: lacustrine, palustrine aquatic bottom, palustrine emergent, palustrine forested, palustrine open water, palustrine scrub shrub, palustrine unconsolidated bottom, and riverine. Previous estimates indicated that there are approximately 300 acres of wetlands on LEAD, predominately in the Ammunition Storage Area and Buffer Area along streambeds and pond or lake sides (Tetra Tech, 2001).

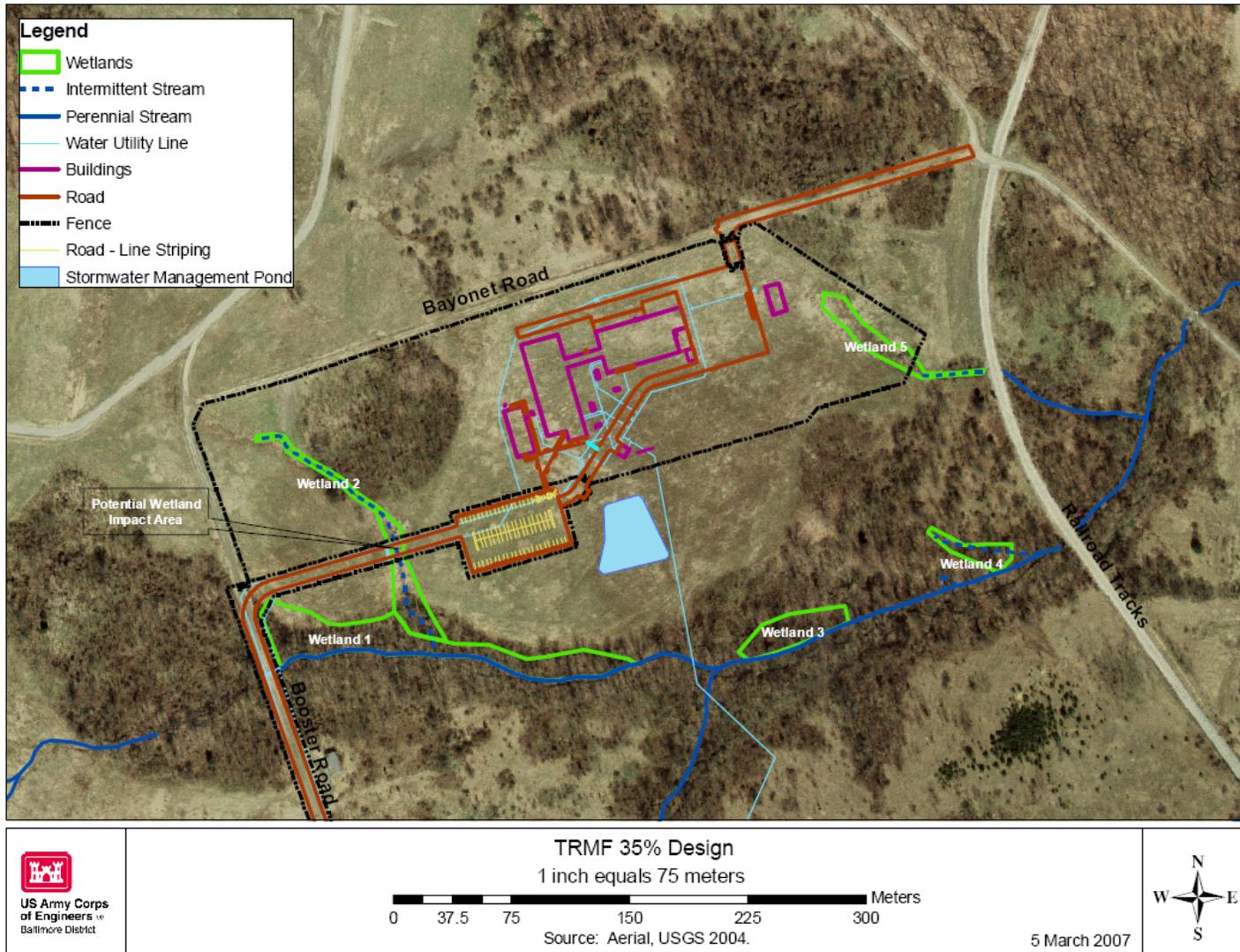
Wetland delineation was performed by the US Army Corp of Engineers on the TRMF site on 8 and 9 January 2007 (see Appendix C). The delineation considered the potential for direct impacts based on 35 percent design plan for the TRMF site. Five jurisdictional wetland areas were noted to occur within the wetland survey boundary (Figure 4-7). The wetland delineation was bound by Bayonet Road to the north, Booster Road to the west, railroad tracks to the east and the unnamed tributary to Muddy Run to the south (USACE, 2007). Wetlands 1, 3 and 4 are found along the unnamed tributary to Muddy Run. Wetlands 2 and 5 are linear wetlands found along the drainages on either side of the wetland survey boundary. No plant species observed during the site delineation are considered rare, threatened or endangered in Pennsylvania (USACE, 2007). The sequence of drainage for the jurisdictional wetland areas occurring within the TRMF is the unnamed tributaries to Muddy Run, which are intermittent tributaries to Muddy Run, a perennial tributary to Conodoquinet Creek, a perennial tributary to Susquehanna River, a tributary to the Chesapeake Bay. Wetland areas identified during the 2007 wetland delineation are provided in Table 4-9.

Table 4-9. Wetland Areas in the TRMF Project Site

Wetland Area (see Figure 4-7)	Acres	Wetland Type
Wetland 1	0.94	Palustrine Forest/Palustrine Emergent
Wetland 2	0.35	Linear Palustrine Emergent/Palustrine Forest
Wetland 3	0.28	Palustrine Forested
Wetland 4	0.13	Palustrine Forested
Wetland 5	0.23	Linear Palustrine Emergent
TOTAL	1.93	

Source: USACE, 2007.

Figure 4-7. Wetland Areas in the TRMF Project Site



Source: USACE, 2007

In the event that construction would encroach upon a USACE jurisdictional wetland or its 100-foot buffer, mitigation measures as stipulated in Federal and Pennsylvania State water quality permits required under Section 404 of the CWA from the US Army Corps of Engineers would need to be adhered to during construction activities and after the construction of the project. All activities that affect wetlands would require an environmental analysis in accordance with AR 200-1, AR 200-2. The Department of the Army policy is to avoid adverse impacts on existing aquatic resources and to offset those adverse impacts which are unavoidable (USACE 2005). The Army will strive to achieve a goal of no net loss of the value and function of existing wetlands and will permit no overall net loss of wetlands on Army-controlled lands (USACE, 2005).

LEAD is in the Chesapeake Bay Region and is subject to the 1987 Chesapeake Bay Agreement (DoD and USEPA, 1990). The U.S. Army Corps of Engineers supports the Bay restoration effort by regulating and enforcing wetland regulations (DoD, 1998).

Water shed management practices at LEAD include:

- Implementation of surface water monitoring program for lakes and pond management,
- Assessment of non-point source pollution and impacts of land-use, particularly agriculture, on water quality, and
- Development of management plans for each water bodies based on water quality, habitat assessment, fish population sampling and fishing program goals.

General management measures to be implemented for controlling pollutant impacts include establishing 100-foot vegetative buffers (stream bank and shoreline vegetation) around water bodies to minimize the flow of non-point source pollution, particularly sediments and nutrients, into the lakes and streams (Figure 4-7). They also include limiting activities in the buffer zones to those causing little or no impact on water quality and aquatic habitats.

4.7.1.2 Hydrogeology/Groundwater

There is no current demand for groundwater on the depot because LEAD's drinking water is supplied by surface storage from Letterkenny Reservoir, which is located a few miles northwest of the depot (Tetra Tech, 2001). Since groundwater is not used by the installation as a water resource, the principal issue of concern associated with groundwater contamination with respect to natural resource management at LEAD is recharge of contaminated groundwater to surface water bodies of LEAD (Tetra Tech, 2001).

4.7.1.3 Floodplains

The Depot does not lie on any significant floodplains and is above the 100-year flood level of Conococheague Creek (Tetra Tech, 2001).

4.7.1.4 Coastal Zone

All of LEAD is located within the Commonwealth of Pennsylvania Coastal Zone Management (CZM) Program. Established by an Executive Order and approved in 1978, CZM Program is a network of state laws and policies designated to protect coastal and marine resources. This includes the Chesapeake Bay, into which water from streams and their tributaries on LEAD eventually flow.

PADEP regulates activities that are proposed within the CZM Program through federal consistency requirements. Under these requirements, applicants for federal and state licenses or permits (including Section 404 permits) to conduct an activity in Pennsylvania's Coastal Management Zone must certify that

their proposed activity will be conducted in a manner consistent with the State's CZM Program. For activities impacting wetlands, the Coastal Zone Consistency determination is issued as part of the State's wetland authorization (PADEP, 1996). Anyone wishing to engage in an activity that would result in discharge of material into a protected water must obtain a Section 404 permit. Additionally, under Section 401 of the Clean Water Act, an applicant for a permit to discharge dredged or fill material into wetlands is also required to obtain a certification from the State where the activity is located that the proposed discharge will not result in the violation of the states water quality standards (NCBAR, 2005). If a state permit is not required for a project, PADEP has the authority to "concur" or "object" to the federal consistency determination. The state's consistency decision is required prior to the federal consistency determination being issued. If the state objects, the federal agency may only proceed if federal law prohibits the agency from being fully consistent.

4.7.2 Environmental Consequences

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

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

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

Significant Effect – Impacts (chemical, physical, or biological effects) would be detectable and would be frequently altered from the historical baseline or desired water quality conditions; and/or chemical, physical, or biological water quality standards or criteria would be locally, slightly and singularly, exceeded on either a short-term or prolonged basis.

4.7.2.1 No Action Alternative

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

4.7.2.2 Realignment (Preferred) Alternative

Impacts to USACE delineated wetlands and unnamed tributaries would not be significant with the implementation of the proposed TRMF project (USACE, 2007). An area of concern is a two-lane road crossing that will bisect a palustrine emergent wetland (see Wetland 2 in Figure 4-7) and an unnamed intermittent tributary that appears to have several small groundwater discharges (see Wetland 2 in Figure 4-7). The road which is expected to cross the wetland area will provide the only access to and from the TRMF site. The expected impact on this area would be approximately 0.03 acre and would require a Pennsylvania State Programmatic General Permit 3 under Section 404 of the CWA (USACE, 2006a; 2007). A 401 Water Quality Certification would be issued in conjunction with the General Permit (USACE, 2007).

A project polygon for the TRMF site was used as the boundary to assess water resources and the potential for impacts to those resources within that polygon in consideration of the possibility that structures may be shifted slightly to avoid sensitive resources as the project design advances to completion. \ No impacts to Wetlands 1, 3, and 4 are anticipated from implementation of the TRMF project. The project polygon and associated infrastructure polygons encroach upon two USACE jurisdictional wetland areas; Wetland 2 and Wetland 5, and its respective 100-foot buffers (see Figure 4-8). Construction of an access road

leading to and from the TRMF site is anticipated to result in minor, long-term impacts to Wetland 2 and its buffer; however, these impacts are anticipated to be less than 1 acre in total. Construction of the TRMF has the potential to result in minor, long-term impacts to Wetland 5, but these impacts may be avoided and would not be significant through project siting and utilization of BMPs, or impacts may be limited only to the 100-foot wetland buffers. In the event that construction would encroach upon a USACE jurisdictional wetland or its 100-foot wetland buffer, erosion control and mitigation measures as stipulated in federal and Pennsylvania State water quality permits under Section 404 of the CWA from the U.S. Army Corps of Engineers would be required. In addition, LEAD's General NPDES permit, Erosion Sediment Pollution Control Plan (ESPCP), and Spill Prevention, Control and Countermeasure Plan (SPCC) would be adhered to during construction activities and after the construction of the project.

Implementation of the proposed project has the potential to impact water resources indirectly through sedimentation, soil erosion, loss of wetland function, and groundwater contamination in the absence of mitigation measures. Approximately 35,000 SF of soil is anticipated to be disturbed due to construction activities associated with the TRMF Site. Up to 690 SF of soil is likely to be disturbed due to the implementation of the Health Clinic Addition. Disturbed soils may be channeled into natural water resources in the vicinity of the construction site if site storm water is not properly managed. Stream sedimentation relating to an increase in storm water runoff would be anticipated to adversely impact the intermittent tributary of Muddy Run located approximately 438 feet south of the proposed TRMF Site in the absence of erosion and sedimentation controls including BMPs designed to minimize point source discharges to surface waters from construction sites.

Operation activities associated with the proposed project once constructed has the potential to adversely impact wetland areas, their buffers and unnamed tributaries within the TRMF polygon via stormwater discharge from impervious surfaces and/or illicit discharges of polluted water into the storm drainage system. Adherence to Federal and state regulation as well as LEAD's NPDES permit stipulations, Stormwater Pollution Prevention Plan and SPCC Plan are anticipated to notably control and minimize the likelihood for adverse impacts associated with stormwater discharge and illicit discharges into the storm drainage system.

Figure 4-8. Buffers Around Water Resources



4.8 BIOLOGICAL RESOURCES

This section provides a summary of the general conditions and characteristics of biological resources found at LEAD, as well as more specific descriptions of the biological resources in the immediate vicinity of the proposed project sites.

The following documents were consulted for incorporation of applicable information: *the Integrated Natural Resources Management Plan* for LEAD, *Field Ammunition Supply Area Development Environmental Assessment*, and LEAD Geographic Information Systems (GIS) data.

4.8.1 Affected Environment

4.8.1.1 Vegetation

Most of land at LEAD is undeveloped and covered by open fields (approximately 52 percent) and forests (approximately 34 percent) (Tetra Tech, 2001). Mixed oak forests, open fields with grasses, and shrubs make up the majority of the vegetative cover. No comprehensive inventory of flora or vegetative communities has been conducted at LEAD; however, Appendix D lists the plants species that are known to occur on the Installation.

Three forest vegetation communities exist on LEAD; deciduous forests (6,066 acres), coniferous dominated forests (505 acres), and mixed coniferous and deciduous forests (204 acres) (USACE, 2001a). Deciduous forests are dominated by red oak (*Quercus rubra*), black oak (*Q. velutina*), white oak (*Q. alba*), chestnut oak (*Q. prinus*), hickory (*Carya* sp.), and red maple (*Acer rubrum*) with an understory composed of black locust (*Robinia pseudoacacia*), dogwood (*Cornus* sp.), red bud (*Cercis canadensis*), and aspen (*Populus* sp.). Coniferous dominated forests are mostly Scotch pine (*Pinus sylvestris*) plantations. Mixed forests are composed of oaks, red maple, white pine (*P. strobus*), eastern hemlock (*Tsuga canadensis*), and Virginia pine (*P. virginiana*). Understory trees in deciduous and mixed forest are dominated by black locust (*Robinia pseudoacacia*), dogwood (*Cornus* sp.), redbud (*Cercis canadensis*), and aspen (*Populus* sp.).

Shrubs, vines, and herbaceous species are abundant in area of early successional vegetation communities, forest edges, unmowed meadows or forest understories. Shrub and vine species include multiflora rose (*Rosa multiflora*), huckleberry (*Gaylussacia* sp.), Japanese barberry (*Berberis thunbergii*), poison ivy (*Toxicodendron radicans*), and greenbriar (*Smilax* sp.). Herbaceous species include thistle (*Cirsium* sp.), ragweed (*Ambrosia* sp.), and goldenrod (*Solidago* sp.).

Theater Readiness Monitoring Facility Site - The proposed site consists of agricultural lands with scattered small stands of mixed oak trees typical to the Installation.

Health Clinic - The proposed project site is at Building 332, the existing Health Clinic. The building is located in the highly developed Cantonment area of the Installation, in the industrial sector, where the surface is composed of impervious asphalt.

4.8.1.2 Wildlife

Wildlife species found at LEAD include mammals, birds, reptiles, and fish. A complete list of wildlife species observed at LEAD is shown in Appendix D.

A wildlife inventory conducted in 1987 found more than 20 species of mammals present at LEAD. Many of the mammals identified in the inventory have adapted to areas with extensive human activities, such as the grey squirrel (*Sciurus carolinensis*), white-tailed deer (*Odocoileus virginianus*), eastern cottontail

(*Sylvilagus floridanus*), and eastern chipmunk (*Tamias striatus*). Species that are less tolerant of human disturbance include the coyote (*Canis latrans*) and mink (*Mustela vison*) (USACE, 2001a).

Avian habitats at LEAD are diverse and include riparian areas, forests, and open fields. A wide variety of avian species utilize LEAD habitats during both the breeding season and winter. Migratory species like warblers and vireos utilize LEAD as a stopover. Nesting species that have been observed during the spring and summer months include the Great Blue heron (*Ardea herodias*), Canada geese (*Branta canadensis*), and killdeer (*Charadrius vociferous*). Year-round residents of LEAD include the ring-necked pheasant (*Phasianus colchicus*), eastern wild turkey (*Meleagris gallopavo*), and woodpeckers (*Picoides* sp.). Other species found on the Installation are European starlings (*Sturnus vulgaris*) and brown-headed cowbirds (*Molothrus ater*).

Though no comprehensive surveys for reptiles or amphibians have been conducted, species that are observed at LEAD would be common to those found in Franklin County. Reptiles that have reportedly been identified on the installation include bog turtle (*Clemmys muhlenbergii*), spotted turtle (*Clemmys guttata*), wood turtle (*Clemmys insculpta*), common snapping turtle (*Chelydra s. serpentina*), Eastern box turtle (*Terrapene carolina*), midland painted turtle (*Chrysemys picta marginata*), Northern water snake (*Nerodia sipedon*), and black rat snake (*Elaphe obsoleta*) (Tetra Tech, 2001).

Theater Readiness Monitoring Facility Site - The proposed site consists of agricultural lands with scattered small stands of mixed oak trees. Wildlife on-site consists of species that typically inhabit open fields, utilize small stands of trees, and are tolerant to human disturbances.

Health Clinic - The proposed project site is located in the highly developed Cantonment area of the Installation, in the industrial sector, where the surface is composed of impervious asphalt. The level of disturbance at this site limits the abundance and diversity of species utilizing the area. Wildlife on-site includes species that are typically tolerant to human disturbances.

4.8.1.3 Threatened and Endangered Species

Plants and animals federally classified as endangered or threatened are protected under the Endangered Species Act (ESA) of 1973, as amended. The U.S. Fish and Wildlife Service (USFWS) is responsible for the listing of endangered species under the ESA. Federally listed species are afforded legal protection under the Act; therefore, sites supporting these species need to be identified.

Surveys for listed species on the Installation were conducted in 1992 by the Nature Conservancy and 2000 by Tetra Tech, Inc. The 1992 survey targeted state- and federally listed species, while the 2000 survey targeted only federally-listed species. The 1992 survey identified the potential for the federally-listed bog turtle (*Clemmys muhlenbergii*) to exist at LEAD; however, the survey conducted in 2000 did not identify any federally-listed species to exist on the Installation (Tetra Tech, 2001).

Bog turtles require very specific habitat conditions that include undisturbed bogs, swamps, and wet meadows where sun penetration, evapotranspiration, and humidity are high. Bog turtles tend to be observed most frequently in circular basins with (1) spring-fed pockets of shallow water, (2) a bottom substrate of mud and rock, (3) dominant vegetation of low grasses and sedges, and (4) interspersed wet and dry patches. These favorable habitat conditions for the bog turtle do not exist within the Field Ammunition Supply Area (FASA) at LEAD (USACE, 2001a). The TRMF site is located within the FASA. The Health Clinic is located in the industrial portion of the Installation where the altered environment provides little high-quality habitat for most species of wildlife.

In addition, previous studies accomplished at LEAD identified the existence or potential for three state-listed animal species, the Allegheny woodrat (*Neotoma floridana magister*), the Henslow's sparrow (*Ammodramus henslowii*) and the least shrew (*Cryptotus parva*). Two state-listed plant species, the small-

flowered crowfoot (*Ranunculus micranthus*), and brown sedge (*Carex burbanmii*) have also been recorded as occurring on or near the Installation. Habitat required to support these species does not exist within the FASA and no known occurrences of species of special concern occur within the area (USACE, 2001a).

In accordance with the requirements of the ESA, agency coordination with the USFWS, the Pennsylvania Game Commission, the Pennsylvania Fish and Boat Commission, and the Pennsylvania Department of Conservation and Natural Resources to identify state and federally-list species was conducted. Consultation letters and responses from USFWS and the state agencies are included in Appendix E.

4.8.1.4 Aquatic Habitat

The streams, ponds, and lakes on the Installation provide habitat for a variety of fish species. Species observed at LEAD include rainbow, brown, and brook trout (*Salmo gairdneri*, *Salmo trutta*, and *Salvelinus fontinalis*), smallmouth and largemouth bass (*Microterpus dolomieu* and *M. salmoides*), bluegill (*Lepomis macrochirus*), white sucker (*Catostomus commersoni*), and golden shiners (*Notemigonus crysoleucas*) (USACE, 2001a).

Aquatic habitats on-site were identified based on the vegetation present and evidence of wetland hydrology observed at the time of the site investigations. In addition, GIS data obtained from 2007 wetland delineation report for the TRMF project (USACE, 2007) was reviewed to determine the presence of wetland habitats within the project sites.

TRMF Site – Five wetland areas occur within the TRMF project site. At this site, 14 species of herbs, 9 species of shrubs and vines, and 5 tree species were identified in the vicinity of the existing wetlands and streams (USACE, 2007). These species include, Common rush (*Juncus effuses*), Rough bluegrass (*Poa trivialis*), Swamp white oak (*Quercus bicolor*), Japanese honeysuckle (*Lonicera japonica*), and Pin oak (*Quercus palustris*). The complete list of species identified during the 2007 delineation is found in Appendix B of the Wetland Delineation Report (Appendix C of EA).

Health Clinic - No potential aquatic habitats are present on the proposed Health Clinic additions site. The nearest wetland is located more than one mile northwest of the project site.

4.8.2 Environmental Consequences

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

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

Not Significant Effect – Impacts would be detectable, but would not be expected to be outside the natural range of variability and would not have any long-term effects on native species, their habitats, or the natural processes sustaining them. Occasional responses to disturbance by some individuals could be expected, but without interference to feeding, reproduction, or other factors affecting population levels. Sufficient habitat would remain functional to maintain viability of all species

Significant Effect – Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, and they would be expected to be outside the natural range of variability for long periods of time or be permanent. Population numbers, population structure, genetic variability, and other demographic factors for species might have large, short-term

declines, with long-term population numbers significantly depressed. Frequent responses to disturbance by some individuals would be expected, with negative impacts to feeding, reproduction, or other factors resulting in a long-term decrease in population levels. Loss of habitat might affect the viability of at least some native species.

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

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

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

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

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

4.8.2.1 No Action Alternative

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

4.8.2.2 Realignment (Preferred) Alternative

Vegetation – Expected adverse effects would not be significant at the TRMF site. Construction and operation of the proposed facilities would disturb the plant ecology, particularly grasses and herbaceous areas, in the immediate vicinity. Removal of low-quality oak trees that are scattered around the project site would be necessary to implement the project. Due to its low-quality, timber removed during implementation of the project would be sold as firewood (Kindlin, 2007). Impacts to vegetation, such as disturbance to plant ecology, would not be significant and could be mitigated by adherence to BMPs.

No significant adverse effects to vegetation would be expected at the site for the Health Clinic additions. The proposed project site has already been highly altered by human activities. No vegetation would be removed to implement the project.

Wildlife – Expected adverse effects would not be significant at the TRMF site. Construction and operation of this could disturb wildlife in the immediate area. Some species, particularly birds, would be temporarily discouraged from the area through destruction of habitat, noise, and/or dust. Wildlife at the site would scatter to adjacent wooded areas and open fields and gradually return once construction is complete.

Adverse, but not significant, effects would be expected at the site for the Health Clinic additions. Construction of this facility could temporarily disturb wildlife in the immediate area, particularly birds, due to noise caused from construction activities. Once construction is completed, it is expected that

wildlife would return to the area. Diversity of wildlife on-site is limited and species that utilize this area have adapted to living conditions in habitats altered by humans.

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

Consultation with the USFWS was conducted to request information on fish and wildlife resources within the area affected by the proposed realignment activities. According to the USFWS, the proposed project is located within the known range of the federally-threatened bog turtle; however, in 2000, a qualified bog turtle surveyor conducted a bog turtle survey of all wetlands on LEAD and found no potential bog turtle habitat on the installation. Therefore, based on review of the bog turtle survey report, the USFWS concluded that the implementation of the proposed project will not affect the bog turtle. The Pennsylvania Fish & Boat Commission concurred with the findings of no adverse impacts to bog turtles from the proposed project. Agency response letters are included in Appendix E.

Aquatic Habitat – At the proposed TRMF site, construction of the two-lane access road leading to and from the TRMF site is anticipated to result in no significant impacts to the wetland or its 100-foot buffer located on the western portion of the project site (Wetland 2).. In addition, the project has the potential to result in impacts that would not be significant to another wetland and its 100-foot buffer located on the eastern portion of the project site (Wetland 5). In the event that construction would encroach upon the a USACE jurisdictional wetland or its 100-foot wetland buffer, erosion control and mitigation measures as stipulated in water quality permits required under Section 404 of the CWA from USACE would be necessary during construction activities (see Section 4.7, Water Resources). Adherence would assure that impacts are not significant.

No effects would be expected at the Health Clinic Addition site, as there are no aquatic habitats present on the proposed site.

4.9 CULTURAL RESOURCES

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

Eligibility for the NRHP is established according to the official Criteria of Evaluation issued by the Department of the Interior. They relate to:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. That are associated with the lives of persons significant in our past; or
- C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. That have yielded or may be likely to yield, information important in prehistory or history.

4.9.1 Affected Environment

4.9.1.1 Prehistoric and Historic Background

LEAD is situated in the center of the southern Cumberland Valley, which is part of the Great Valley section of the Ridge and Valley Province running northeasterly to the Delaware River. LEAD is adjacent to the eastern edge of Broad Mountain; its drainage is divided between the Potomac and Susquehanna River systems. (USACE, 2001b)

Four major Precontact periods are defined for Pennsylvania: Paleo-Indian, ca. 12,000 Before the Common Era (B.C.E.) to 7,000 B.C.E.; Archaic, 7,000 B.C.E. to 2,000 B.C.E.; Transitional, 2,000 B.C.E. to 1,000 B.C.E. and Woodland, 1,000 B.C.E. to Contact (around 1550 C.E.) There is evidence for human occupation of the Cumberland Valley for all periods. At the time of the contact, the Susquehannocks were the dominant Indian tribe in the region although much reduced by warfare with other tribes and subsequently by European introduced diseases such as smallpox. (USACE, 2001b)

The Cumberland Valley's first European settlers arriving around 1730 were largely Germans and Scots-Irish. Falling Spring, established during this time, was to become the Franklin County seat of Chambersburg after it was subdivided in 1748 by Colonel Benjamin Chambers. However, most settlements in the area were small farmsteads established by squatter possession until land titles began to be issued in the 1750's. (USACE, 2001b)

In 1837 the railroad was completed between the Cumberland Valley and Baltimore increasing trade and industry. Iron and other manufacturing were undertaken, but the economy remained predominantly agricultural. Prior to the Civil War, Chambersburg was a stop along the Underground Railroad; John Brown met to plan his raid on Harpers Ferry there. During the war, Franklin County was a major focus of military conflict. It was the target of three major Confederate raids as well as invasion during the Gettysburg Campaign in 1863. More than 150,000 soldiers from both sides camped at various places, and Chambersburg was torched by the Confederate Army. (PAVisNet, No date)

After the Civil War, the economy remained dominated by agriculture as well as small scale industry until the Federal Government acquired the Letterkenny depot property. (USACE, 2001b)

The military history of LEAD began in 1941 when Secretary of War Henry Stimson signed a directive to acquire 21,000 acres of farmland north of Chambersburg for the purpose of constructing an ordnance depot along the Eastern Seaboard. One of several established across the United States, Letterkenny was needed to store and ship ammunition, trucks, parts, and other supplies for the World War II arms buildup. A terrain characterized by farmhouses, barns, and chicken coops was rapidly altered by the construction of 798 underground "igloos", 12 above ground magazines, and 17 warehouses. With excellent rail connections, the depot operated 7 days a weeks, and 3 million tons of supplies moved through Letterkenny during the war years. (LEAD, No date)

The end of World War II in Europe did not immediately lessen the need for LEAD's mission because combat vehicles and ordnance had to be shipped back for storage. Techniques for "canning" or the long term storage of vehicles for future mobilization in dehumidified petroleum storage tanks were developed at LEAD and proved successful. The Korean Conflict led to a revival of activity at the depot and new, advanced systems for the control and management of the supply chain were developed. In 1954 Letterkenny became a permanent military installation. From 1976 to 1995 the 2 star U. S. Army Depot System Command, which coordinated the depot function of the Army's logistics was located at Letterkenny. In the 1980s and 1990s with the Automatic Storage and Retrieval System-Plus in operation,

the depot concentrated on supply, maintenance, and ammunition. Paladin Howitzer upgrades and Patriot and Hawk missile work predominated. (LEAD, No date)

In 2002 LEAD marked 60 years of service.

4.9.1.2 Status of Cultural Resource Inventories and Section 106 Consultations

The most recent Integrated Cultural Resources Management Plan (ICRMP) for LEAD was prepared in 2006 by the Baltimore District of the U. S. Army Corps of Engineers.

Built Environment – A Preliminary Architectural Survey of buildings at LEAD was carried out by the National Park Service (NPS) in 1984. The NPS survey recommended evaluation of the World War II resources for NRHP eligibility. (USACE, 2006b)

In June 1998, a Programmatic Agreement (PA) for the BRAC action at LEAD was developed and signed by the Army Materiel Command (AMC), the Pennsylvania State Historic Preservation Office (PA SHPO), and the Advisory Council on Historic Preservation. The PA stated that the Army, in consultation with the SHPO “considers the entire LEAD installation as eligible as a district for the National Register of Historic Places only under National Register Criterion A for its association with the events of World War II (1939-1945).” This implies that the district was not found NRHP eligible for its architectural value, which would have been Criterion C. (USACE, 2006b)

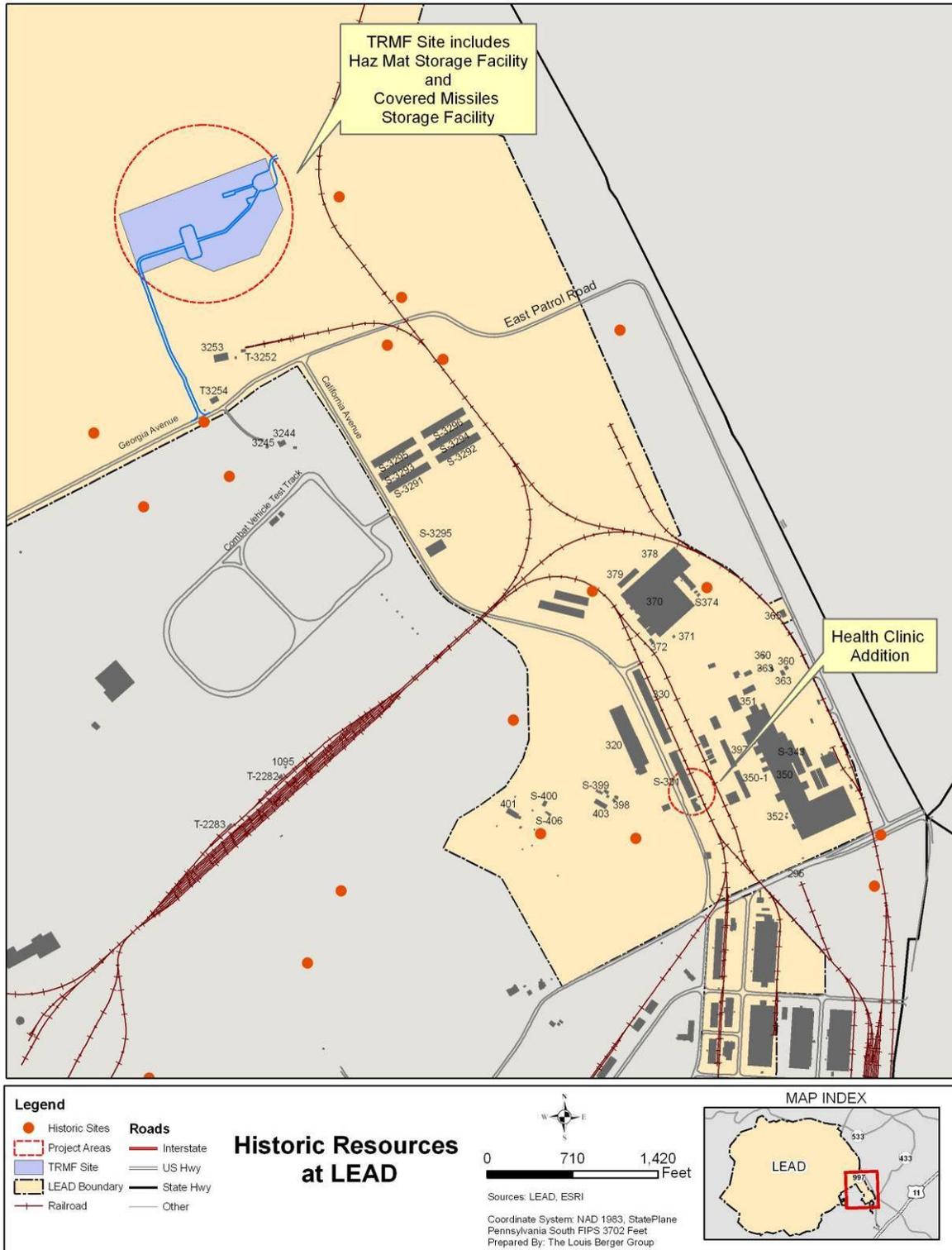
The PA identified all World War II resources as contributing elements in the historic district as contributing elements to the district. According to the PA, all resources, regardless of integrity or permanence of construction. i.e. permanent, semi-permanent, or temporary, were considered contributing (USACE, 2006b).

The PA SHPO has expressed their opinion in an October 30, 1997 letter that the Period of Significance should be extended to the Korean War or through 1953; however, the Army has not agreed with this position.

Various buildings at LEAD have been demolished within the past decade to meet the Army’s Facilities Reduction Program and Defense Reform Initiative Directive # 36 which mandates a 0 percent net increase in the amount of building square footage at the installation or due to health and safety concerns. Where these actions required demolition of buildings of the World War II era and the disputed Korean War era, the installation consulted with the PA SHPO and was able to demolish based upon the resources’ agreed loss of integrity. Another project to upgrade ammunition storage area igloo doors was deemed an adverse effect under NHPA but resolved by recordation of a sample igloo as a mitigation measure. (USACE, 2006b)

Extant buildings that predate the establishment of LEAD may be NRHP eligible but have not been comprehensively evaluated (USACE, 2006b).

Figure 4-9. Location of Historic Resources at LEAD



Archaeological Resources – Several archaeological studies have been conducted at LEAD. Archaeological field investigations have identified numerous historic sites and three Pre contact sites. Pre contact artifacts encountered at LEAD have been limited to isolated projectile points (USACE, 2006b).

In 1981, A Phase I archaeological investigation was carried out on approximately 200 acres; three historic and three Pre contact sites were found; one of the latter, 36FR112, was found potentially NRHP eligible (USACE, 2006b).

In 1985, the NPS prepared a report entitled “*An Archaeological Overview and Management Plan for Letterkenny Army Depot*”. It utilized documentary research – but no fieldwork – to identify 345 potential historic archaeological sites associated with farmsteads and other resources that predated the government’s acquisition of the property. These potential sites, many of which may have been destroyed during the development of the installation, would include foundation ruins and associated artifacts. They have not been comprehensively surveyed although a field survey for the realignment of Cartridge Road on base identified a site, the Rush Hoover House, or 36FR355 that was deemed potentially NRHP eligible. (USACE, 2006b)

The 1999 ICRMP developed a predictive model based on slope, soils, proximity to water, and previous disturbance, and calibrated to the then larger size of the depot, of 9,325 acres with low probability for archaeological resources, 7,917 of medium probability, and 1,895 of high probability (USACE, 2006a).

Recent years have seen other compliance based archaeological studies with field work to examine the sites of construction projects (USACE, 2006b).

4.9.1.3 Native American Resources

To date, no traditional cultural properties or American Indian sacred sites have been recorded at LEAD. There are no Federally recognized Indian tribes present in the vicinity of LEAD. However, some Federally recognized tribes elsewhere in the United States may have a historical affiliation with the state due to past occupancy by their ancestors. There are also no collections of American Indian remains, funerary objects, or items of cultural patrimony in the possession of LEAD.

The current LEAD ICRMP contains a complete list of laws and procedures relating to American Indian patrimony which would be implemented in the event of an unanticipated discovery.

4.9.2 Environmental Consequences

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

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

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

Section 106 Scale

Per 36 CFR 800.16(i) *effect* means alteration to the characteristics of a historic property that qualify it for inclusion or eligibility for the National Register. Per 36 CFR 800.5 (a) (1), the effect becomes *adverse* when “an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association.” Examples of adverse effects include: the physical destruction of all or part of the historic property; an alteration of the property that is not consistent with the Secretary of Interior’s Standards for the Treatment of Historic Properties (36 CFR 68); the removal of the property from its historic setting; changing the character of the property’s use or of the physical features of its setting that contribute to its significance; and the introduction of visual, aural, and atmospheric elements that diminish the integrity of the property’s significant historic features.

Environmental Impacts to Cultural Resources vs. the Section 106 Scale

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

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

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

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

4.9.2.1 No Action Alternative

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

4.9.2.2 Realignment (Preferred) Alternative

Implementation of the Realignment Alternative was reviewed against the baseline knowledge of National Register of Historic Places eligible resources present for each of the four specific BRAC projects areas. In accordance with the Army BRAC Manual for NEPA Compliance, the “status of knowledge” on the potential for NRHP eligible resources within the Areas of Potential Effect (APEs) of the four BRAC projects was assessed and found insufficient for the location of three projects: the Theater Readiness Monitoring Facility, the Covered Missile Storage Facility, and the Hazardous Materials Storage Facility, all of which are collocated. Therefore, a Phase I Cultural Resource Investigation of the site was carried out to determine if there was any cultural resource issues connected with project implementation (see Appendix F). Fieldwork for the Phase I Investigation was conducted in November 2006. The report, prepared by the Baltimore District of the USACE and dated December, 2006, concluded as follows:

Archaeological investigations consisted of a review of existing site information at Letterkenny Army Depot, investigation of historic mapping, and a controlled surface collection of the areas to

be disturbed by the construction. The only artifacts observed were a single rhyolite biface fragment and a small number of 20th century fragments. No National Register archaeological resources are located within the project's Area of Potential effect and no further cultural resource investigations are recommended. (USACE, 2006c)

Theater Readiness Monitoring Facility, Covered Missile Storage Facility, and Hazardous Materials Storage Facility – No effects would be expected. There are no architectural resources at all within the APE and, per the recent Phase I cultural resources investigation (see above); there are no NRHP eligible archaeological resources. There are no American Indian sacred sites at LEAD.

Health Clinic Addition – No effects would be expected. The project is 690 SF addition to the non historic Building 332 in an area of hardstand and previous disturbance. Although it falls within the World War II historic district, coterminous with the installation, it cannot be considered to have any effect on the setting of World War II buildings as they are not considered significant for their architecture.

By letter of January 8, 2007, the Letterkenny Army Depot forwarded the Phase I Archaeological Resource Investigation for the site of the TRMF and collocated projects to the Pennsylvania State Historic Preservation Office with a request for that agency's concurrence in a determination under Section 106 of the National Historic Preservation Act of no effect for the projects and no adverse effect for the Health Clinic project. The Pennsylvania SHPO replied on February 28 that all projects would have no effect upon NRHP resources. Additionally the agency made certain technical comments on the Phase I Investigation which will be incorporated by the author, the Baltimore District USACE, see Appendix E.

4.10 SOCIOECONOMICS

4.10.1 Affected Environment

The economic Region of Influence (ROI) for LEAD consists of Franklin County, Huntingdon, and Cumberland Counties in Pennsylvania, and it constitutes the area where the predominant socioeconomic effects of the Proposed Action would take place. Approximately 90 percent of LEAD employees live in these counties. The geographical extent of the ROI is based on residential distribution of the installation's military, civilian, and contracting personnel and the location of businesses that provide goods and services to the Installation and its employees. The baseline year for the socioeconomic analysis is 2006, although much of the economic and demographic data for the ROI are available only through the year 2005. Wherever possible, the most recent data available is presented so that the affected environment descriptions are reflective of current conditions in the ROI.

4.10.1.1 Economic Development

Regional Economic Activity

The ROI civilian labor force in 2005 totaled 219,701, with 211,299 employed (Stats Indiana, 2006a). The unemployment rate for the ROI averaged 3.8 percent in 2005, compared to 5 percent for the State of Pennsylvania and the national unemployment rate of 5.1 percent. The manufacturing, finance and insurance, public administration, and accommodation and food services are the major sources of employment in the ROI. Key industries in the manufacturing sector include machine makers, a toy maker, and a paper company.

The ROI per capita personal income (PCPI) in 2004 was \$58,817, more than the U.S. PCPI of \$33,050, and the Pennsylvania PCPI of \$33,312 (Stats Indiana, 2006b).

Installation Contribution to the Local Economy – LEAD employs 2,048 people (Sgroi, 2007a), and are divided among the depot and forward repair areas, the Letterkenny Munitions Center (LEMC), the

Defense Logistics Agency (DLA), the US Army Industrial Logistics System Center (ILSC), US Army District Test, Measurement and Diagnostic Equipment (TMDE) Support Center, US Army TMDE Management Office-Region 1, Regional Support Activity, and the US Army Health Clinic. The Installation workforce accounts for about 1.1 percent of all ROI employment. Installation expenditures in the ROI totaled \$331,827,963 during 2005. Payroll expenditures reached \$81,505,437 in 2005 and the average annual salary for civilian workers at LEAD was \$62,696. Salaries for permanent military personnel at LEAD averaged \$93,465 in 2005 (Sgroi, 2007b).

4.10.1.2 Demographics

Of all the ROI counties, Franklin County is by far the largest county, while Huntingdon County has the smallest population. All of the counties in the ROI have experienced growth from 1980 to 2005, but Cumberland County has experienced the most significant growth during this period. Population data for Pennsylvania and the United States are also provided in Table 4-10 for comparison purposes.

Table 4-10. LEAD ROI County Population Growth 1980 -2005

Location	1980	1990	2000	2005
Franklin County	407,630	421,330	470,212	490,593
Cumberland County	179,625	195,257	213,674	223,089
Huntingdon County	42,253	44,164	45,586	45,947
Pennsylvania	11,864,720	11,882,842	12,281,054	12,429,616
United States	226,545,805	248,709,873	281,421,906	296,410,404

(Source: Stats Indiana, 2006c)

4.10.1.3 Housing

The ROI housing stock is summarized in Table 4-11, which identifies both owner-occupied and renter-occupied homes, along with median home values, for the 3-county ROI. The housing units identified in the table include all structure types (e.g., single-family homes, apartments, and mobile homes). The estimated median value of owner-occupied units in the 3 counties was \$94,467, well below the nationwide median value of \$119,600, and \$97,000 for Pennsylvania (US Census, 2000). In 2006, there were 1,300 homeless in Franklin County. There are 11 programs focused on improving the living conditions of low to moderate income households residing in the county, including soup kitchens, shelters and group homes. In addition, The Housing Partnership has programs to increase affordable housing in Franklin County.

Table 4-11. Housing Characteristics for the 3-County ROI

Franklin, Cumberland, and Huntingdon Counties Combined	
Total Housing Units	161,812
Occupied Housing Units	150,407
Owner-occupied	111,091
Renter-occupied	39,316
Vacant Housing Units	11,405
Median Home Value (Owner-occupied)	94,467

(Source: Stats Indiana, 2006d)

4.10.1.4 Quality of Life

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

Installation Housing –On-post lodging at LEAD is not common, unlike at many other installations. On the installation, there are only 4 housing units for a colonel, sergeant major, and 2 officers, and all are currently occupied. All other personnel live off-post.

Health Care Facilities – On the installation, the Army operates a health clinic that serves LEAD's personnel, and provides basic treatment and care for minor illnesses and injuries, as well as medical examinations. Other facilities operating outside the installation and within the ROI include the 219-bed Chambersburg Hospital, Carlisle Hospital in Cumberland County, and JC Blair memorial Hospital in Huntingdon County.

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

The ROI has a total of 59,274 students in 126 schools. (NCES, 2003-2004a; b; and c). Any elementary students that live on-post would most likely attend the Grandview School located only ½ mile from the installation. The closest schools to the installation are located in the borough of Chambersburg, which is only 2 miles from LEAD.

Family Support Services – There are at least 20 day care centers operating in the vicinity of the installation.

Shops, Services, and Recreation – Recreation opportunities around the installation abound. Throughout Pennsylvania, there are plenty of opportunities to go hiking, canoeing, backpacking, birding, kayaking, white water rafting, skiing, fishing, and elk watching.

Law Enforcement – The installations has one police station operating and its main role is to monitor and regulate access to LEAD and to enforce laws and traffic regulations on-post. In the ROI, Franklin County has 6 police departments, Cumberland County has 18 police departments, and Huntingdon County has 4 police departments providing law enforcement and protection services to residents.

Fire Protection – There is one on-post fire department and its firefighters also serve the communities off-post when needed. Fire departments off-post and operating throughout the ROI include 31 Fire and EMS departments in Cumberland County, 15 in Franklin County, and 16 in Huntingdon County.

4.10.1.5 Environmental Justice

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

In 2005, 94.5 percent of the ROI population was white, 3.1 percent was black, 1.4 percent were Asian, and 2 percent were of Hispanic origin. For the United States, 80.4 percent of the population was white, 12.8 percent was black, and 12.6 percent was of other minority racial groups. Approximately 12.5 percent of the U.S. population was Hispanic (Stats Indiana, 2006d). The ROI has a lower percentage of minority residents than for both the state of Pennsylvania and the United States. The Census Bureau bases the poverty status of families and individuals on 48 threshold variables, including income, family size, number of family members under the age of 18 and over the age of 65, and amount spent on food. In 2003 approximately 8.8 percent of the ROI residents were classified as living in poverty, lower than the state of Pennsylvania and approximately half the poverty rate for the United States as a whole.

4.10.1.6 Protection of Children

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

4.10.2 Environmental Consequences

EIFS Model Methodology. The economic effects of implementing the proposed action are estimated using the Economic Impact Forecast System (EIFS) model, a computer-based economic tool that calculates multipliers to estimate the direct and indirect effects resulting from a given action. Changes in spending and employment associated with the renovation of housing represent the direct effects of the action. Based on the input data and calculated multipliers, the model estimates changes in sales volume, income, employment, and population in the ROI (not the installation exclusively), accounting for the direct and indirect effects of the action. Appendix G discusses this methodology in more detail and presents the model input and output tables developed for this analysis.

To determine the historical range of economic variation, the EIFS model calculates a rational threshold value (RTV) profile for the ROI. This analytical process uses historical data for the ROI and calculates fluctuations in sales volume, income, employment, and population patterns. The historical extremes for the ROI become the thresholds of significance (i.e., the RTVs) for social and economic change. If the estimated effect of an action falls above the positive RTV or below the negative RTV, the effect is considered to be significant.

Impacts to socioeconomics were identified using the following criteria:

No Effects – No change to socioeconomic conditions.

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

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

4.10.2.1 No Action Alternative

Economic Development – No effects would be expected. Under the no action alternative, the Installation working population and Installation expenditures would remain unchanged from baseline levels. No new construction would take place. Therefore, economic activity levels would be the same as under the baseline conditions.

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

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

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

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

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

4.10.2.2 Realignment (Preferred) Alternative

Economic Development – Expected direct and indirect beneficial effects to the ROI would not be significant. Under the proposed action 174 civilian employees would be added to the LEAD workforce. According to the EIFS model, the proposed action would generate an approximate total net gain of 354 jobs in the LEAD economic ROI (231 direct and 123 indirect jobs). Of these jobs created, nearly 20 percent are directly from construction activities, and would be of a short-term nature. The EIFS model shows that this increase in employment would represent a 0.15 percent increase in the region's employment levels and would fall far short of the maximum positive RTV Value of 3.31 percent. The proposed action would also generate positive changes in the other economic indicators estimated by the EIFs model, including an approximately 0.24 percent increase in sales volume and a 0.18 percent increase in regional personal income.

In addition, the construction of the new facilities on the installation would further generate economic activity due to the associated increase in expenditures on labor and materials during the building period. Sales volume generated by the proposed action is expected to reach in excess of \$44,194,720, or, a 0.24 percent increase. Of this total, sales directly related to construction activities is over \$14,030,070, or approximately 32 percent of the total. Meanwhile, construction would contribute to 20% of the total increase in jobs and 17% of the total increase in income.

Demographics – Expected direct and indirect effects would not be significant. Under the proposed action, incoming military and civilian personnel and their dependents would increase the ROI population by only 433, or 0.11 percent.

Housing – Expected adverse direct and indirect effects would not be significant. Under the proposed action, there would be a minor increase in the demand for housing. The 11,405 unoccupied housing units in the ROI should be capable of absorbing the predicted increase in population and subsequent increase in demand for housing. This minor increase in demand is not expected to result in increases in local housing costs.

Quality of Life – Expected adverse direct effects would not be significant. Approximately 100 school age children would be expected to accompany the incoming military and civilian personal based on a calculation of 2.49 family members per incoming employee. Schools operating close to capacity would be the most affected by incoming students. Generally speaking, elementary schools are the most affected by increasing populations. No effects would be expected for any other of the public services including health, fire, and law enforcement, given the relative small size of the incoming population compared to the population size of the ROI.

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

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

4.11 TRANSPORTATION

4.11.1 Affected Environment

4.11.1.1 Roadways and Traffic

The transportation systems that support LEAD include roadways and railway.

Off Post Roadways

Surface roads are the main mode of transportation to and on the depot. The main access to LEAD is by way of SR- 997. This route allows access to the Pennsylvania Turnpike at exit 15, about 14 miles north-northwest, and Interstate 81, approximately 4 miles to the southeast at exit 8. SR 997 is a two-lane road with wide lanes, good pavement, minimum shoulders, and a usual posted speed limit of 55 miles per hour (mph), with short stretches at 35 or 45 mph. At and near the intersection of SR 997 and SR 647, the road passes through the village of Roxbury. The remainder of SR 997 north-northwest of LEAD passes through mixed low-density residential or rural areas (Tetra Tech, 2001).

Gates

There are two access control points (ACP) at LEAD: the California ACP and the Wisconsin ACP. The California controls access to the main industrial area at LEAD which accomplished the majority of the Depot's mission. The Wisconsin ACP operates as inspection station for visitor's and controls access to the warehousing area south of Coffey Avenue. The operation of the Wisconsin Avenue ACP is slightly irregular because during lower Force Protection Conditions (FPCONs) general public traffic is allowed to use Wisconsin Avenue through the ACP.

On Post Roadways

On the depot, there are more than 150 miles of paved road serving both the ammunition and industrial areas. The preponderance of maintenance activity has been on the most heavily used arteries. The paved roads are generally in good condition. The condition of the unpaved roads varies greatly, but on average can be considered fair. However, erosion problems have been identified on certain sections of unpaved roads, particularly forest access roads (Tetra Tech, 2001).

Parking

On a survey conducted as part of the Comprehensive Traffic Engineering and Parking Study, all the parking spaces in the industrial area were counted. There are 1308 parking spaces with only 13 handicapped accessible (well below the American Disabilities Act requirements). Surveys of these parking spaces indicate that in the AM peak hour 88 percent of the spaces are occupied and in the PM peak hour also 88 percent of the spaces are occupied (Gannett Fleming, 2006).

There are expansion and construction plans that would reduce the utilization rates to 77% and 78% for the AM and PM peak hours respectively.

4.11.1.2 Installation Transportation

Railways. Although rail traffic is no longer used to a significant degree, it does provide some support to the ammunition mission and related industrial area. Railcars enter and exit LEAD through a service entrance at the southeast corner of the depot (Tetra Tech, 2001).

Airways. LEAD does not have an airfield, but operates a helipad located within the BRAC parcel of the cantonment area (Tetra Tech, 2001).

4.11.1.3 Public Transportation

There are no fix transit routes serving LEAD. There is a shared ride demand responsive transportation program where citizens call to order transportation services. This service is available to senior citizens, medical assistance clients and the general public in Franklin County (Franklin County, No date).

4.11.2 Environmental Consequences

The traffic consequences of the implementation of the No Action and the Preferred Alternative are described in the following sections. The following criteria were used to assess the transportation impacts for each of the alternatives:

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

Not Significant Impact – Short or long term changes to the traffic patterns and level of service that maintain the same or nearly the same levels of service as is expected under the No-Action alternative without crossing the threshold to failure.

Significant Impact – Short or long term changes to the traffic patterns and level of service that would cause an intersection to fail as a result of implementing that action beyond what is expected under the no action alternative. For the purposes of this EIS, a significant impact would be considered significant when an intersection that had not failed under the no action alternative fails under either of the preferred alternative.

4.11.2.1 No Action Alternative

Implementation of the no action alternative would not alter the existing transportation infrastructure at the sites being considered under the proposed action. There would be no impacts.

Under this alternative, traffic is assumed to grow at a constant annual growth rate of 1.0 percent, which reflects the population forecasts prepared by the US Census Bureau for the years between 2005 and 2015 for the state of Pennsylvania (which is similar to the growth observed in the past 25 years, when Franklin county grew at an annual rate of 0.8 percent) (US Census, 1995; 2005). This growth is assumed to happen even if no action is taken (defined as background growth). Considering that the construction of the Preferred Alternative is expected to be completed by 2011, this year was selected for analysis.

Installation Transportation and Public Transportation – No significant impacts would be expected from the no-action alternative.

4.11.2.2 Realignment (Preferred) Alternative

None to not significant temporary impacts to transportation could occur during construction, depending on measures taken to manage disruptions such as requiring most of construction vehicles delivering materials to do so outside peak hours and designating sufficient parking and storage space for construction related vehicles and materials. Construction projects are relatively small and construction related traffic is expected to be not significant.

No significant effects would be expected during operations. Several buildings are identified as part of the BRAC actions being evaluated in association with the proposed action of this EA. The impact that these new projects would have on the transportation infrastructure is measured by the number of trips that the projects would generate (see Table 4-12) combined with the current volumes and the background traffic growth expected from other non-BRAC new developments.

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

Using the trip generation procedure outlined by the ITE, the trips generated by each of the projects were estimated. These trips reflect the net increase in activity as the result of the implementation of each project. For the cumulative impacts section, most of the vehicle movements to the maintenance facilities are internal to the area; these trips generated for such facilities have been reduced when analyzing its impact on the ACPs.

Considering that the access to the LEAD area is through designated gates, it is necessary to consider during the analysis that the traffic would move towards or from these gates to their respective buildings. It has been assumed that the traffic would take the shortest (or the only available) route to the gate from the building.

Table 4-12. Additional Trips Generated by Preferred Alternative

	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Total Trips Generated	121	16	137	117	22	139

The resulting volumes under this scenario are the sum of the background traffic (existing volumes plus historic growth) calculated in the analysis of the No Action Alternative plus the above traffic volumes that result from the implementation of the Preferred Alternative.

The greatest impact of this additional traffic would be expected at the gates where this additional traffic would queue until inspected, increasing the delays. Typically, the highest traffic volume concentration is observed in the AM peak hours, entering the Depot. On January 2006, traffic was counted entering LEAD at the two gates during the AM peak hour (Gannett Fleming, 2006). Using this data, the analysis of potential impacts at the California and Wisconsin ACPs was conducted for the during the AM peak hour. Considering the location of the proposed projects, the likely routing would take the vehicles through the California ACP. Therefore the additional trips from the proposed action would only increase the traffic entering the California ACP. The results indicate that all gates will operate below their capacity and even though delays will increase with the additional vehicles, they will remain within acceptable levels (see Table 4-13).

Table 4-13. Traffic Impacts by Alternative at Gates

Gate	AM Inbound Traffic			Gate Capacity ^{1,2}	V/C - AM Inbound Traffic		
	2006	No-Action	Preferred		2006	No-Action	Preferred
California	707	743	864	1,050	67%	71%	82%
Wisconsin	106	111	111	390	27%	28%	28%
Total	813	854	975				

Note:

- 1) Assumptions were made for the number of lanes, guards and percentage of DOD-decaled vehicles at each gate.
- 2) Takes into consideration processing rates estimated by the Military Traffic Management Command (MTMC) for 100% DOD-decaled vehicles for a specific number of security personnel and three processing scenarios (i.e., low, medium and high).

4.12 UTILITIES

4.12.1 Affected Environment

This section assesses potable water supply, wastewater systems, stormwater systems, energy sources, communications, and solid waste service. Data presented in this section reflect the current condition of utilities at LEAD using references to the most recent available data sources, including the Draft Installation Master Plan (R&K Engineering, 2006b) and personal communication with Joseph Repasi, Jr., LEAD Master Planner (Repasi, 2007a).

4.12.1.1 Potable Water Supply

LEAD receives potable water from the Letterkenny Reservoir; a 330-million-gallon reservoir located approximately 10 miles north of the installation. Raw water from the reservoir is piped 20 miles to the Cumberland Valley Business Park's water treatment plant, which has a capacity to treat 1-million-gallons per day. Potable water storage facilities on the installation include a 200,000-gallon tower that serves the Industrial Area and a 300,000-gallon tower that serves the Ammunition Storage Area. A water supply line is planned for construction within Georgia Avenue (as part of another project) and this line will have sufficient capacity to serve the new TRMF facility.

4.12.1.2 Wastewater System

Domestic sewage from LEAD is collected and treated by facilities owned and operated by the Franklin County General Authority. Wastewater is treated at a contact stabilization treatment facility with a capacity of 500,000 gallons per day. The LEAD planning department indicated that a wastewater collection line is planned for construction within Georgia Avenue (as part of another project) and this line will have sufficient capacity to serve the TRMF facility.

An Industrial Wastewater Treatment Plant (IWTP) exists at LEAD to provide treatment of 290,000 gallons of industrial wastewater per day. With new missions, new chemical processes, and with more stringent USEPA laws, the IWTP at LEAD requires renovation and expansion. There is currently (July 2006) a contractor assessing the requirements of the LEAD IWTP and to insure it is within USEPA compliance and it meets the current and new mission requirements of the installation.

4.12.1.3 Storm Water System

A formal storm water drainage system does not exist at the site of the new proposed TRMF. Storm water from this site currently flows overland to adjacent areas. A formal storm water drainage system is present at the site of the Health Clinic. The small addition to the Health Clinic could be drained to the existing storm water system.

4.12.1.4 Energy Sources

Electrical power at LEAD is provided by Allegheny Power's (AP) Letterkenny substation, which is located about 0.5 mile southeast of the installation. The substation is served from a single 138-kV feeder that approaches from the east, where it ties to the AP distribution grid. Power is then distributed from the adjacent switch station, which is owned by the Letterkenny Industrial Development Authority (LIDA), but is operated by AP. Power is distributed to LEAD through this switch station at 12,470 volts via as many as six aerial circuits, depending on current switching configurations. The Ammunition Area is then sub-fed at 7,200 volts on a single aerial circuit by means of step-down transformers. The electrical distribution network on the installation is owned by LIDA, with whom LEAD contracts for generation and transportation/distribution services. The network is maintained by AP under a contract between LIDA and AP.

4.12.1.5 Communications

The communications infrastructure at the installation is owned by LEAD and operated under contract by Cordev, Inc. The provider of telecommunications and fiber service to the installation is Sprint. The LEAD planning department indicated that a new fiber line is planned for construction along Georgia Avenue. This line will have ample capacity to provide communication services to the new TRMF.

4.12.1.6 Solid Waste

Solid waste generated at LEAD is collected and disposed through a contract with Waste Management, Inc. The waste is transported to Upton, Pennsylvania, and placed in a landfill owned by Waste Management of Central Pennsylvania.

4.12.2 Environmental Consequences

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

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

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

Significant Effect – thresholds for significance are defined below:

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

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

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

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

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

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

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

4.12.2.1 No Action Alternative

No effects would be expected. Implementation of the no action alternative would not alter the existing utility infrastructure at the sites being considered under the proposed action. There would be no impacts.

4.12.2.2 Realignment (Preferred) Alternative

Theater Readiness Monitoring Facility, Covered Missile Storage Facility, and Hazardous Materials Storage Facility - Negligible impacts would be expected. The installation utility systems are designed to supply the operations of over 6,000 employees. The Depot is currently supporting the operations of only approximately 2,400 employees; therefore substantial excess utility capacity is available. Utility extensions from existing (or planned) lines on Georgia Avenue would be required to provide water, sewer, electric and communications service to the proposed site. These would result in impacts caused by trenching and burial along and potentially in/across roadways; however, no significant utility impacts are expected. System capacities are adequate and distribution is convenient to the site.

Impacts would be expected on the storm water system. The proposed TRMF would increase the amount of impervious area and could cause an increase in the amount of storm water runoff generated at the site. Storm water runoff from the new impervious areas will be managed by a new retention or infiltration pond planned for construction in conjunction with the TRMF. This pond will ensure that peak storm water runoff rates from the site will remain at pre-construction levels. Implementation of controls

necessary to comply with storm water permits from the state during both construction and operation of these facilities would ensure that any impacts from the increased storm water runoff would be minor.

Health Clinic Addition - Expected impacts would not be significant. The 690 SF addition to the existing Health Clinic would tie into the existing service connections for water, sewer, electricity, storm water and communications. The existing systems have the capacity to support the minute utility demands for this addition.

4.13 HAZARDOUS AND TOXIC SUBSTANCES

This section addresses the use, handling, and storage of hazardous and toxic substances at the proposed BRAC facilities; the generation and disposal of hazardous materials (including hazardous medical materials) associated with the proposed operations; and potential site contamination issues.

4.13.1 Affected Environment

4.13.1.1 Hazardous Materials Use, Handling, and Storage

At LEAD, hazardous materials, hazardous substances, and toxic chemicals are routinely used in maintenance activities and, to a lesser extent, base operation activities. Typical products used would include antifreeze; various petroleum products, oils, and lubricants (POL); brake fluid, hydraulic fluid, cleaners, degreasers, solvents, paints, fuels (gasoline and diesel), and batteries. Hazardous materials are stored in several buildings in the Industrial Area and the areas where hazardous materials, hazardous substances, and toxic chemicals are used in Buildings 1, 320, 350, and 370 (USACE, 1999).

The Installation has a Hazardous Material Management System, which allows for an efficient management and tracking of hazardous material on the installation.

Neither of the sites proposed for BRAC facilities construction contain any known hazardous materials, hazardous substances, and toxic chemicals. The site proposed for TRMF, Hazmat Storage Facility, and the Covered Missile Storage Facility is in an area that has been used exclusively for agricultural purposes and there is no evidence of contamination based on the historical use of the site (LEAD, 2007). No environmental contamination was identified in the area proposed for the addition to the Health Clinic when the existing Health Clinic was moved to the present location as a part of the implementation of BRAC 1995. In addition, no incidents have been reported in the area since the Health Clinic was established (Johnson, 2007b).

4.13.1.2 Hazardous Waste Generation, Storage, and Disposal

Hazardous waste is generated in multiple building at LEAD through industrial operations which include chrome plating shop operation, munitions demilitarization, chemical and mechanical depainting, spray painting, cleaning and degreasing operations, electrical maintenance, battery shop operations, engine and transmission operations, industrial waste treatment plant operations, electronic system maintenance, and base operations support vehicle (USACE, 1999). The hazardous waste generated is identified and classified, and handled in accordance all applicable Federal and State hazardous waste regulations.

LEAD does not have a Resource Conservation and Recovery Act (RCRA) Part B Permit (Quinn, 2007b).

4.13.1.3 Site Contamination Issues

Two National Priorities List (NPL) Sites, the Property Disposal Area and Southeast Area, are located in the southern portion of the installation. Remediation work associated with the Resource Conservation

and Recovery Act has been completed at each location (USACE, 2001a). Neither of the proposed areas is located on those sites.

4.13.1.4 PCBs, Radon, Asbestos, and Lead-based Paint

PCBs - In 1980, transformers at LEAD were surveyed for elevated PCB levels and all transformers with PCB levels above permissible standards have been replaced (USACE, 2001a).

Radon – The Installation is in a high radon area with levels expected to be above the suggested action level of 4 pCi/L (USEPA, 2006d). Radon testing was conducted in buildings that are most frequently occupied. Remediation occurred in eight building that exceeded EPA’s standard and monitoring activities are ongoing (USACE, 2001a). The sites proposed for the BRAC action are currently open areas.

Asbestos Containing Material (ACM) - Approximately 75% of the 250 buildings surveyed in the 1990s were found to contain asbestos containing material (ACM) and abatement is conducted on a case by case basis (USACE, 2001a). The proposed BRAC constructions require neither demolition nor renovation of any buildings; therefore, ACM would not be of concern.

Lead or Lead Based Paint - No formal survey for lead or lead based paints (LBP) has been conducted at LEAD. The original structures were built in the 1940s and most of the structures were built prior to the ban on LBP. Therefore, it is likely that those structures contain lead based paint or lead pipes. The proposed BRAC constructions require neither demolition nor renovation of any buildings, therefore, lead or LBP would not be of concern.

4.13.1.5 Underground/Aboveground Storage Tanks (USTs/ASTs)

No USTs or ASTs are located at the sites proposed for the addition to the Health Clinic and the TRMF, Hazardous Material Storage Facility and Covered Missile Facility (Quinn, 2007b).

4.13.2 Environmental Consequences

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

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

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

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

4.13.2.1 No Action Alternative

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

4.13.2.2 Realignment (Preferred) Alternative

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

Hazardous Materials Use, Handling, and Storage

The proposed BRAC facilities include construction of a 2,000 SF covered hazardous materials storage pad, which will be used to classify, store and hold for disposal hazardous materials generated by the transferred mission. These materials include lubricants, cleaning agents, and other liquids along with solid wastes generated by small-scale blasting and painting operations. The construction and operation of the proposed facilities would require hazardous materials additional to the current requirements in the installation. However, the increase in hazardous material would be minimal (Quinn, 2007b). The hazardous material would be handled in accordance with regulatory, Army, and installation procedures and guidelines. Therefore, no significant impact is anticipated.

Hazardous Waste Generation, Storage, and Disposal

The construction and operation of the proposed facilities would generate hazardous waste additional to the current hazardous waste generated at the installation. However, the increase in hazardous waste would be minimal (Quinn, 2007b; LEAD, 2007). Hazardous waste disposal would be handled in accordance with the Federal, State, and local laws and regulations. Therefore, no significant impact is anticipated.

Site Contamination Issues

Neither of the proposed project area is located on the two NPL sites on the installation. Therefore, it is anticipated that there will be no effect from site contamination.

PCBs, Radon, Asbestos, Lead and Lead-based Paint

As discussed, because the sites proposed under the BRAC action are open areas, PCBs, ACM, and Lead and Lead-Based Paints are not anticipated to be of concern.

Radon may be of concern as the Installation is located in a high radon area with levels expected to be above the suggested action level of 4 pCi/L; however, if the design and construction of the facilities would take this into account and therefore, no significant impact is anticipated.

USTs/ASTs

No effect is expected as there are no USTs/ASTs in the areas proposed for the TRMF site or the addition to the Health Clinic.

4.14 HUMAN HEALTH AND SAFETY

This section describes the affected environment associated with the Explosive Safety Quantity Distance. Explosive Safety Quantity Distance (QD) arc encumbered areas provide protection via distance from any accidental explosions associated with ordinance and ammunition handling and storage.

4.14.1 Affected Environment

An Explosive Safety Quantity Distance (QD) arc area provides protection via distance from any accidental explosions associated with ordinance and ammunition handling and storage. The QD arcs requirements are defined in Safety Ammunition and Explosives Safety Standards, DA PAM 385-64 (DA,

1999). The areas proposed for the Health Clinic addition and the TRMF are located outside of the QD arcs established for LEAD's Ammunition Storage Area. However, due to the nature of the operation, TRMF and the Covered Missile Storage Facility are required to be within Ammunition Storage Area and require their own QD arcs, which have been established (R&K Engineering, 2006).

Public traffic routes (PTR) are treated similar to inhabited buildings when they pass through QD arc encumbered areas, for passengers are subject to accidental explosions much as they would be if inhabitants in a building. If routes have 10,000 or more passengers per day, then inhabited building distance criteria apply.

4.14.2 Environmental Consequences

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

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

Not Significant Effect – Buildings unrelated to TRMF and Covered Missile Facility and Public Transport Route (PTR) would be located within the QD arcs established for the proposed facilities. However, the buildings are not inhabited and the inhabited building distance criteria do not apply to PTR.

Significant Effect – Buildings unrelated to TRMF and Covered Missile Facility and Public Transport Route (PTR) would be located within the QD arcs established for the proposed facilities and the buildings are inhabited and the inhabited building distance criteria apply to PTR.

4.14.2.1 No Action Alternative

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

4.14.2.2 Realignment (Preferred) Alternative

As discussed, the nature of the operation requires that the area proposed for the TRMF and the Covered Missile Facility be located within Ammunition Storage Area. The QD arc established for the proposed facilities would encompass mostly open space. However, the QD arc would also encompass Building 3254, well as approximately 1500 feet of the railroad accessing the Ammunition Storage Area, and approximately 300 feet of East Patrol Road (R&K Engineering, 2006a).

Building 3254 is currently partially inhabited; however, the building will be used for storage purposes only by the time proposed facilities are operational (Repasi, 2007b). Therefore, no significant impact would occur to the building.

The railroad is part of the Ammunition Storage Area operations and is not used for public transport and East Patrol Road is used by the LEAD security personnel for patrolling purposes only (Repasi, 2007b). Therefore, no significant impact would occur to the building and East Patrol Road. Likewise, the access road to the proposed facilities is slated for upgrade and will be part of their operations. The access road is outside the QD arc (Repasi, 2007c).

In addition, the design and construction of the proposed facilities require the review and approval of the U.S. Army Technical Center for Explosives Safety (USATCES) and the Department of Defense Explosive Safety Board (DDESB). The process ensures that the Army's explosive safety requirements are met, therefore, it is not anticipated that significant impact would occur from the proposed action.

4.15 CUMULATIVE EFFECTS SUMMARY

A cumulative impact is defined as “the impacts on the environment that result from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertake such other action” (40 CFR 1508.7). The section goes on to note: “such impacts can result from individually minor but collectively significant actions taking place over a period of time.” Cumulative impacts associated with implementation of the Realignment (Preferred) Alternative would include any impacts from other on-going mission actions that would be incremental to the impacts of constructing and operating the four different projects at LEAD.

Past MILCON projects that were included in the cumulative impacts analysis include:

- Renovate/Expand Industrial Waste Treatment Plant
- Construct Ammunition Truck Blocking and Bracing Facility.
- Renovate Family Housing A/C & Heating
- Construct State of the Art Hazardous Material Storage Facility
- Renovate Tactical Missile Maintenance Facilities #12, 14
- Renovate Tactical Missile Maintenance Bldg #370
- Construct Strategic Mobility Missile Shipping Complex
- Ammunition Infrastructure Improvements (Gate 6D)
- Igloo Door Upgrade (in work)
- Less than Truck Load (LTL) Facility (in work)

Several new projects defined in the 2006 LEAD Requirement Analysis (R&K Engineering, 2006) that may occur simultaneously with construction activities for the Proposed Action, include:

- Child Development Facility
- Headquarters Administration Facility (w/communications and Cafeteria)
- Fire Station
- DPW Complex
- New Main Entrance Gate
- Industrial Waste Water Treatment Plant Upgrades and Expansion
- Ground Support Equipment Maintenance Facility
- Soldier Support Equipment Maintenance Facility
- General Purpose Warehouse Facility
- Addition to Building 350 for Metal Treatment and Surface Prep.)

- Post Office (US Mail as well as FedEx, DHL, etc)
- Electronics Repair Facility
- Physical Fitness Center
- Replace Pole barn

Additionally, several non-federal projects occurring in the vicinity of LEAD were included in the cumulative impacts analysis, including:

- County of Franklin current construction project for a new \$24 million prison in the Cumberland Valley Business Park on land exsessed during 1995 BRAC.
- Proposed construction by private developers for a 30,000-square foot facility adjacent to LEAD on land exsessed during 1995 BRAC.
- “Gateway Parcel” development - construction of new office facilities on lands adjacent to LEAD, completed in 2006.

4.15.1 No Action Alternative

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

4.15.2 Realignment (Preferred) Alternative

Land use

The proposed action is consistent with the mission of LEAD and siting of activities as outlined in the Requirement Analysis, which is the supporting document to the LEAD Real Property Master Plan (RPMP) (currently in progress). The Requirement Analysis identifies requirements and alternatives for resolving real property deficiencies, excesses, and addressed land use issues.

Aesthetic and Visual Resources

The proposed projects would be expected to be consistent with the aesthetic quality of the surrounding buildings. None of the proposed projects are expected to interfere with existing viewsheds. As a result, there projects will not adversely cause significant impacts when added cumulatively to the effects of other construction.

Air Quality

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

Noise

Construction and operation of the TRMF and the addition to the Health Clinic would not contribute to cumulative noise levels in the area as there are no current or proposed future actions scheduled to occur within or adjacent to either of the proposed sites.

Geology and Soils

Impacts to geology, topography, soils, and prime farmlands are site-specific and are not affected by cumulative development in the region. Cumulative impacts would only occur if development were to occur within or immediately adjacent to the site where the proposed actions were to occur, or if development on the site affected geologic resources of the site where other development may occur. Because there are no current or proposed future actions scheduled to occur within or adjacent to the proposed TRMF site and no impacts are expected from the addition to the existing Health Clinic, there would be no significant cumulative impacts to the geology, topography, or soils within or immediately adjacent to the project area.

Water Resources

Cumulative effects result from the incremental consequences of an action when added to other past and reasonable foreseeable future actions (40 CFR 1508.7). Cumulatively, this proposed action may result in minor incremental adverse effects to palustrine forested wetland areas. These effects would be mitigated through the adherence to existing installation policies regarding wetland preservation as stated in the LEAD 2001 INRMP and permit mitigation requirements as stipulated in the US Army Corps of Engineers Section 404 permit. The project as proposed when considered with non-federal development such as Franklin County's proposed prison and the "Gateway Parcel" development would add to the total amount of impervious surface within the Susquehanna River watershed. An increase in impervious surfaces has the potential to make more water flow over land as runoff, prior to entering into streams and their tributaries, often resulting in changes in the water cycle, impacts to riparian areas, and increases in water pollution, which eventually would decrease water quality. Mitigation measures aimed at minimizing adverse cumulative effects include the: reduction and/or maintenance of point and non-point sediment; compliance with general construction NPDES permit limits and requirements; and implementation of Soil Erosion Control Plans including application of BMPs. Further analysis of cumulative effects is recommended to verify this assumption.

Biological Resources

Cumulative impacts to biological resources would not be significant. Some species may be temporarily discouraged from the area through loss of habitat, dust, erosion, and/or noise. However, no rare, threatened, or endangered species are present on LEAD, as discussed in Section 4.8.1.3.

Cultural Resources

There are no cumulative impacts for Cultural Resources. As the TRMF projects have "no effect" under Sec 106 NHPA - there are no significant resources within their APE - they cannot contribute to a cumulative impact. The Health Clinic Addition project has "no adverse effect" under Sec. 106 NHPA, a theoretically higher level, only because it is situated in an area where other existing buildings have status as contributing buildings to a historic district, based upon their historical significance. Other projects which may be constructed in the historic district adjacent to contributing elements can have either an "adverse effect" (if they require the demolition of contributing resources) or "no adverse effect" (if they merely affect the setting of contributing resources), but there is no tipping point or cumulative impact

beyond “No Significant Effect” in NEPA terms that will be created by the construction of the Health Clinic Addition.

Socioeconomics

The addition of the Child Development Facility, Physical Fitness Facility, and Fire Station facilities would have significant positive effects on the quality of life of LEAD employees. The Child Development facility would improve the quality of life for LEAD employees by providing more child care options. Although the ROI has many operating child care centers, there is currently no child care facility on the installation. The physical fitness facility would improve the quality of life for LEAD employees by provide more recreation opportunities on the installation. The fire station would improve the quality of life for LEAD employees by adding to the existing fire and emergency response capabilities on-post.

All other cumulative projects will have a positive effect on economic development due to increased construction spending over current proposed levels. Increased construction spending will contribute to raised incomes, higher sales volume, and increased employment. Whether or not these effects will be significant depends on whether or not this spending will contribute to percentage increases in these categories above historical RTV values.

Transportation

There are two types of cumulative impacts: On-post and Off-post. They are related to upgrades of existing facilities and construction of new buildings, which cause increases in traffic on existing roads that could require new or upgrades to the roads.

In addition to the projects considered under the cumulative impacts there are transportation projects related the ACPs and the parking lots. The details of these projects are as follow:

- *ACPs.* There are plans to change the operations at the ACPs, although no specific details (no 1391 forms written) have been established. The improvements are not expected to be implemented within the next 5 years. LEAD is planning to use the California Gate (Main Gate) for all truck traffic (non - ammunition) to support the maintenance mission, use Gate 6D for all ammunition and missile deliveries, and create a new private-owned vehicle (POV) ACP on the east side of Building 370 on East Patrol road.
- *Parking.* At present parking at LEAD is sufficient. LEAD personnel indicate that “there is parking included in the BRAC TRMF project that is sufficient to cover the transfer of BRAC workload”. Additional parking expansion will be done as needed, where needed. This can be done incrementally over the next 5 years as workload increases.

The implementation of the Action and cumulative projects would certainly increase the congestion level at the post and outside the post. Within the post the analysis of the Preferred Alternative shows that even though the impact would not be significant, the congestion and delay would increase to a point closer to the ACP’s capacity.

Outside of LEAD the three non-federal projects, which are at different stages of development, could contribute additional traffic to the nearby transportation facilities.

- Construction of new office space that was completed in 2006 for an organization with over 300 employees in six locations providing labor to government agencies.
- The Franklin County prison is currently being expanded to solve overcrowding problems. The same number of employees will remain, not causing an increase in trip generation.

- Sales agreements between Franklin County with two world class transportation, storage and logistics companies would total 30,000 square feet in proposed new facilities adjacent to the installation.

The combined traffic generation from these three projects is expected to be less than a 100 vehicles in the AM and PM peak hours.

The incremental effect that the cumulative projects would have in addition to the action alternative could potentially be significant, considering that the traffic increases due to cumulative projects are estimated to be more than 30 percent of the number of trips generated under the Preferred Alternative (see Table 4-14). These estimates are based on limited information regarding the cumulative projects provided for this analysis. The total additional area of new construction is more than 720,000 SF. More details (including number of additional employees) could improve the analysis and may reduce the number of trips estimated to be generated. The projects with most potential trips generation are the Headquarters Administration Facility, the DPW Complex, the Ground Support Equipment Maintenance Facility and the Soldier Support Equipment Maintenance Facility.

Table 4-14. Trips Generated by Cumulative Projects at the ACPs

Gate	AM Inbound Traffic		Gate Capacity	Volume to Capacity		Cumulative vs. Preferred
	Preferred	Cumulative		Preferred	Cumulative	
California	864	1,163	1,050	82%	111%	35%
Wisconsin	111	111	390	28%	28%	0%
Total	975	1,274				

Utilities

The existing installation utility systems are designed to support the operations of over 6,000 employees. The Depot is currently supporting the operations of only approximately 2,400 employees; therefore substantial excess utility capacity is available (Repasi, 2007). The recent past and present projects are not expected to have a cumulative impact on the ability of the providers to continue to provide ample utility services to the installation.

Hazardous and Toxic Substances

The quantities of hazardous material required for and hazardous waste generated from the proposed action would be minimal and is not anticipated to contribute to the cumulative impacts.

Human Health and Safety

The QD arcs established for LEAD Ammunition Supply Area do not encompass the areas proposed for the BRAC action and no other reasonably foreseeable proposed actions would require QD arcs.

4.16 MITIGATION SUMMARY

None of the predicted effects of the proposed action would result in significant impacts; therefore, mitigation is not needed, although the following requirements and permits would be necessary in implementing the projects identified in the analysis. In addition, the Army may consider the use of BMPs in the construction and operation of these facilities.

- **Erosion and Sediment Control, and Stormwater Management:** An erosion and sediment control plan would be required prior to any land disturbances. The proposed projects would also require coverage under Pennsylvania Department of Environmental Protection (PADEP) General National Pollutant Discharge Elimination System (NPDES) Permit for storm water discharges associated with construction activities.
- **Wetlands:** The expected impact on wetlands would require a Pennsylvania State Programmatic General Permit 3 under Section 404 of the Clean Water Act.
- **Best Management Practices (BMPs):** Use of BMPs for controlling runoff, erosion, and sedimentation during construction activities. BMPs could include, but are not limited to, erosion control matting, silt fencing, brush barriers, storm drain outlet protection, stone check dams, rock filter dams, construction exits, temporary and permanent seeding, and the application of mulch.

THIS PAGE INTENTIONALLY LEFT BLANK

5.0 FINDING AND CONCLUSIONS

5.1 FINDINGS

5.1.1 Consequences of No Action Alternative

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

5.1.2 Consequences of Realignment (Preferred) Alternative

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

5.2 CONCLUSIONS

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

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

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

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
<i>Regional Air Pollutant Emissions Summary</i>	No effect.	Effects would not be significant; temporary emissions would not exceed 10% of the allowable limits laid out by the SIP.	Effects would not be significant; emissions would not exceed 10% of the allowable limits laid out by the SIP.
Noise	No effect.	Effects would not be significant; noise from construction of the Health Clinic addition would be temporary, the TRMF, Hazmat Storage Facility would be located in an open area.	Effects would not be significant; the Health Clinic addition would not generate significant noise levels, there are no sensitive receptors in proximity to the TRMF, Hazmat Storage Facility and OSHA standards would be followed to protect the workers.
Geology and Soils			
<i>Geologic and Topographic Conditions</i>	No effect.	Effects would not be significant; minor leveling and grading required.	No effect.
<i>Soils</i>	No effect.	Effects would not be significant; majority of soils are already disturbed or modified.	No effect.
<i>Prime Farmland</i>	No effect.	No effect; no lands suitable for classification as prime farmland.	No effect; no lands suitable for classification as prime farmland.
Water Resources			
<i>Surface Water/Wetlands</i>	No effect.	Effects would not be significant. Minor, long-term impacts to jurisdictional wetland area and unnamed tributary to Muddy Creek. Erosion control and mitigation measures as stipulated in Pennsylvania State and federal water quality permits required under Section 404 of the CWA from the U.S. Army Corps of Engineers and LEADs General National Pollutant Discharge Elimination System (NPDES) permit, Erosion Sediment Pollution Control Plan (ESPCP), and Spill Prevention, Control and Countermeasure Plan (SPCC) would minimize impacts.	Effects would not be significant. Potential impacts to jurisdictional wetland area, and unnamed tributaries to Muddy Creek would be controlled and minimized through adherence to Federal and state regulations as well as LEAD's NPDES permit stipulations, Stormwater Pollution Prevention Plan and SPCC Plan.

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
<i>Hydrogeology/ Groundwater</i>	No effect.	Effects would not be significant. Possible impacts due to the potential for minor oil and antifreeze spills, leaks from vehicles, and pollutant leaching as a result of construction activities. Potential contamination sources would be controlled and minimized by implementation of LEAD's Spill Prevention, Control and Countermeasure Plan and by meeting the requirements of the General NPDES Permit for storm water discharges associated with construction activities.	Effects would not be significant. Possible impacts due to the potential for minor oil and antifreeze spills, leaks from vehicles, etc.
<i>Floodplains</i>	No effect.	No effect.	No effect.
<i>Coastal Zone</i>	No effect.	No effect.	No effect.
Biological Resources			
<i>Vegetation</i>	No effect.	Effects would not be significant from removal of vegetation.	No effect.
<i>Wildlife</i>	No effect.	Effects would not be significant to wildlife. Construction activities could temporarily disturb wildlife in the immediate area.	No effect.
<i>Threatened & Endangered Species</i>	No effect.	No effect.	No effect.
<i>Aquatic Habitat</i>	No effect.	Effects would not be significant.	Effects would not be significant
Cultural Resources			
<i>Built Environment</i>	No effect.	Effects would not be significant.	Effects would not be significant.
<i>Archaeology</i>	No effect.	No effect.	No effect.
<i>Native American Resources</i>	No effect.	No effect.	No effect.
Socioeconomics			
<i>Economic Development</i>	No effect.	Effects would not be significant; approximately 70 construction related jobs would be created, most of which will be temporary.	Effects would not be significant; minor increases in jobs, sales volume, and personal income.
<i>Demographics</i>	No effect.	Effects would not be significant; insignificant increases in the Region of Influence population of a temporary nature.	Effects would not be significant; minor increases in the Region of Influence population.
<i>Housing</i>	No effect.	No effect.	Effects would not be significant; minor increase in demand for housing.

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
<i>Quality of Life</i>	No effect.	No effect.	Effects would not be significant; small number of additional children to be absorbed by ROI school system.
<i>Environmental Justice</i>	No effect.	No effect.	No effect.
<i>Protection of Children</i>	No effect.	No effect.	No effect.
Transportation			
<i>Roadways and Traffic</i>	No effect.	Effects would not be significant; transitory increase in traffic due to construction vehicles.	Effects would not be significant; increased traffic from additional workforce.
<i>Installation Transportation</i>	No effect.	Effects would not be significant	Effects would not be significant
<i>Public Transportation</i>	No effect.	Effects would not be significant	Effects would not be significant
Utilities			
<i>Potable Water Supply</i>	No effect.	Effects would not be significant. Requires normal short-term disruptions from utility extensions.	Effects would not be significant; comparatively small demand would not be cause for system or regulatory limits to be exceeded.
<i>Wastewater System</i>	No effect.	Effects would not be significant. Requires normal short-term disruptions from utility extensions.	Effects would not be significant; comparatively small discharges would not be cause for system or regulatory limits to be exceeded.
<i>Stormwater System</i>	No effect.	Effects would not be significant. Requires normal short-term disruptions from utility extensions.	Effects would not be significant; compliance with all State and Federal guidelines.
<i>Energy Sources</i>	No effect.	Effects would not be significant. Requires normal short-term disruptions from utility extensions.	Effects would not be significant; comparatively small demand would not cause system overloads or shortages.
<i>Communications</i>	No effect.	Effects would not be significant. Requires normal short-term disruptions from utility extensions.	Effects would not be significant; communication requirements can be provided.

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
<i>Solid Waste</i>	No effect.	Effects would not be significant. Requires normal short-term disruptions from utility extensions.	Effects would not be significant: required landfill space not large comparatively; adherence to approved solid waste handling procedures prevents adverse effects during operations.
Hazardous and Toxic Substances			
<i>Hazardous Materials Use, Handling and Storage</i>	No effect.	Effects would not be significant.	Effects would not be significant with proper handling; The operation of the TRMF would require hazardous materials additional to the current requirements in the installation.
<i>Hazardous Waste Generation, Storage, and Disposal</i>	No effect.	Effects would not be significant; little hazardous waste from construction.	Effects would not be significant with proper disposal.
<i>Site Contamination Issues</i>	No effect.	Effects would not be significant; site contamination issues unlikely but would be handled according to the applicable operating procedures if encountered.	No effect.
Human Health and Safety	No effect.	Not applicable as the QD arcs are applicable once the facilities are in operation.	Effects would not be significant; East Patrol Road is used only by the LEAD security personnel; the railroad is part of the operations of the Ammunition Storage Area, used solely for transporting munitions Building 3254 will become a storage building; the QD arcs do not encompass the access road to be upgraded.
Cumulative Impacts			
<i>Land Use</i>	No effect.	Effects would not be significant; projects are consistent with the Requirement Analysis, which supports the Real Property Master Plan.	Effects would not be significant; projects are consistent with the Requirement Analysis, which supports the Real Property Master Plan.
<i>Aesthetic and Visual Resources</i>	No effect.	Effects would not be significant.	Effects would not be significant.
<i>Air Quality</i>	No effect.	Effects would not be significant; increase in annual emissions would not exceed <i>de minimis</i> thresholds.	Effects would not be significant; increase in annual emissions would not exceed <i>de minimis</i> thresholds.
<i>Noise</i>	No effect.	Effects would not be significant; minimal increase in noise levels that would not exceed applicable noise standards.	Effects would not be significant; minimal increase in noise levels that would not exceed applicable noise standards.

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
<i>Geology and Soils</i>	No effect.	Effects would not be significant; majority of soil have been previously disturbed.	Effects would not be significant; majority of soil have been previously disturbed.
<i>Water Resources</i>	No effect.	Effects would not be significant; impacts minimized through use of required BMPs and adherence to existing installation policies	Effects would not be significant; impacts minimized through use of required BMPs and adherence to existing installation policies
<i>Biological Resources</i>	No effect.	Effects would not be significant.	Effects would not be significant.
<i>Cultural Resources</i>	No effect.	No effect	No effect
<i>Socioeconomics</i>	No effect.	Effects would not be significant; increase in sales volume and temporary jobs	Effects would not be significant; creation of jobs, increase in sales volume and increase in permanent population and improved quality of life.
<i>Transportation</i>	No effect.	Effects would not be significant.	Effects would not be significant.
<i>Utilities</i>	No effect.	Effects would not be significant; requires normal short-term disruptions from utility extensions.	Effects would not be significant; relatively small utility requirements compared to other projects.
<i>Hazardous and Toxic Substances</i>	No effect.	Effects would not be significant with adherence to applicable standards and regulations.	Effects would not be significant with adherence to applicable standards and regulations.
<i>Human Health & Safety</i>	No effect.	Effects would not be significant following OSHA and other standards.	Effects would not be significant following OSHA and other standards.

6.0 LIST OF PREPARERS

LEAD, Pennsylvania

Numerous LEAD staff contributed to this EA, including Randy Quinn with the LEAD Environmental Management Division. Mr. Quinn served as the primary post-POC for this effort.

U.S. Army Corps of Engineers, Mobile District

Name	Title	Education/Responsibility	Experience
Beverly Hayes Stout	Project Manager	M.E.M., Resource Ecology, Duke University/Project Management	22 years

The Louis Berger Group, Inc.

Name	Title	Education/Responsibility	Experience
Najja Bracey	Economist	M.A. International Relations and Economics. Responsible for Socioeconomics.	5 years
Andrew Burke	GIS Analyst/ Environmental Scientist	B.S. Geography/GIS and Environmental Science and Policy/Land use. Responsible for GIS analysis and mapping	3 years
Rebecca Byron	Environmental Scientist	B.S. Environmental Science and Policy. Responsible for Air Quality and Administrative Record.	1 year
Timothy Canan, AICP	Manager and Senior Planner	M.U.R.P. Urban and Regional Planning. Responsible for project management and all sections prepared by Louis Berger staff.	17 years
Jess Commerford, AICP	Senior Vice President	B.G.S. Political Science. M.S. Urban and Regional Planning. Responsible for all sections prepared by Louis Berger staff.	17 years
Erin Kimsey	Landscape Architect	B.L.A. Responsible for Aesthetics and Visual Resources	2 years
Lawrence P. Earle, AICP	Senior Planner Environmental Scientist	B.A. Government, M.A. Planning. Responsible for Cultural Resources	31 years
Carlos Espindola, P.E.	Senior Transportation Engineer	M.S. Civil Engineering / Transportation. Responsible for Transportation.	10 years

Name	Title	Education/Responsibility	Experience
Julie Flesch-Pate	Senior Environmental Planner	B.S. Biochemistry/Water Resources. Responsible for Water Resources.	15 years
Joel Gorder	Planner/Environmental Scientist	M.U.R.P. Responsible for Geology and Soils.	11 years
Todd McAuliffe	Planner	M.A. Geography. Responsible for GIS analysis and mapping	3 years
Suni Shrestha	Environmental Scientist	B.S. Environmental Science, Analysis and Planning, Responsible for Noise, Hazardous and Toxic Substances, and Human Health and Safety.	10 years
Tristyne Youngbluth, P.E.	Principal Environmental Engineer	B.S. Civil Engineering. Responsible for Utilities.	13 Years
Julia Yuan	Environmental Scientist	B.S. Environmental and Forest Biology/Forest Resources Management, M.P.S Forest and Natural Resources Management. Responsible for daily task management, Land Use and Biological Resources, GIS analysis and mapping.	5 years

7.0 DISTRIBUTION LIST

This section identifies local, State and Federal agencies that have received a copy of the EA and/or FNSI. Other agencies, groups and individuals were informed of availability through the public notice.

EA and FNSI Distribution List

Federal Agencies

U.S. Environmental Protection Agency,
Region 3
Environmental Programs Branch
Attn: Roy E. Denmark, Jr., Chief
1650 Arch Street (3PM52)
Philadelphia, PA 19103-2029

U.S Department of Agriculture
Natural Resource Conservation Service
Attn: John Clark
Franklin County
550 Cleveland Avenue
Chambersburg, Pennsylvania 17201

U.S. Fish and Wildlife Service
Pennsylvania Field Office
Attn: David Densmore, Supervisor
315 South Allen Street, Suite 322
State College, Pennsylvania 16801

State Agencies

Pennsylvania Department of Environmental
Protection
South-central Regional Office
Attn: Michael Steiner, Regional Director
909 Elmerton Avenue
Harrisburg, Pennsylvania 17110-8200

Pennsylvania Department of Conservation and
Natural Resources
Ecological Services Section, Bureau of Forestry
Attn: Aura Stauffer, Chief
6th Floor, Rachel Carson State Office Building
400 Market Street
Harrisburg, Pennsylvania 17105-8767

Pennsylvania Natural Diversity Inventory-
Central
Bureau of Forestry
Attn: Chris Firestone, Plant Program Manager
P.O. Box 8552
Harrisburg, Pennsylvania 17105-8552

Bureau for Historic Preservation
Division of Archaeology and Protection
Attn: Douglas McLearn, Chief
Keystone Commonwealth Building
400 North Street, 2nd Floor
Harrisburg, Pennsylvania 17120-0093

Local Government

Franklin County Commissioners
Attn: Warren Elliott
Franklin County Courthouse
157 Lincoln Way East
Chambersburg, PA 17201

Green Township
Board of Supervisors
1145 Garver Lane - P.O. Box 215
Scotland, PA 17254-0215

Letterkenny Township
4924 Orrstown Road
Orrstown, PA 17224

Library

Coyle Free Library
102 North Main Street,
Chambersburg, PA 17201

Notice of Availability Distribution List

Newspaper

The Public Opinion
77 N. 3rd Street
Chambersburg, PA 17201

THIS PAGE INTENTIONALLY LEFT BLANK

8.0 REFERENCES

- (AIRNow, 2007). Air Quality Guide for Ozone. Last updated: 14 January 2007. Accessed at: <http://airnow.gov/index.cfm?action=static.consumer>
- (DA, 1999). Department of the Army. 15 December 1999 Army Regulation 385–64: Safety Ammunition and Explosives Safety Standards. Headquarters, Washington, DC.
- (DOD, 1998). U.S. Department of Defense. Office of the Deputy Under Secretary of Defense (Environmental Security). April 1998. *Department of Defense and the Chesapeake Bay*, Washington, D.C. Accessed at: <https://www.denix.osd.mil/denix/Public/News/Earthday98/Chesapeake/bay.html>
- (DoD and USEPA, 1990). U.S. Department of Defense and U.S. Environmental Protection Agency. Cooperative Agreement Between Department of Defense and Environmental Protection Agency Concerning Chesapeake Bay Activities. Accessed on: 11 January 2007. Accessed at: <https://www.denix.osd.mil/denix/Public/ES-Programs/Compliance/Memos/note4.html>
- (Franklin County, No date). Franklin County, Pennsylvania, USA Online! Franklin County Integrated Transportation System. Accessed on 12 January 2007. Accessed at: <http://www.co.franklin.pa.us/franklin/cwp/view.asp?a=1449&q=463284&franklinNav=|27585>.
- (Global Security, 2006). Global Security. Org. Letterkenny Army Depot. Modified 21 January 2006. Accessed at: <http://www.globalsecurity.org/military/facility/letterkenny.htm>
- (Johnson, 2007a). Email communication between Todd Johnson (Hazardous Material Manager, LEAD) and Julia Yuan (the Louis Berger Group, Inc.) on 15 February 2007.
- (Johnson, 2007b). Personal communication between Todd Johnson (Hazardous Material Manager, LEAD) and Suni Shrestha (the Louis Berger Group, Inc.) on 19 January 2007.
- (Kindlin, 2007). Personal communication between Craig Kindlin (Natural Resources Manager, LEAD) and Julia Yuan (the Louis Berger Group, Inc.) on 17 January 2007.
- (LEAD, No date). Letterkenny Army Depot Home Page. *History*. Access on 14 January 2007. Accessed at: <http://www.letterkenny.army.mil/history.html>
- (LEAD, 2005). Letterkenny Army Depot. 7 October 2005. BRAC 2005 Implementation Plan for Letterkenny Army Depot.
- (LEAD, 2006). Letterkenny Army Depot. DD Form 1391 for PN 63366, Theater Readiness Monitoring Facility (Guided Missile Maintenance Building).
- (LEAD, 2007). Letterkenny Army Depot. 6 February 2007. MEMORANDUM FOR District Engineer, U.S. Army Engineer District, Baltimore (CENAB-EN-M, Mr. Antoine Plessy). SUBJECT: Identification of Special Circumstances for Design Initiation of the Guided Missile Maintenance Building, (or TRMF), Letterkenny Army Depot, BRAC 2005 MCA, FY08,PN 063366
- (Leonard, 2006). David E. Leonard, Transformation Manager, Chief, Transformation Office, Letterkenny Army Depot. Comment for Draft Description of Proposed Actions and Alternatives (DOPPA), received through BRAC Management and Implementation System (BMAIS) on 20 November 2006.

(NCBAR, 2005). North Carolina Bar Association Foundation. 2005. *You Can't Always Get What you Want...Navigating in the Brave New World of Land Use and Environmental Law in the 21st Century*.

(NCES, 2003-2004a) National Center for Education Statistics. School Data for Cumberland County. Accessed at:

http://nces.ed.gov/ccd/schoolsearch/school_list.asp?Search=1&InstName=&SchoolID=&Address=&City=&State=42&Zip=&Miles=&County=cumberland&PhoneAreaCode=&Phone=&DistrictName=&DistrictID=&SchoolType=1&SchoolType=2&SchoolType=3&SchoolType=4&SpecificSchlTypes=all&IncGrade=-1&LoGrade=-1&HiGrade=-1

(NCES 2003,-2004b) National Center for Education Statistics. School Data for Franklin County. Accessed at:

http://nces.ed.gov/ccd/schoolsearch/school_list.asp?Search=1&InstName=&SchoolID=&Address=&City=&State=42&Zip=&Miles=&County=franklin&PhoneAreaCode=&Phone=&DistrictName=&DistrictID=&SchoolType=1&SchoolType=2&SchoolType=3&SchoolType=4&SpecificSchlTypes=all&IncGrade=-1&LoGrade=-1&HiGrade=-1

(NCES, 2003-2004c) National Center for Education Statistics. School Data for Huntingdon. Accessed at: http://nces.ed.gov/ccd/schoolsearch/school_list.asp?Search=1&InstName=&SchoolID=&Address=&City=&State=42&Zip=&Miles=&County=huntingdon&PhoneAreaCode=&Phone=&DistrictName=&DistrictID=&SchoolType=1&SchoolType=2&SchoolType=3&SchoolType=4&SpecificSchlTypes=all&IncGrade=-1&LoGrade=-1&HiGrade=-1

(PADEP, 1996). Pennsylvania Department of Environmental Protection. Pennsylvania Coastal Zone Management Program. 1996 *Commonwealth of Pennsylvania Coastal Zone Management Program, Guidance Document*.

(PADEP, 2006). Pennsylvania Department of Environmental Protection. Bureau of Air Quality. November 2006. State Implementation Plan Revision: Maintenance Plan and Base Year Inventory: Franklin Eight Hour Ozone Non-attainment Area.

(PADEP, 2007). Pennsylvania Department of Environmental Protection. Bureau of Air Quality. Ambient Air Quality Standards in Pennsylvania. Accessed at: <http://www.dep.state.pa.us/dep/deputate/airwaste/aq/standards/standards.htm>.

(PAVisNet, No date). Pennsylvania Visitors Network, *Franklin County, Pennsylvania*. Accessed on 14 January 2007 Accessed at: [:http://www.pavisnet.com/franklin/are.html](http://www.pavisnet.com/franklin/are.html)

(Quinn, 2007a). Email communication between Randall Quinn (Environmental Coordinator, LEAD) and Julia Yuan (the Louis Berger Group, Inc.) on 15 February, 2007.

(Quinn, 2007b). Personal communication between Randy Quinn (Environmental Coordinator, LEAD) and Suni Shrestha (the Louis Berger Group, Inc.) on 19 January 2007.

(R&K Engineering, 2006a). R&K Engineering. *Requirement Analysis*. October 2006. Prepared for Letterkenny Army Depot by R&K Engineering, Roanoke, Virginia.

(R&K Engineering 2006b). R&K Engineering. *Draft Master Plan*. Prepared for Letterkenny Army Depot, Pennsylvania.

- (Resau, 2006). Tom Resau, Alion Contractor, Industrious Branch, Letterkenny BRAC D Project Manager. Comment for Draft Description of Proposed Actions and Alternatives (DOPPA), received through BRAC Management and Implementation System (BMAIS) on 20 November 2006.
- (Repasi, 2007a). Personal communication between Joseph Repasi (Master Planner, LEAD) and Tristyne Youngbluth (the Louis Berger Group, Inc.) on 17 January 2007.
- (Repasi, 2007b). Personal communication between Joseph Repasi (Master Planner, LEAD) and Suni Shrestha (the Louis Berger Group, Inc.) on 5 March 2007.
- (Repasi, 2007c). Personal communication between Joseph Repasi (Master Planner, LEAD) and Suni Shrestha (the Louis Berger Group, Inc.) on 8 March 2007.
- (Sgroi, 2007a). Personal communication between Joseph Sgroi (Director of Resource Management, LEAD) to Najja Bracey (the Louis Berger Group, Inc.) on 16 January 2007.
- (Sgroi, 2007b). Personal communication between Joseph Sgroi (Director of Resource Management, LEAD) and Najja Bracey (the Louis Berger Group, Inc.) on 11 January.
- (Stats Indiana, 2006a). Stats Indiana. Labor data for United States; Pennsylvania; and Franklin, Huntingdon, and Cumberland Counties, Pennsylvania. Updated 27 November 2005. Accessed at: http://www.stats.indiana.edu/uspr/a/us_profile_frame.html
- (Stats Indiana, 2006b). Income data for United States; Pennsylvania; and Franklin, Huntingdon, and Cumberland Counties, Pennsylvania. Updated 27 November 2005. Accessed at: http://www.stats.indiana.edu/uspr/a/us_profile_frame.html
- (Stats Indiana, 2006c). Population data for United States; Pennsylvania; and Franklin, Huntingdon, and Cumberland Counties, Pennsylvania. Updated 27 November 2005. Accessed at: http://www.stats.indiana.edu/uspr/a/us_profile_frame.html
- (Stats Indiana, 2006d). Housing data for United States; Pennsylvania; and Franklin, Huntingdon, and Cumberland Counties, Pennsylvania. Updated 27 November 2005. Accessed at: http://www.stats.indiana.edu/uspr/a/us_profile_frame.html
- (Stewart, 2007). Personal communication between Jack Stewart (Installation Housing, LEAD) and Najja Bracey (the Louis Berger Group, Inc.) on 9 January 2007.
- (Tetra Tech, 2001). *Final Integrated Natural Resources Management Plan, for Letterkenny Army Depot, 2001 – 2005*. February 2001. Prepared for Letterkenny Army Depot, U.S. Army Materiel Command Installations and Services Activity by Tetra Tech, Inc., Fairfax, Virginia
- (USACE, 1999). U.S. Army Corps of Engineers, Baltimore District. December 1999. *Environmental Assessment: Current and Future Base Operations*. Prepared for Letterkenny Army Depot, Franklin County, Pennsylvania.
- (USACE, 2001a). U.S. Army Corps of Engineers, Baltimore District. May 2001. *Environmental Assessment: Field Ammunition Supply Area Development*. Prepared for Letterkenny Army Depot, Franklin County, Pennsylvania.

- (USACE, 2001b) U.S. Army Corps of Engineers, Baltimore District. May, 2001. *Phase I Cultural Resource Investigation: Field Ammunition Supply Area Development, Letterkenny Army Depot, Franklin County, Pennsylvania*. Prepared for Letterkenny Army Depot, Franklin County, Pennsylvania.
- (USACE, 2006a). U.S. Army Corps of Engineers. 1 July 2006. *Pennsylvania State Programmatic General Permit – 3 (PASPGP-3)*.
- (USACE, 2006b) U.S. Army Corps of Engineers, Baltimore District. March, 2006 *Draft Integrated Cultural Resources Management Plan, Letterkenny Army Depot*. Prepared for Letterkenny Army Depot, Chambersburg, PA.
- (USACE, 2006c) U. S. Army Corps of Engineers, Baltimore District. December, 2006. *Phase I Cultural Resource Investigation: Theater Readiness Monitoring Facility: Letterkenny Army Depot, Letterkenny, Greene, and Hamilton Townships, Franklin County Pennsylvania*. Prepared for Letterkenny Army Depot, Letterkenny, Pennsylvania.
- (USACE, 2007). U. S. Army Corps of Engineers, Baltimore District. January 2007. *Wetland Delineation, Letterkenny Army Depot, Theater Readiness Monitoring Facility*. Prepared for Letterkenny Army Depot, Chambersburg, PA.
- (US Census, 1995). U.S. Census Bureau. Population of Counties by Decennial Census: 1900 to 1990, Pennsylvania. 27 March 1995. Accessed at:
<http://www.census.gov/population/cencounts/pa190090.txt> and
- (US Census, 2000). U.S. Census Bureau. Summary File 3 (SF3) Data for Housing., H3, H6, H8, H76, H85. http://factfinder.census.gov/servlet/DTTable?_bm=y&-context=dt&-ds_name=DEC_2000_SF3_U&-CONTEXT=dt&-mt_name=DEC_2000_SF3_U_H001&-mt_name=DEC_2000_SF3_U_H006&-mt_name=DEC_2000_SF3_U_H008&-mt_name=DEC_2000_SF3_U_H015&-mt_name=DEC_2000_SF3_U_H085&-tree_id=403&-redoLog=true&-all_geo_types=N&-caller=geoselect&-geo_id=05000US42041&-geo_id=05000US42055&-geo_id=05000US42061&-search_results=01000US&-format=&-_lang=en
- (US Census, 2005). U.S. Census Bureau. Population Division, Interim State Population Projections, 2005. Last revised 21 April, 2005. Accessed at:
<http://www.census.gov/population/www/projections/projectionsagesex.html>)
- (USDA, 1994). United States Department of Agriculture. Farmland Protection Policy Act. 1981. Updated in 1994
- (USDA, 2004) U.S. Department of Agriculture, Natural Resources Conservation Service. 2004. Prime and other Important Farmlands: Franklin County, Pennsylvania Tabular Data Version Date: 03/03/2004. Accessed via Soil Data Mart at:
<http://soildatamart.nrcs.usda.gov/Report.aspx?Survey=PA055&UseState=PA>
- (USDA, 2006) U.S. Department of Agriculture, Natural Resources Conservation Service. 2006. *Natural Resources Conservation Service Web Soil Survey (Franklin County, Pennsylvania)*. Accessed at:
<http://websoilsurvey.nrcs.usda.gov/app/>.
- (USEPA, 1971). U.S. Environmental Protection Agency. *Noise from Construction and Operations, Building Equipment and Home Appliances*. NTID 300.1. Washington, D.C.

- (USEPA, 2006a). U.S. Environmental Protection Agency. AirData: Air Quality Index Report: Franklin County, PA. 2002-2006. Last Updated: 4 December 2006. Accessed at: <http://iaspub.epa.gov/airsdata/adaqs.aqi?geotype=co&geocode=42055&geoinfo=%3Fco%7E42055%7EFranklin+Co%2C+Pennsylvania&year=2006+2005+2004+2003+2002&sumtype=co&fld=gname&fld=gcode&fld=stabbr&fld=regn&rpp=25>
- (USEPA 2006b). U.S. Environmental Protection Agency. AirData: Monitor Values Report – Criteria Air Pollutants: Franklin County, PA; Ozone, 2002-2006. Last Updated: 4 December 2006. Accessed at: <http://iaspub.epa.gov/airsdata/adaqs.monvals?geotype=co&geocode=42055&geoinfo=%3Fco%7E42055%7EFranklin+Co%2C+Pennsylvania&pol=O3&year=2006+2005+2004+2003+2002&fld=monid&fld=siteid&fld=address&fld=city&fld=county&fld=stabbr&fld=regn&rpp=25>.
- (USEPA 2006c). U.S. Environmental Protection Agency. National Ambient Air Quality Standards. Last updated 13 October, 2006. Accessed at: <http://epa.gov/air/criteria.html>
- (USEPA, 2006d). U.S. Environmental Protection Agency. EPA Maps of Radon Zones – Pennsylvania. Last Updated : 7 September 2006. Accessed on 14 January 2007. Accessed at: <http://www.epa.gov/radon/zonemap/pennsylvania.htm>
- (USFWS, 2007). U.S. Fish and Wildlife Service. Response letter for proposed realignment activities at Letterkenny Army Depot, USFWS Project #2007-0755. 18 January 2007.
- (World Climate, No date). Climate Data for 39 N 77 W, Chambersburg 1ESE, Franklin County, Pennsylvania, USA. Accessed on 3 January 2007. Accessed at: <http://www.worldclimate.com/cgi-bin/grid.pl?gr=N39W077>

THIS PAGE INTENTIONALLY LEFT BLANK

9.0 PERSONS CONSULTED

Individual	Affiliation
James Coccagna	Letterkenny Army Depot, Engineering and Planning Division
David Densmore	U.S. Fish and Wildlife Service, Pennsylvania Field Office, Supervisor
Greg Epstein	Letterkenny Army Depot, Environmental Management Office
Rodney Gettig	Letterkenny Army Depot, Director of Public Works
Todd Johnson	Letterkenny Army Depot, Environmental Management Office
Erin Kendall	Letterkenny Army Depot, Environmental Management Office
Craig M. Kindlin	Letterkenny Army Depot, Natural Resources Manager, Environmental Management Office
David Leonard	Letterkenny Army Depot, Chief, Transformation Office
Randall Quinn	Letterkenny Army Depot, Environmental Coordinator, Environmental Management Office
Joseph Repasi	Letterkenny Army Depot, Master Planner, Engineering and Planning Division
Joseph Sgroi	Letterkenny Army Depot, Director of Resource Management
Jed Starner	Letterkenny Army Depot, Engineering and Planning Division
Beverley H. Stout	Mobile District, US Army Corps of Engineers Military Planning and Environmental Compliance
Christopher Urban	Pennsylvania Fish & Boat Commission, Division of Environmental Service, Chief, Natural Diversity Section

THIS PAGE INTENTIONALLY LEFT BLANK

10.0 ACRONYMS AND ABBREVIATIONS

µg	micrograms
ACM	Asbestos Containing Material
ACP	Access Control Point
AIRFA	American Indian Religious Freedom Act
AMC	U.S. Army Material Command Engineering Activity
AMCOM	U.S. Army Missile Command
AL	Alabama
AMC	U.S. Army Material Command Engineering Activity
AP	Allegheny Power
APE	Area(s) of Potential Effect
AQI	Air Quality Index
AR	Army Regulation
ARPA	Archaeological Resource Protection Act
AST	aboveground storage tank
BCE	Before the Common Era
BMPs	Best Management Practices
BRAC	Base Realignment and Closure
CA	California
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CARC	Chemical Agent Resistant Coating
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERL	U.S. Army Construction Engineering Research Laboratory
CFR	Code of Federal Regulations
CO	carbon monoxide
CWA	Clean Water Act
CZM	Coastal Zone Management
DA	Department of the Army
dB	decibel
dBA	decibels on an A-weighted scale
DD	Department of Defense (forms only)
DDESB	Department of Defense Explosive Safety Board
DISA WESTHEM	Defense Information Systems Agency Western Hemisphere
DLA	Defense Logistics Agency
DoD	Department of Defense
DRMS	Defense Reutilization and Marketing Office
EA	Environmental Assessment
EIFS	Economic Impact Forecast System
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
°F	degrees Fahrenheit
FASA	Field Ammunition Supply Area
FNSI	Finding of No Significant Impact
FPCON	Force Protection Condition
GIS	Geographic Information Systems

HAWK	Homing All the Way Killer.
HUC	Hydrologic Unit Code
ICRMP	Integrated Cultural Resources Management Plan
ICUZ	Installation Compatible Use Zone
IL	Illinois
ILSC	U.S. Army Industrial Logistics System Center
INRMP	Integrated Natural Resources Management Plan
ITE	Institute of Transportation Engineers
IWP	Industrial Water Treatment Plant
kV	kilovolt
LBP	lead-based paints
LEAD	Letterkenny Army Depot
LEMC	Letterkenny Munitions Center
LIDA	Letterkenny Industrial Development Authority
m ³	cubic meter
NA	Not applicable
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPS	National Park Service
NRHP	National Register of Historic Places
NRCS	Natural Resource Conservation Service
O ₃	ozone
OB/OD	Open burning/open detonation
OSHA	Occupational Safety & Health Act
PAM	pamphlet
PA	Pennsylvania
PA	Programmatic Agreement
Pb	lead
PCB	Polychlorinated Biphenyl
PL	Public Law
PM ₁₀	particulate matter, ten microns
PM _{2.5}	particulate matter, 2.5 microns
POL	petroleum, oils, and lubricants
ppm	parts per million
PADEP	Pennsylvania Department of Environmental Protection
PATRIOT	Phased Array Tracking Radar Intercept On Target
QD	Quantity Distance
RCRA	Resource Conservation and Recovery Act
RF	Radio Frequency
ROI	Region of Influence
RONA	Record of Non-Applicability
RPMP	Real Property Master Plan
RTV	rational threshold value
SDWA	Safe Drinking Water Act
SF	square foot/feet

SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SIPP	Site Incident Prevention Plan
SO	sulfur oxide
SO ₂	sulfur dioxide
SR	State Route
tpy	tons per year
TACOM	Tank Automotive and Armaments Command
TMDE	Test, Measurement, and Disposal Equipment
TRMF	Theater Readiness Monitoring Facility
TSCA	Toxic Substance Control Act
U.S.	United States
USACE	U.S. Army Corps of Engineers
USATA	U.S. Army Test Measurement and Diagnostic Equipment Activity
USATCES	U.S. Army Technical Center for Explosives Safety
USC	U.S. Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
VOC	volatile organic compound

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDICES

APPENDIX A

REALIGNMENT ACTIONS AT LETTERKENNY ARMY DEPOT¹

Secretary of Defense Recommendation:

1. Close Red River Army Depot, TX. Relocate the depot maintenance of Tactical Vehicles to Tobyhanna Army Depot, PA and Letterkenny Depot, PA. Relocate the depot maintenance of Tactical Missiles to Letterkenny Army Depot, PA.

Secretary of Defense Justification:

This recommendation supports the strategy of minimizing the number of industrial base sites performing depot maintenance for ground and missile systems. The receiving depots have greater maintenance capability, higher facility utilization and greater opportunities for inter-service workloading. This recommendation reinforces Anniston's and Letterkenny's roles as Centers of Industrial and Technical Excellence for Combat Vehicles (Anniston) and Missile Systems (Letterkenny).

Community Concerns:

The community stated that the Army must retain all depots to support the warfighter and combatant commanders, disputed DoD's assertion of excess capacity, and claimed the recommendation deviated substantially from the military value criteria. The community focused on the Industrial Joint Cross Service Group's creation of 2.6 million direct labor hours of capacity at Anniston and Letterkenny Army Depots to justify closure of the Red River Army Depot (RRAD) over Army objections, and the artificial use of a 60 hour work week instead of the DoD 40-hour standard for determining capacity. Also highlighted was the disestablishment of the top-ranked Defense Distribution Red River, TX, center due to the potential closure of the RRAD. The community emphasized that there was no excess capacity to eliminate because Red River was running at twice its 2003 level of effort and pointed to a major backlog of Bradley Fighting Vehicles and High Mobility Multipurpose Wheeled Vehicles (HMMWV) awaiting repair at the depot. They also highlighted that RRAD is the only facility that strips and replaces track pads and manufactures M1 road wheels. The community proposed leaving the Red River Army Depot, Munitions Center, and Defense Distribution Center intact. The community argued that the economic impact from closure would be devastating, creating a projected unemployment rate exceeding 14 percent of the total employment in the seven surrounding rural towns.

Commission Findings:

The Commission found that many vehicle and weapons systems repaired at Red River are critical to ongoing real time efforts in Operations Iraqi Freedom/Enduring Freedom, and was unwilling to take the risk of closing a ground vehicle depot-level maintenance facility during a time of war and uncertainty. The Army is already surging its industrial base capacity with the execution of 12 million direct labor hours (DLH) in fiscal year 2004, and goals of 19 million DLH in fiscal year 2005 and 25 million DLH in fiscal year 2006 at the Army's five maintenance depots. The Commission found that Red River is operating at twice its fiscal year 2003 level (when BRAC data-calls were issued) and that there is no current excess capacity within the Army's maintenance depots. The Army's depot level maintenance

¹ Excerpts from the BRAC 05 Report: *Base Closure and Realignment Report*, Volume I. U.S. Department of Defense. May 2005.

workload has and continues to increase to respond to several critical Army efforts. Ongoing business process reengineering efforts have also successfully resulted in significant process improvements at each of the maintenance depots. In response to community concerns, the Commission recalculated the economic impact to incorporate increased staffing, and if closure had been approved, it would have resulted in a negative economic impact of 8.3 percent of area jobs. The Commission's analysis determined that the amended realignment recommendation would best meet the military's future needs and requirements.

Commission Recommendations:

The Commission found the Secretary of Defense substantially deviated from final selection criteria 1, 2, 3 and 6 and the Force Structure Plan. Therefore, the Commission recommends the following:

- *Relocate the depot maintenance of Tactical Missiles to Letterkenny Army Depot, PA.*

Secretary of Defense Recommendation:

2. Realign Marine Corps Logistics Base Barstow, CA. Consolidate depot maintenance of Tactical Missiles at Letterkenny Army Depot, PA.

Secretary of Defense Justification:

This recommendation follows the strategy of minimizing sites using maximum capacity of 1.5 shifts while maintaining a West Coast depot maintenance presence at Marine Corps Logistics Base Barstow to provide West Coast operating forces with a close, responsive source for depot maintenance support. Required capacity to support workloads and core requirements for the DoD is relocated to other DoD Centers of Industrial and Technical Excellence, thereby increasing the military value of depot maintenance performed at these sites. This recommendation decreases the cost of depot maintenance operations across DoD through consolidation and elimination of 30 percent of duplicate overhead structures required to operate multiple depot maintenance activities. This recommendation supports transformation of DoD's depot maintenance operations by increasing the utilization of existing capacity by up to 150 percent while maintaining capability to support future force structure. This recommendation also results in utilization of DoD capacity to facilitate performance of interservice workload. In addition, based on present and future wartime surge projections, Marine Corps Logistics Center Barstow will establish an additional 428,000 hours of amphibious vehicle capacity. This recommendation, along with other recommendations affecting supply and storage functions, optimizes the depot

Community Concerns:

The Barstow community argued DoD's recommendation concerning ground depot maintenance performed at Marine Corps Logistics Base Barstow substantially deviated from BRAC selection criteria 1, 3 and 6, as well as from the Force Structure Plan. They claimed Marine Corps and Army models of ground combat maintenance are fundamentally and qualitatively different, and these differences significantly affect combat-readiness and combat-effectiveness. The community said DoD erred by leaving cycle time (turnaround time) out of the computation of military value, incorrectly based comparisons on a commodity to-commodity rather than depot-to-depot basis, and that adopting the Army model of depot maintenance for Marine Corps equipment would greatly increase cycle times. The community stated the Marine Corps, not the Army, is America's "9-1-1 Emergency Response Force" and that the recommendation, if adopted, would violate the National Military Strategy and the 20-Year Force Structure Plan. Barstow representatives also claimed DoD sought savings at the expense of readiness. The community asserted DoD substantially deviated from Criteria 6 in assessing local economic impact, estimating the impact at 8 percent of Barstow's labor force rather than the one-tenth of one percent estimated by DoD.

Lastly, Barstow advocates opposed the idea of closing two Marine Corps depots and transferring the workload to Red River Army Depot, TX, as an alternative to the DoD recommendation to close Red River Army Depot. The combined workload from two Marine Corps depots would not make a significant difference in Red River's capacity utilization rate, and Army depots do not have the facilities, equipment or workforce to handle the Marines' unique amphibious vehicle requirements.

Commissions Findings:

The Commission agreed with the Secretary of Defense that the proposed realignment of Marine Corps Logistics Base Barstow, CA will decrease the cost of depot maintenance operations across DoD while increasing the military value to the Warfighter. The community's contentions that cycle times would be degraded, and the quality of work would suffer, were not supported by the Commission's review and analysis. The realignment recommendation will leave in place sufficient depot surge capacity while generating cost savings.

Commission Recommendations:

The Commission found the Secretary's recommendation consistent with the final selection criteria and the Force Structure Plan. Therefore, the Commission approves the recommendation of the Secretary:

- *Realign Marine Corps Logistics Base Barstow, CA. Consolidate depot maintenance of Tactical Missiles at Letterkenny Army Depot, PA.*

Secretary of Defense Recommendation:

3. Realign Naval Weapons Station Seal Beach, CA, as follows: ... and relocate the depot maintenance of Tactical Missiles to Letterkenny Army Depot, PA.

Secretary of Defense Justification:

This recommendation supports depot maintenance function elimination at Naval Weapons Station Seal Beach and follows the strategy of minimizing sites using maximum capacity at 1.5 shifts. This recommendation eliminates over 243,000 SF of depot maintenance production space with annual facility sustainment and recapitalization savings of \$1.1M. Required capacity to support workloads and Core requirements for the Department of Defense (DoD) is relocated to other DoD Centers of Industrial and Technical Excellence, thereby increasing the military value of depot maintenance performed at these sites. This recommendation decreases the cost of depot maintenance operations across DoD by consolidation and elimination of 30 percent of duplicate overhead structures required to operate multiple depot maintenance activities. Additionally, this recommendation supports transformation of the Department's depot maintenance operations by increasing the utilization of existing capacity by up to 150 percent while maintaining capability to support future force structure. Another benefit of this recommendation includes utilization of DoD capacity to facilitate performance of interservice workload.

Community Concerns:

The Seal Beach community noted the base would lose positions and work to four different locations. In particular, they said the recommendation to "relocate the depot maintenance of Tactical Missiles to Letterkenny Army Depot, PA," made absolutely no sense. They claimed the Navy mischaracterized this work as depot maintenance, when in reality it consists of about \$500 worth of work polishing, removing dents, tightening screws, etc. on missile containers which are returned to Seal Beach and reunited with missiles sent to the Fleet. They indicated these tasks are more efficiently performed at Seal Beach, rather than spending \$960 per missile container shipping it from Seal Beach to the East Coast and back again. The community also noted that San Diego-based ships would benefit from having West Coast-based

support to adjust, install, and trouble-shoot fire-control and aircraft landing radar, rather than shipping it back to the depot at Tobyhanna, PA, and overhauling it there.

Commission Findings:

The Commission found no reason to disagree with the recommendation of the Secretary of Defense regarding the first elements of the recommendation. The Commission carefully considered the community concerns relating to the subrecommendation dealing with West Coast support for Fire Control Systems and Components, Radar, and Radio equipment. However, the Commission determined that this issue did not rise to the level of requiring a revision to the DoD recommendation.

The Commission found that the segment of DoD's recommendation to direct work and personnel to Letterkenny Army Depot to correct work more efficiently performed at Seal Beach, where related work is already performed, deviated substantially from criteria #1 and #4. Rejection of the proposal also avoids holding missiles in inventory awaiting only delivery of their shipping containers from the East Coast. Therefore, the Commission deleted the section of the recommendation referring to the relocation of missile container work to Letterkenny.

Commission Recommendations:

The Commission found that the Secretary of Defense deviated substantially from final selection criteria 1 and 4, as well as from the Force Structure Plan. Therefore, the Commission recommends the following: Realign Naval Weapons Station Seal Beach, CA, as follows: relocate the depot maintenance of Electronic Components (Non-Airborne), Fire Control Systems and Components, Radar, and Radio to Tobyhanna Army Depot, PA; relocate the depot maintenance of Material Handling to Marine Corps Logistics Base Albany, GA; and relocate the depot maintenance of Other Components to Anniston Army Depot, AL.

The Commission found that this change and the recommendation as amended are consistent with the final selection criteria and the Force Structure Plan.

Secretary of Defense Recommendation:

4. Realign Rock Island Arsenal, IL, by relocating the depot maintenance of Combat Vehicles and Other to Anniston Army Depot, AL, and the depot maintenance of Other Equipment and Tactical Vehicles to Letterkenny Army Depot, PA.

Secretary of Defense Justification:

This recommendation supports minimizing the number of depot maintenance sites through the consolidation of Rock Island's remaining Combat Vehicle workload and capacity at Anniston Army Depot, the Army's Center for Industrial and Technical Excellence for Combat Vehicles. The recommendation also increases overall depot capability utilization by consolidating Rock Island's remaining Tactical Vehicle workload and capability at Letterkenny, the depot with the highest Military Value for Tactical Vehicle maintenance. This recommendation eliminates over 160,000 SF of depot maintenance production space with annual facility sustainment and recapitalization savings of \$0.6M. This recommendation also decreases the cost of depot maintenance operations across DoD by consolidation and elimination of 30 percent of duplicate overhead structures required to operate multiple depot maintenance activities. Finally, this recommendation facilitates future interservice utilization of DoD depot maintenance capacity.

Community Concerns:

The Illinois/Rock Island Arsenal community argued DoD greatly deviated from the selection criteria by not basing its decisions regarding the Rock Island Arsenal on military value and cost savings. Rock Island Arsenal Tank Automotive and Armaments Command (TACOM) had a higher military value score than Detroit Arsenal TACOM, yet the lower-ranked facility would gain the management of the Depot Level Repairable mission. The community claimed facilities at Detroit Arsenal had insufficient space to accommodate Rock Island's TACOM mission. The community expressed concerns about discrepancies in the number of positions identified (740 versus 1,129) with the moves and efficiencies at TACOM Rock Island, which in their view underestimated true costs. Similarly, they asserted military construction costs identified in the COBRA data for Detroit Arsenal were grossly understated by either \$42 million or \$85 million, depending on the source of data. They claimed a move to Michigan raised Force Protection and Antiterrorism issues, since Rock Island Arsenal meets and exceeds force protection requirements, while Detroit does not. Moving Rock Island TACOM away from the Engineering support and PEO combat system could also result in the loss of synergy. The community voiced concerns about the recommendation for the Joint Manufacturing & Technology Center (JMTC-RI), questioning the categorization of the JMTC-RI in comparing Depot Maintenance hours. The bulk of JMTC-RI workload is not Depot Maintenance, and therefore this may have been misreported. The Civilian Personnel Operations Center (CPOC) and Defense Finance and Accounting Service (DFAS) center, both located on Rock Island, were rated number one in military value compared to similar facilities. CPOC was recently assigned the highest-priority missions for human resources. The community recommended that the Commission overturn the Pentagon's BRAC recommendation to realign TACOM, CPOC and other activities at Rock Island Arsenal.

Commission Findings

The Commission found that DoD's proposed realignment of Rock Island Arsenal, IL, will decrease the cost of depot maintenance operations while increasing the military value to the warfighter. In response to community concerns, the Commission examined the appropriateness of transferring TACOM from a higher quantitatively ranked installation to a lower ranked installation but found that military value is measured by military judgment as well as by numerical calculation and that military judgment was reasonably exercised in this recommendation. The Commission also found that while cost projections might vary, they did not vary sufficiently to call into question the logic and financial soundness of the proposal, nor did potential cost variances rise to the level of a substantial deviation from the final selection criteria.

Commissions Recommendations:

The Commission found the Secretary's recommendation consistent with the final selection criteria and the Force Structure Plan. Therefore, the Commission approves the recommendation of the Secretary:

- ***Realign Rock Island Arsenal, IL, by relocating the depot maintenance of Combat Vehicles and Other to Anniston Army Depot, AL, and the depot maintenance of Other Equipment and Tactical Vehicles to Letterkenny Army Depot, PA.***

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX B

GENERAL CONFORMITY APPLICABILITY ANALYSIS

This general conformity applicability analysis was conducted to identify potential increases or decreases in criteria air pollutant emissions associated with the Proposed Action Letterkenny Army Depot in Pennsylvania. Since the project would occur within a U.S. Environmental Protection Agency (U.S. EPA) designated basic ozone non-attainment area, it is subject to the federal conformity requirements. The purpose of the analysis is to further determine the applicability of the Federal General Conformity Rule established in 40 CFR, Part 93 entitled: *Determining Conformity of Federal Actions to State or Federal Implementation Plans* to the Proposed Action.

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

1.0 PROJECT DESCRIPTION

The following describes the BRAC-related projects assessed in this EA. Figure 2-2 identifies the project locations.

Theater Readiness Monitoring Facility (PN 63366)

To support this realignment, it is necessary to construct a Theater Readiness Monitoring Facility (TRMF). Square footage of the TRMF is identified on existing DD1391 as 40,000 SF but has been further refined to approximately 35,000 SF (LEAD, 2005; Leonard, 2006). Facility includes substantial dividing walls, can and decan areas, loading dock, test bays, operation bays, Electromagnetic Radio Frequency (RF) shielding, grounding, raised floor areas, controlled humidity, clean room, administrative area, break room, rest room, explosion proof lighting, cold storage area, inert gas lines, cranes, storage areas, CARC paint area, fire protection to include alarm, sprinkler system, fire pump, intrusion detection, emergency generator and building information systems. Supporting facilities include lighting protection, external security lighting, paved access road, 0.75-acre (~ 80 spaces) operational parking, and security fence.

Covered Missile Storage Facility. Construct a 2,000 SF storage facility for Tactical Missiles. Storage of missiles to be worked through the TRMF require quantity-distance compliant storage that may not be available in existing earth-covered magazines depending upon the conventional storage requirements imposed upon LEMC. This project is needed to ensure that adequate storage space for the new mission is available.

Hazardous Materials Storage Facility. Construction of a 2,000 SF new covered hazardous materials storage pad is required to classify, store, and hold for disposal hazardous materials that will be generated by the transferred mission. These wastes include lubricants, cleaning agents, and other liquids along with solid wastes generated by blasting and painting operations.

Health Clinic Addition. Construction of a 690-square-foot addition to building 332, the existing Health Clinic (located adjacent to building 331), is required to accommodate increased BRAC staffing and provide storage area for additional employee health records. The increase in staff and records volume is necessary to provide health services to the additional personnel associated with the new missions.

2.0 METEOROLOGY/CLIMATE

Temperature is a parameter used in calculations of emissions for air quality applicability. Chambersburg, Pennsylvania is typically characterized by cold winters and warm summers with periods of high humidity. The average annual temperature in Chambersburg is 52 degrees (°) Fahrenheit (F). The average maximum temperature is 84.4° F, with the hottest temperatures typically recorded in July. The average minimum temperature is 19.8° F, with the coldest weather occurring in January.

Precipitation in the Chambersburg region is relatively stable throughout the year. Precipitation averages approximately 40.4 inches per year. (World Climate, 2007)

3.0 CURRENT AMBIENT AIR QUALITY CONDITIONS

Ozone is monitored in Franklin County at one site located at SR 1857 and US 301. This ozone monitor has recorded a peak of 27 exceedances (days in which area ozone levels exceeded the NAAQS standard) in 2002. In 2003, there were 3 days above the standard. Since 2003, there have been zero days where the monitor has recorded ozone levels above the NAAQS standard. Table B-1 shows the existing ozone monitoring data within Franklin County, PA (U.S. EPA, 2006b).

Table B-1. Existing 8-Hr Ozone Monitoring Data within Franklin County, PA

Monitoring Station	Year				
	2002	2003	2004	2005	2006
#420550001 – SR1857/US301 – Ozone	0.108/0.106	0.095/0.090	0.076/0.072	0.076/0.075	0.071/0.069

Ozone values are in parts per million (ppm); 1st/2nd highest data

Source: U.S. EPA 2006b

NAAQS: 8-hour average = 0.08 ppm (0.085 is an exceedance)

4.0 AIR QUALITY REGULATORY REQUIREMENTS

The U.S. EPA defines ambient air in 40 CFR Part 50 as “that portion of the atmosphere, external to buildings, to which the general public has access.” In compliance with the CAA and the 1977 and 1990 Clean Air Act Amendments (CAAA), the U.S. EPA promulgated NAAQS. The NAAQS were enacted for the protection of the public health and welfare, allowing for an adequate margin of safety. To date, the U.S. EPA has issued NAAQS for six criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO₂), particles with a diameter less than or equal to a nominal 10 micrometers (PM₁₀), ozone (O₃), nitrogen dioxide (NO₂), and lead (Pb). The U.S. EPA promulgated a standard for fine particulates (PM_{2.5}) in April 2005; however, PM_{2.5} *de minimis* thresholds are not yet finalized. Areas that do not meet NAAQS are called non-attainment areas.

The U.S. EPA classified the Franklin County area, including the project area, as being in basic non-attainment for ozone. The NAAQS for ozone are presented in Table B-2.

Table B-2. Ambient Air Quality Standards for Ozone

Pollutant	Federal Standard	Pennsylvania Standard ¹
Ozone (O ₃) ¹ 8-Hour Average	0.08 ppm	0.12 ppm

¹ Primary and secondary standards for this pollutant are identical.

ppm – parts per million.

Source: U.S. EPA 2006c; PADEP, 2007

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

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

Direct emissions are those caused by, or initiated by, the federal action that occur at the same time and place as the action. Indirect emissions are those caused by the action, but which occur later in time and/or at a distance removed from the action itself, yet are reasonably foreseeable and the federal agency responsible for the action can maintain control as part of the actions program responsibility. To determine the applicability of the Rule to this action, emissions must be estimated for the ozone precursor pollutants nitrogen oxides (NO_x) and volatile organic compounds (VOC). Annual emissions for these compounds were estimated for the project to determine if it would be below or above the *de minimis* levels established in the Rule. The *de minimis* for moderate ozone non-attainment areas is 100 tons per year (TPY) for both NO_x and VOCs.

In addition to evaluating air emissions against *de minimis* levels, emissions are also evaluated for regional significance. A federal action that does not exceed the threshold emission rates for criteria pollutants may still be subject to a general conformity determination. The federal action is subject to a general conformity determination if the direct and indirect emissions from the action exceed 10 percent (%) of the total emissions inventory for a particular criteria pollutant in a non-attainment or maintenance area. If the emissions exceed this 10% threshold, the federal action is considered to be a “regionally significant” activity, and thus, the general conformity rules apply.

5.0 CONFORMITY APPLICABILITY ANALYSIS

For the proposed BRAC-related actions at Letterkenny Army Depot, a General Conformity analysis is required to be performed. This conformity analysis and air emissions evaluation will follow the criteria regulated in 40 CFR Parts 6, 51, and 93, *Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule* (November 30, 1993).

5.1 CONSTRUCTION PHASE EMISSIONS

Construction emissions would result from the operation of heavy equipment, the commuter vehicle traffic from the construction crew, and the painting of both parking spaces and interior building spaces. The project would utilize a mix of heavy equipment for construction, mainly associated with preparing the site for the building and utility relocation.

5.1.1 Emissions from Heavy Equipment

Annual emissions were calculated for various types of diesel construction vehicles using the U.S. EPA’s document *Exhaust Emission Factors for Nonroad Engine Modeling—Compression-Ignition* (Report No. NR-009A, USEPA, 1998b). Truck emission levels were calculated using the U.S. EPA’s *MOBILE6* model for an average temperature of 52° F. The total annual emissions, in tons per year, were determined for each vehicle based on the number of vehicles used and the number of operating hours per year. It was

assumed that construction activities would last approximately 18 months (360 workdays). Emissions factors used for construction vehicles, under all alternatives, are shown in Table B-3.

Table B-3. Emissions Factors for Construction Vehicles

Construction Vehicle Type	Emissions Factors lbs/hr-vehicle	
	NO _x	VOC
Grader	1.53	0.12
Chipping Machine	5.29	0.59
Chain Saws	4.79	0.64
Dozer	4.73	0.25
Concrete Truck	2.94	0.23
Front End Loader	3.45	0.20
Paver	1.30	0.10
Vibratory Roller	1.49	0.11
Pneumatic Tire Roller	0.94	0.10
Steel Wheel Roller	0.94	0.10
Concrete Pumper Truck	2.94	0.23
Backhoe	1.52	0.25
Crane	1.17	0.11
Pick-up Truck*	0.79	0.56
Dump Truck (heavy duty) *	7.03	0.61
Excavator	3.15	0.16
Scraper	5.25	0.28
Delivery Truck (Medium)*	0.80	0.55
Delivery Truck (Heavy)*	3.90	0.36

*units are in grams/mile/vehicle

For this analysis it was assumed that delivery trucks and pick-up trucks would make 5 trips per day and travel 10 miles per trip, for a total of 50 miles per day. It was also assumed that each dump truck would make 6 trips per day and travel 10 miles per trip when used during trenching activities, equaling approximately 334 miles traveled daily.

5.1.1.1 Calculations for Construction Emissions

Using the emissions factors in Table B-4, annual construction emissions were calculated for the Proposed Action at Letterkenny. Using the assumptions described above, the annual construction emissions in tons per year of NO_x and VOC were calculated for each vehicle type using the appropriate equations displayed in Table B-4.

Table B-5 summarizes the total annual emissions for the heavy equipment used during construction based upon hours of usage.

Table B-4. Equations for Construction Emissions Calculations

Emission Source	Equation	Sample Calculation
Heavy Equipment Emissions, On-Site	(# of vehicle type) (Emission factor) (Total # of days in operation) (percent usage) (hours/day) (1 ton/2000 lbs) = TPY of air emissions	(1 grader) (1.53 lbs/hr/vehicle) (26 days in operation) (100% usage) (8 hours/day) (1 ton/2000 lbs) = 0.16 TPY of NO_x emissions
Construction Crew, Commuting	(# of vehicles) (#miles/day) (#days) (emissions factor grams/mile) (1 lb/453.59 grams) (1ton/2000 lb) = TPY	(40 vehicles) (80 miles/day) (360 days) (0.95 grams/mile/vehicle) (1 lb/453.59 grams) (1ton/2000 lb) = 0.80 TPY NO_x of Vehicle

Table B-5. Total Emissions from On-Site Construction Activity – Proposed Action

Construction Vehicle Type	Number of Vehicles	Length of Operation (days)	Total Annual Emissions –TPY	
			NO _x	VOC
Grader	1	26	0.16	0.009
Chipping Machine	1	5	0.02	0.001
Chain Saws	2	11	0.02	0.002
Dozer	1	13	0.16	0.013
Concrete Truck	1	47	0.55	0.04
Front End Loader	1	16	0.20	0.014
Paver	1	3	0.01	0.001
Vibratory Roller	1	37	0.22	0.019
Pneumatic Tire Roller	1	3	0.01	0.00
Steel Wheel Roller	2	5	0.04	0.002
Concrete Pumper Truck	1	188	2.21	0.17
Backhoe	1	381	2.31	0.37
Crane	1	141	0.66	0.06
Pick-up Truck	5	495	0.178	0.15
Dump Truck	9	46	0.136	0.137
Excavator	1	14	0.18	0.011
Scraper	6	55	1.15	0.06
Delivery Truck (Medium)	1	15	0.001	0.00
Delivery Truck (Heavy)	1	71	0.032	0.00
Total Emissions¹			6.54	0.93

¹ In this table the sum of the emissions for the individual vehicle types maybe slightly different than the calculated Total Emissions due to rounding the numbers to the nearest hundredth.

5.1.2 Emissions from Construction Crew Workers

Emissions from construction personnel commuting to and from the work site were calculated using the U.S. EPA’s *MOBILE6*. It was assumed that the construction crew would consist of approximately 40 workers during the 18-month (360-workdays) construction period. For a conservative analysis, it was assumed that each person would commute to the site and that each would drive approximately 80 miles

each day. Based on *MOBILE6*, the emission factors for NO_x and VOC for the average fleet in Franklin County, PA is 0.95 grams/mile/vehicle and 0.954 grams/mile/vehicle, respectively. Based on the above assumptions, it was calculated that the total emissions associated with the commuting of the construction crew to and from the project site would be approximately 0.80 TPY of NO_x and 0.81 TPY of VOC.

5.1.3 Emissions from Painting Activities

When calculating VOC emissions from painting building structures it was assumed that water-based latex paint with a VOC content of one pound per gallon would be used, and that one gallon of paint would cover approximately 300 SF. It was also assumed that three coats of paint would be applied (one primer and two finish) to approximately 31,554 ft² of interior surfaces (this excludes the unheated storage areas which are assumed to not need painting). Based on these assumptions, approximately 316 gallons of paint would be needed to paint the interior building spaces and this would create approximately 0.16 TPY of VOC emissions.

Calculated emissions from painting parking spaces were based on the following assumptions: stripes would be 4-inches wide, the average parking space would be 9 feet wide by 19 feet long, and every two parking spaces would share a common line; resulting in approximately 20 SF that needs to be painted for every two parking spaces. It was assumed that alkyd paint with a VOC content of three pounds per gallon would be used to paint the parking spaces and that one gallon of paint would cover approximately 200 SF. It was also assumed that one coat of paint would be applied to the parking surfaces. There will be approximately 80 personal vehicle parking spaces that will need to be painted. Based on the construction of 80 parking spaces at the facility, the amount of area to be painted, and the number of gallons of paint required, the VOC emissions for painting the parking spaces would be approximately 0.01 TPY.

5.1.4 Summary of Construction Emissions

After the emissions analysis was performed for all aspects of construction, the totals were added together to determine the combined construction emissions. Table B-6 displays a summary of the findings compared to the *de minimis* values for each alternative.

Table B-6. Total Emissions from Construction Related Activities –Proposed Action

Construction Activity	Total Emissions (TPY)		<i>De minimis</i> values –TPY	
	NOx	VOC	NOx	VOC
Use of Heavy Equipment (on –site construction)	6.54	0.93	100	100
Construction Crew Workers	0.80	0.81		
Painting	NA	0.16		
Total Emissions from Construction¹	7.35	1.90		

¹ In this table the sum of the emissions of the individual construction and painting activities may be slightly different than the calculated Total Emissions from Construction due to rounding the numbers to the nearest hundredth.

5.2 OPERATIONAL EMISSIONS

5.2.1 Heating Source Emissions

The DD1391 for the Proposed Action does not provide an estimated energy usage for the proposed facilities at Letterkenny Army Depot; therefore energy usage was estimated based on previously conducted environmental assessments where energy usage for similar facilities was known. The estimate generated for the combined number 2 fuel oil usage for boilers and water heaters was approximately 0.75 gallons of fuel oil per SF of office space per year. Furthermore, using the U.S. EPA's *AP-42 Fifth Edition, Compilation of Air Pollution Emission Factors Volume I, Chapter 1: Stationary Sources, Supplement E* (U.S. EPA, 1998a), the emission factors for NO_x and VOC were determined for the facility boilers and water heaters. For NO_x emissions, the facility boilers and water heaters fall in the category of small, uncontrolled boilers that emit 55 lb NO_x /10³ gal of fuel oil. The emission rate for total organic compounds (TOC) was found to be 1.28 lb/10³ gal of fuel oil. Using these emission factors and the stated fuel oil demand based on the combined 40,000 SF of space for the proposed facilities to be heated, the emissions of NO_x and VOC were calculated to be approximately 0.825 TPY and 0.0192 TPY, respectively.

For the emergency generator, EPA's *Report No. NR-009A Exhaust Emission Factors for Nonroad Engine Modeling – Compression-Ignition* was used to determine NO_x and VOC emissions. The DD 1391 for the TMRF does not state the proposed size of the emergency generator; therefore the size of the proposed generator was estimated based on previously conducted environmental assessments where the generator size for similar facilities was known. The emergency generator is assumed to be 850 kW (1140 Hp). Assuming that a new generator with a model year from 2004 to 2007 (classified as Tier 2 Regulation) would be used, resulting NO_x emissions are 4.5 g/hp-hr and VOC emissions of 0.3 g/hp-hr. These emission factors were used, assuming that the generators operated at maximum horsepower for a total of 200 hours per year. The 200 hours include up to 10 hours per month of scheduled tests plus an allowance for emergency use. Using these assumptions, the annual emissions of NO_x and VOC were calculated to be 1.055 TPY NO_x and 0.075 TPY VOC, respectively.

5.2.2 Vehicle Emissions from Daily Commuters

Vehicle emissions from daily commuters are based on the U.S. EPA's *MOBILE6* air modeling program estimating the emissions per vehicle per mile traveled. The *MOBILE6* modeling program takes into account the vehicle age, average speed, and vehicle type to create average emission factors to be used in an overall analysis. The analysis assumed that the annual average temperature for the ROI is 52° F. Based on this assumption, the NO_x and VOC emissions factors for an average commuter vehicle are provided in Table B-7.

Table B-7. Emission Factors for Daily Commuter Vehicles

Pollutant	Emissions Factor - grams/mile/vehicle (lbs/km/vehicle)
NO _x	0.950
VOC	0.954

The annual emissions in tons per year of NO_x and VOC for commuter vehicle emissions were calculated using the appropriate equations displayed in Table B-8.

Table B-8. Equations for Daily Commuter Emissions Calculations

Emission Source	Equation	Sample Calculation
Daily Commuters	(# of vehicles) (# of trips/day) (#miles/trip) (#days/year)= #miles/year (#miles/year) (emissions factor grams/mile) (1 lb/453.59 grams) (1ton/2000 lb) = TPY of Vehicle Emissions	(200 vehicles) (2 trips/day) (25 miles/trip) (240 days/year) = (2.4 million miles/year) (0.95 g/mile/vehicle) (1 lb/453.59 grams) (1 ton/2000 lbs) = 2.51 TPY NO_x

Implementing the Proposed Action would result in an increase in present staffing levels at Letterkenny by 174 daily employees. For the analysis, it was assumed that these employees would commute approximately 50 miles round trip to the Depot. Based on these assumptions, the additional daily vehicle emissions are shown in Table B-9.

Table B-9. Additional Emissions from Increased Daily Commuter Vehicle Traffic

Total Annual Emissions – TPY	
NO _x	VOC
2.51	2.52

5.3 REGIONAL SIGNIFICANCE

In addition to *de minimis* levels, air emissions were also evaluated to determine regional significance. The *2006 State Implementation Plan Revision: Maintenance Plan and Base Year Inventory: Franklin Eight-Hour Ozone Non-attainment Area* (PADEP, 2006) sets forth daily target levels for the 2009 maintenance year emissions inventory. The inventory is broken down by major source category. Emissions inventory and the sources applicable to this proposed action are displayed in Table B-10. The increase in annual emissions from the Proposed Action would not make up 10% percent or more of the available SIP, and would therefore not be regionally significant. Air quality impacts are therefore not considered to be significant.

Table B-10. Emissions Inventory Summary for the 2009 Maintenance Year (tons per summer day)

Major Source Category	NO _x Emissions	VOC Emissions
Stationary Area Sources	0.7	7.8
Highway Vehicles	12.7	7.3
Nonroad Engines/Vehicles	3.4	2.2

6.0 OVERALL RESULTS

Table B-11 summarizes the total emissions associated with the Proposed Action at Letterkenny Army Depot. Construction related emissions would be temporary and only occur during the 18-month construction period for the facilities. Operational emissions associated with the operation of the generator and the boilers for heating the facilities would be long-term and occur throughout the life of the facility.

When compared to the *de minimis* values of 100 TPY for NO_x and VOC for this ozone non-attainment area, the emissions associated with implementing the Proposed Action are below the *de minimis* levels. As a result the Proposed Action is not subject to the General Conformity Rule requirements.

Table B-11. Total Emissions from the Proposed Action

Activity	Construction Emissions (TPY)		Operation Emissions (TPY)		Combined Emissions (TPY)	
	NO _x	VOC	NO _x	VOC	NO _x	VOC
Heavy Equipment (building/parking)	6.54	0.93			6.54	0.93
Construction Crew Commuting Vehicles	0.80	0.81			0.80	0.81
Painting	NA	0.16			NA	0.16
Stationary Heating Unit (boiler and water heater)			1.87	0.09	1.87	0.09
Daily Commuter Traffic			2.51	2.52	2.51	2.52
Totals					16.11	4.51

Air Quality Applicability Analysis References

- (PADEP, 2007). Pennsylvania Department of Environmental Protection. 2007. Bureau of Air Quality. Ambient Air Quality Standards in Pennsylvania. <http://www.dep.state.pa.us/dep/deputate/airwaste/aq/standards/standards.htm>.
- (RS Means, 2005). *Building Construction Cost Data*. RS Means Company Inc: Kingston, MA.
- (USEPA, 1996). U.S. Environmental Protection Agency. 1996. *Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Developed, Funded or Approved under Title 23 U.S.C. or the Federal Transit Act*. 40 CFR Part 51, Subpart T.
- (USEPA, 1997). U.S. Environmental Protection Agency. 1997. *MOBILE6 Emission Factor Model, for Trucks year 2006 Vehicle Emissions*.
- (USEPA, 1998a). U.S. Environmental Protection Agency. 1998. *Compilation of Air Pollutant Emission Factors, Volume I, Chapter 1 Supplement E: Stationary Sources, AP-42, 5th edition*.
- (USEPA, 1998b). U.S. Environmental Protection Agency. February 13, 1998, revised June 15, 1998.. *Exhaust Emission Factors for Nonroad Engine Modeling-Compression-Ignition, Report No. NR-009A*.
- (USEPA, 1999). U.S. Environmental Protection Agency. *National Primary and Secondary Ambient Air Quality Standards*. 40 CFR Part 50.
- (USEPA, 2006a). U.S. Environmental Protection Agency. AirData: Air Quality Index Report: Franklin County, PA. 2002-2006. 4 December 2006. Accessed at: <http://iaspub.epa.gov/airsdata/adaqs.aqi?geotype=co&geocode=42055&geoinfo=%3Fco%7E42055%7EFranklin+Co%2C+Pennsylvania&year=2006+2005+2004+2003+2002&sumtype=co&fld=gname&fld=gcode&fld=stabbr&fld=regn&rpp=25>
- (USEPA, 2006d). U.S. Environmental Protection Agency. 2006d. Understanding the Air Quality Index. Last updated: 14 January 2007. Accessed at: <http://airnow.gov/index.cfm?action=aqibroch.aqi#4>.
- (USEPA, 2007). U.S. Environmental Protection Agency. Greenbook - 8-Hour Ozone Non-attainment State/Area/County Report. Last updated: 5 January 2007. Accessed at: <http://www.epa.gov/oar/oaqps/greenbk/gncs.html#PENNSYLVANIA>
- (World Climate, No date). Climate Data for 39 N 77 W, Chambersburg 1ESE, Franklin County, Pennsylvania, USA. Accessed on 3 January 2007. Accessed at: <http://www.worldclimate.com/cgi-bin/grid.pl?gr=N39W077>

GENERAL CONFORMITY – RECORD OF NON-APPLICABILITY

Project/Action

Name: Implementation of BRAC 05 Realignment in Letterkenny Army Depot, PA

Project/Action

Identification Number: _____

Project/Action

Point of Contact: Randall Quinn
 Environmental Coordinator, Environmental Management Division
 Telephone: (717) 267-9022

Begin Date: September 23, 2005

End Date: September 15, 2011

General Conformity under the Clean Air Act, Section 176 has been evaluated for the project described above according to the requirements of 40 CFR 93, Subpart B. The General Conformity Rule applies to federal actions occurring in regions designated as being in non-attainment for the NAAQS or attainment areas subject to maintenance plans (maintenance areas). Threshold (*de minimis*) rates of emissions have been established for federal actions with the potential to have significant air quality impacts. If a project/action located in an area designated as non-attainment exceeds these *de minimis* levels, a general conformity analysis is required. Franklin County is designated as a basic ozone non-attainment area thus the VOC and NO_x thresholds apply.

A General Conformity Analysis of this project/action is not required because:

Total direct and indirect emissions from this project/action have been estimated at:

NO_x: 16.11 tons; VOC: 4.51 tons

and are below the *de minimus* levels established in 40 CFR 93.153 (b) of:

NO_x: 100 tons; VOC: 100 tons;

Furthermore, the project/action is not considered regionally significant under 40 CFR 93.153 (i). Franklin County is in attainment for criteria pollutants PM₁₀, PM_{2.5}, CO, SO₂ and Pb and therefore these pollutants are not subject to conformity review.

Supporting documentation and emissions estimates can be found in Section 4.4 and Appendix B of the Environmental Assessment document.

 16 Apr 07

Randall Quinn
Environmental Coordinator,
Environmental Management Division
Letterkenny Army Depot

THIS PAGE INTENTIONALLY LEFT BLANK

**APPENDIX C – WETLAND DELINEATION, LETTERKENNY ARMY
DEPOT THEATER READINESS MONITORING FACILITY**



**US Army Corps
of Engineers**
Baltimore District

**WETLAND DELINEATION
LETTERKENNY ARMY DEPOT
THEATER READINESS MONITORING FACILITY**



Prepared for: **Letterkenny Army Depot
Chambersburg, MD**

Prepared by: **U.S. Army Corps of Engineers, Baltimore District
P.O. Box 1715
Baltimore, Maryland 21203-1715**

JANUARY 2007

**WETLAND DELINEATION
LETTERKENNY ARMY DEPOT
THEATER READINESS MONITORING FACILITY**



Prepared for:

Letterkenny Army Depot
Chambersburg, MD

Prepared by:

U.S. Army Corps of Engineers
Baltimore District
P.O. Box 1715
Baltimore, Maryland 21203

JANUARY 2007

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	STUDY PURPOSE.....	1
1.2	STUDY AREA	1
2.0	METHODS	1
2.1	DATA COLLECTION AND ANALYSIS.....	1
2.2	WETLAND DELINEATION.....	1
2.3	GLOBAL POSITIONING SYSTEM (GPS) METHODOLOGY	2
3.0	FINDINGS	2
3.1	GENERAL WETLAND FINDINGS	2
3.1.1	Vegetation.....	2
3.1.2	General Soil Characteristics.....	3
3.1.3	Hydrology	3
3.2	JURISDICTIONAL WETLANDS.....	3
3.2.1	Wetland Area Descriptions.....	4
3.3	JURISDICTIONAL WATERS.....	5
4.0	CONCLUSIONS	5
5.0	REFERENCES	6

LIST OF TABLES

Table 3.1.	Soils at the TRMF Site, LEAD.....	3
Table 4.1	Wetlands at the TRMF Site	4

APPENDICES

Appendix A: Maps of the TRMF Site

- Location of Letterkenny Army Depot and Theater Readiness Monitoring Facility Site
- Theater Readiness Monitoring Facility Site
- Topography at TRMF Site
- Jurisdictional Wetlands at TRMF Site
- TRMF 35% Design

Appendix B: Plant List

Appendix C: Soil Series Map and Description

Appendix D: Project Information Form and Wetland Data Forms

Appendix E: Letter of Jurisdictional Determination

Appendix F: Photographs

1.0 INTRODUCTION

1.1 STUDY PURPOSE

The purpose of this investigation was for the U.S. Army Corps of Engineers, Baltimore District (Corps) to identify and delineate and make a jurisdictional determination of wetlands found on the proposed Theater Readiness Monitoring Facility (TRMF) site at Letterkenny Army Depot (LEAD), Chambersburg, PA, as requested by LEAD. This purpose was achieved through (1) collection and synthesis of existing wetland and waters information; and (2) site visit to conduct routine wetland delineation as prescribed in the 1987 *Corps of Engineers Wetland Delineation Manual*. A jurisdictional determination was made by the Corps Regulatory Branch as a result of this investigation, exerting Regulatory jurisdiction over the five wetlands found at this site.

1.2 STUDY AREA

The study area for this investigation was the TRMF site at LEAD, located in Franklin County, Chambersburg, PA. LEAD is approximately 17,700 acres, of which over 12,000 acres are ammunition storage. The TRMF site is located within the ammunition storage area on approximately 30 acres in the southeastern portion of LEAD. Bayonet Road and Booster Road are the northern and western boundaries, while a railroad runs along the eastern edge and the Unnamed Tributary to Muddy Run runs along the southern edge.

The TRMF site is primarily an open abandoned agricultural field with a small patch of forest in the northwest corner and a wooded riparian corridor along the Unnamed Tributary to Muddy Run on the southern edge. The terrain at the TRMF site is gently rolling with elevations ranging from 700 to 720 feet above mean sea level. Maps of the site are found in Appendix A.

2.0 METHODS

2.1 DATA COLLECTION AND ANALYSIS

Existing wetland information and GIS data were collected from various sources for preliminary analysis and identification of potential wetland areas on the TRMF site. Sources of data include: USGS topographic quadrangles, USDA soil surveys, aerial photography (USGS, 2004), and U.S. Fish and Wildlife Service's National Wetland Inventory (NWI) maps. A composite map for analysis was created in GIS by overlaying the aerial photography, topography, soils, and wetlands data. Potential wetlands to verify in the field were identified by areas with any of the following: wetland inclusions in NWI mapping, hydric soils, streams, low-lying areas, and wet or dark signatures on the aerial photographs.

2.2 WETLAND DELINEATION

The wetland delineation was performed as prescribed in the 1987 *Corps of Engineers Wetland Delineation Manual* and subsequent guidance memoranda, as Federal and state agencies require use of these documents for jurisdictional investigations. Two representatives from the Corps conducted the delineation on 8 and 9 January 2007. Data sheets were completed for each sample location with corresponding pictures. Wetland boundaries were marked with flags.

2.3 GLOBAL POSITIONING SYSTEM (GPS) METHODOLOGY

The field survey was completed using Global Positioning System (GPS) technology. The objective of the GPS survey was to collect location data for each wetland delineation flag, soil sample point, and picture. This survey horizontally references the North American Datum of 1983 (NAD83), Pennsylvania State Coordinate System (Zone 3702).

The survey utilized the Trimble GeoXT handheld GPS system for GIS data collection yielding sub-meter horizontal accuracy. The geographic location (x and y coordinate) of each wetland boundary flag, soil sample and picture location was taken using GPS. This data was then transferred into ArcGIS 9.1 for analysis and mapping.

3.0 FINDINGS

3.1 GENERAL WETLAND FINDINGS

Wetlands are defined by the presence of hydrophytic vegetation, hydric soils, and wetland hydrology factors in accordance with methods prescribed for determining federal and state regulatory jurisdiction. Wetlands exist where all three parameters have been field verified.

Analysis of soils, aerial photos, topographic maps, and NWI mapping indicate the presence of a wetland along the tributary at the southern edge of the TRMF site. In this area, the soils are mapped as hydric (Maurertown series) and USFWS designated the wetland as a freshwater forested/shrub wetland. The soils on the remainder of the site are categorized as upland soils.

Two drainages appear on the aerial photography on the western and eastern edges of the TRMF site. On the western side, a drainage appears to run from the top western corner, through the patch of woods and south through the field to the tributary. The drainage on the eastern side appears to originate in the field and run south to the forested area.

Results of the site visits confirm the presence of the mapped NWI wetland and the two drainages that appear on the aerial photography. Detailed analysis of the NWI wetland reduced the size of this wetland and broke it into three parcels separated by upland area along the tributary. The two drainages were marked as linear wetlands following secondary tributaries.

3.1.1 Vegetation

For purposes of wetland identification, many plants are assigned an indicator status by the USFWS, which is useful for determining the probability of their occurrence in wetlands. At the TRMF site, 14 species of herbs, 9 species of shrubs and vines, and 5 tree species were identified in the vicinity of the identified wetlands and streams. Identification of some plant species within the fields was difficult due to recent mowing activities and time of year. The identified plant species are presented on the attached plant list (Appendix B) with their indicator status. No plant species observed on the site are considered rare, threatened, or endangered in Pennsylvania.

3.1.2 General Soil Characteristics

The Franklin County, Pennsylvania soil survey (USDA, 1975) identifies three soil series at the TRMF site: Berks, Maurertown and Weikert (Table 3.1). The Berks and Weikert soils are both well drained soils formed in material that weathered from shale, siltstone and sandstone. The Maurertown soils are hydric soils that are very deep and poorly drained, typically formed in clayey alluvial deposits on low stream terraces and floodplains. These soils are found along the floodplain of the Unnamed Tributary to Muddy Run. See Appendix C for further information about these soil types.

Table 3.1. Soils at the TRMF Site, LEAD

Soil Name	Map Symbol	Hydric
Berks channery silt loam, 3 to 8% slopes	BkB	No
Maurertown silt loam	Mb	Yes
Weikert channery silt loam, 3 to 8% slopes	WeB	No
Weikert very channery silt loam, 3 to 8% slopes	WkB	No

3.1.3 Hydrology

Evidence of wetland hydrology was observed in the areas identified as wetland during the site investigation, and included saturated soils, shallow ponding, wetland drainage patterns, blackened leaves/vegetation, oxidized rhizospheres and water in soil pits. Morphological plant adaptations including elevated root systems, and fluting and flaring of tree trunks on multiple age classes of pin oak (*Quercus palustris*) and green ash (*Fraxinus pennsylvanica*) also supported presence of wetland hydrology. Two significant rain events between 5 and 7 January left surface drainages flowing a bit high on 8 January, which was reduced on 9 January. Several small groundwater discharges were found within the marked wetlands. Ponding occurred across the site in the ruts from mowing and plowing, making the determination of the extent of long-term hydrology more difficult. Conclusive evidence of wetland hydrology was absent in the upland areas.

3.2 JURISDICTIONAL WETLANDS

The Corps team placed 51 numbered flags at the TRMF site that precisely identify the limits of 5 wetland areas. The flags were located using formal survey methods. The delimited areas amount to approximately 1.93 acres of wetlands, each wetland is less than one acre (Table 4.1). Wetlands 1, 3 and 4 are found along the Unnamed Tributary to Muddy Run. Wetlands 2 and 5 are linear wetlands found along the drainages on either side of the field. Wetlands 1, 2, 3 and 4 drain to the Unnamed Tributary to Muddy Run on the site, either directly or through a secondary tributary. The drainage from Wetland 5 continues off the TRMF site where it eventually connects with the Unnamed Tributary to Muddy Run. These wetlands are all jurisdictional pursuant to Section 404 of the Clean Water Act. Wetland data forms are provided in Appendix D along with the Project Information Form.

Table 4.1 Wetlands at the TRMF Site

Wetland	Classification	Acreage
1	PEM/PFO	0.94
2	PEM	0.35
3	PFO	0.28
4	PFO	0.13
5	PEM	0.23
	Total	1.93

3.2.1 Wetland Area Descriptions

Wetland 1 (0.94 acres) is primarily a palustrine forested wetland along the riparian corridor of the Unnamed Tributary to Muddy Run, named Unnamed Tributary A. A portion of Wetland 1 juts into the field up to Booster Road, where it is classified as a palustrine emergent wetland. Green ash (*Fraxinus pennsylvanica*) is the dominant tree species within the wooded riparian corridor, where it exhibits morphological adaptations such as elevated roots, fluted and flared trunks and few instances of hypertrophied lenticels. Sensitive fern (*Onoclea sensibilis*) is the dominant herb in both the wooded and field areas of this wetland. The soils in this wetland are hydric (Maurertown series) and were saturated and inundated in parts, with low chroma colors.

Wetland 2 (0.35 acres) is a linear wetland that follows a drainage that runs just southeast of the corner of Booster and Bayonet Roads through the patch of forest and south to meet Wetland 1 and the Unnamed Tributary to Muddy Run. This wetland is primarily palustrine emergent except for where it runs through the wooded area, where it is considered palustrine forested. The waterway, named Unnamed Tributary B, appears to be intermittent with several small groundwater discharges. Unnamed Tributary B is a confined channel as it runs from the north through the patch of woods but is an unconfined channel as it runs south through the field due to disturbance from plowing. The vegetation in this wetland was recently mowed; soft rush (*Juncus effusus*) was the only identifiable dominant species. Soils were saturated at this location with low chroma colors.

Wetland 3 (0.28 acres) is a small palustrine forested wetland along the Unnamed Tributary to Muddy Run. It is similar in character to Wetland 1. The dominant tree species include green ash and pin oak (*Quercus palustris*). Soils were saturated at this location.

Wetland 4 (0.13 acres) is also a small palustrine forested wetland similar in character to Wetland 1. A small intermittent channel, Unnamed Tributary C, runs through this wetland and joins with the Unnamed Tributary to Muddy Run. The dominant vegetation at this location includes pin oak trees, American elm (*Ulmus americana*), and Japanese honeysuckle (*Lonicera japonica*). The soils were saturated and ponded in areas, with low chroma colors.

Wetland 5 (0.23 acres) is a linear palustrine emergent wetland on the eastern side of the site. An intermittent waterway, named Unnamed Tributary D, carrying groundwater discharge flows through this wetland and east to a culvert under the railroad tracks. Unnamed Tributary D is an unconfined channel in the field, due to disturbance from mowing and plowing, and a confined

channel within the wooded area. The identifiable dominant plants included soft rush and woolgrass (*Scirpus cyperinus*), with two unknown species of *Carex* that had been mowed. Soils were saturated and exhibit low chroma colors.

3.3 JURISDICTIONAL WATERS

The sequence of drainage is the Unnamed Tributaries B, C and D (intrastate waters), which are intermittent tributaries to the Unnamed Tributary to Muddy Run (intrastate waters), which is a perennial tributary to Conodoquinet Creek (intrastate waters), which is a perennial tributary to the Susquehanna River (perennial and interstate waters), which is a tributary to the Chesapeake Bay (perennial and interstate waters). These waters are all jurisdictional pursuant to Section 404 of the Clean Water Act.

4.0 CONCLUSIONS

The five wetland areas and associated waters described in Section 3.0 were determined to be jurisdictional by the Corps per Section 404 of the Clean Water Act. A letter of Jurisdictional Determination from the Corps Baltimore District Regulatory Branch is supplied in Appendix E confirming these results.

Based on the 35% design for the TRMF facility, see Appendix A, minimal direct wetland impacts are expected. One area of concern is a road crossing that will bisect Wetland 2. The expected impact will require a Pennsylvania State Programmatic General Permit 3 under Section 404 of the Clean Water Act. A 401 Water Quality Certification will be issued in conjunction with the General Permit. Changes to the 35% site design may result in different wetland impacts; consult with the Corps regarding permit requirements as the design progresses.

Grading, earth moving and construction activities have high potential to impact both Wetlands 2 and 5. If possible, reduce grading near these wetlands to avoid and minimize disturbance. During construction, best management practices must be used to minimize impacts and prevent any secondary impacts such as sedimentation, erosion and loss of wetland function. Temporary disturbances to wetlands should be included in any permit review.

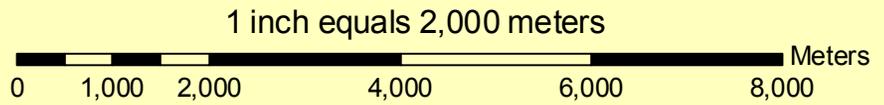
5.0 REFERENCES

- Munsell Color. 1992. *Munsell Color Charts – 1992 Revised Edition*. Kollmorgen Corporation. Baltimore, MD. Not paginated.
- Reed, Porter B., Jr. 1988. National List of Plant Species that Occur in Wetlands: Northeast (Region 1). U.S. Fish and Wildlife Service, National Ecology Research Center. Biological Report 88(26.1). Fort Collins, CO. 111p.
- U.S. Department of Agriculture (USDA). 1975. *Soil Survey of Franklin County, Pennsylvania*.
- USDA Natural Resources Conservation Service. Updated frequently. National Plants Database, available at <http://plants.usda.gov/index.html>
- U.S. Department of the Army, Environmental Laboratory (USDOA-EL). 1987. *Corps of Engineers Wetlands Delineation Manual*. Final Report. Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station. St. Petersburg, FL.
- U.S. Fish and Wildlife Service. National Wetlands Inventory map overlay to the Roxbury topographic quadrangle, Franklin County, Pennsylvania. Washington, D.C. Scale 1:24,000. 1 Sheet.
- U.S. Geological Survey (USGS). 1973. Roxbury Quadrangle, Franklin County, Pennsylvania, 7.5-minute topographic series. U.S. Department of the Interior. Scale 1:24,000. 1 Sheet.
- USGS. 2004. High Resolution Orthoimage, South-Central Pennsylvania, File Name: 25001990PAS. Scale 1:24,000. 1 Sheet.

APPENDICES

Appendix A: Maps of the TRMF Site

Letterkenny Army Depot
Chambersburg, PA



★ Chambersburg, PA

Location of Letterkenny Army Depot
and Theater Readiness Monitoring Facility Site



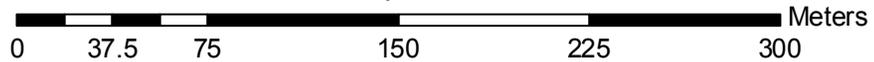
US Army Corps
of Engineers
Baltimore District





Theater Readiness Monitoring Facility Site

1 inch equals 75 meters



Source: Aerial, USGS 2004.



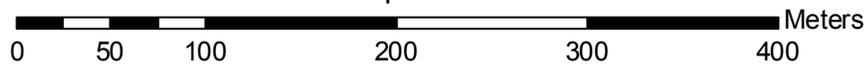
US Army Corps
of Engineers
Baltimore District





US Army Corps
of Engineers
Baltimore District

Topography at TRMF Site
1 inch equals 100 meters



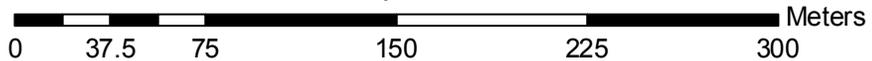
Source: USGS Roxbury Topographic Quadrangle, 1973. 7.5-minute, SW/4 Shippensburg Quadrangle





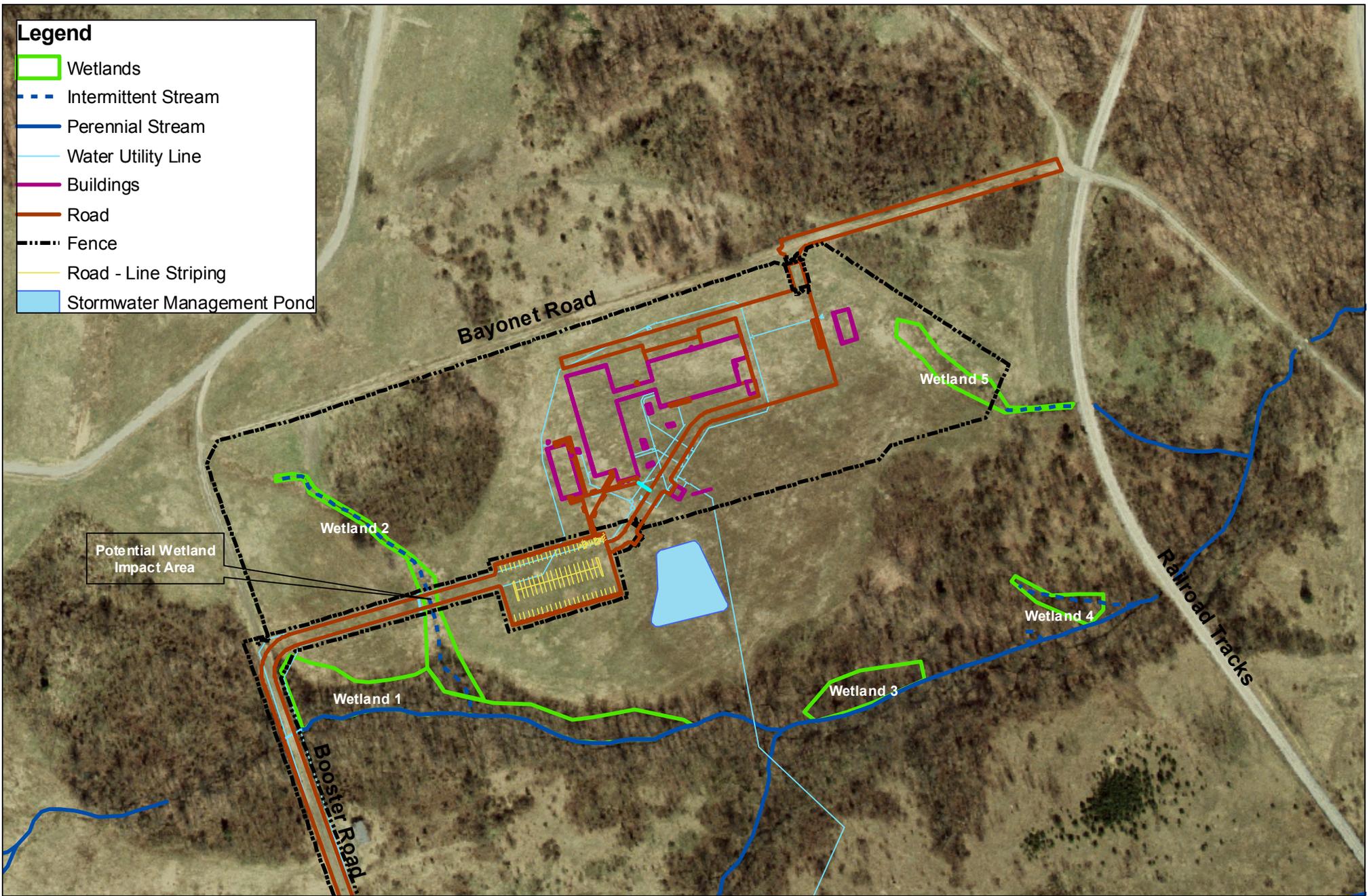
Jurisdictional Wetlands at TRMF Site

1 inch equals 75 meters



Source: Aerial, USGS 2004.





Appendix B: Plant List

Plant List

Scientific and common names of 28 plant species observed at the Theater Readiness Monitoring Facility, Letterkenny Army Depot, Chambersburg, Pennsylvania are listed below. This list was compiled during a site investigation on 8 and 9 January 2007. A number of herbaceous species were difficult to identify due to recent mowing and senescence. The field area is dominated by upland agricultural grasses. The wooded riparian corridor is dominated by shagbark hickory, black cherry, autumn olive and blackberry. In the upland area and pin oak, green ash, swamp white oak, sensitive fern and rough bluegrass in the wetland areas. Invasive species found throughout the wooded corridor include multiflora rose, autumn olive, meadow garlic and Japanese honeysuckle. The following table also lists the wetland indicator status as determined by the U.S. Fish and Wildlife Service, explained at the end of the table.

<u>Scientific Name</u>	<u>Common Name</u>	<u>Indicator</u>
Herbs (14 species)		
<i>Agrimonia parviflora</i>	Harvestlice	FAC
<i>Allium canadense</i>	Meadow Garlic	FACU
<i>Carex lurida</i>	Shallow sedge	OBL
<i>Carex sp. 1</i>	Unknown sedge 1	----
<i>Carex sp. 2</i>	Unknown sedge 2	----
<i>Juncus effusus</i>	Common rush	FACW
<i>Juncus tenuis</i>	Poverty rush	FAC-
<i>Onoclea sensibilis</i>	Sensitive fern	FACW
<i>Panicum sp.</i>	Unknown panicum grass	----
<i>Poa trivialis</i>	Rough bluegrass	FACW
<i>Pycnanthemum sp.</i>	Unknown mountainmint	----
<i>Scirpus cyperinus</i>	Woolgrass	FACW
<i>Solidago sp.</i>	Unknown goldenrod	----
<i>Vernonia noveboracensis</i>	New York ironweed	FACW+
Shrubs and Vines (9 species)		
<i>Acer negundo</i>	Boxelder	FAC
<i>Crataegus sp.</i>	Unknown hawthorn	----
<i>Elaeagnus umbellata</i>	Autumn olive	UPL
<i>Lonicera japonica</i>	Japanese honeysuckle	FAC-
<i>Lonicera tatarica</i>	Tatarian honeysuckle	FACU
<i>Quercus bicolor</i>	Swamp white oak	FACW
<i>Rosa multiflora</i>	Multiflora rose	FACU
<i>Rubus sp.</i>	Unknown blackberry	FACU
<i>Vitis sp.</i>	Unknown grapevine	----
Trees (5 species)		
<i>Carya ovata</i>	Shagbark hickory	FACU
<i>Fraxinus pennsylvanica</i>	Green ash	FACW
<i>Prunus serotina</i>	Black cherry	FACU
<i>Quercus palustris</i>	Pin oak	FACW
<i>Ulmus americana</i>	American elm	FACW

Key to Indicator Status, Definition Summaries:

Federal definitions (USDOA-EL 1987, Reed 1988)

OBL: Obligate Hydrophyte. Always found in wetlands (greater than 99% frequency)

FACW: Wet Facultative Hydrophyte. Usually found in wetlands (66-99% frequency)

FAC: Facultative Hydrophyte. Sometimes found in wetlands (34-66% frequency)

FACU: Dry Facultative Hydrophyte. Seldom found in wetlands (1-33% frequency)

UPL: Not found in wetlands in this region, but associated with wetlands elsewhere.

NI: No indicator. Regional review panel did not consider this species.

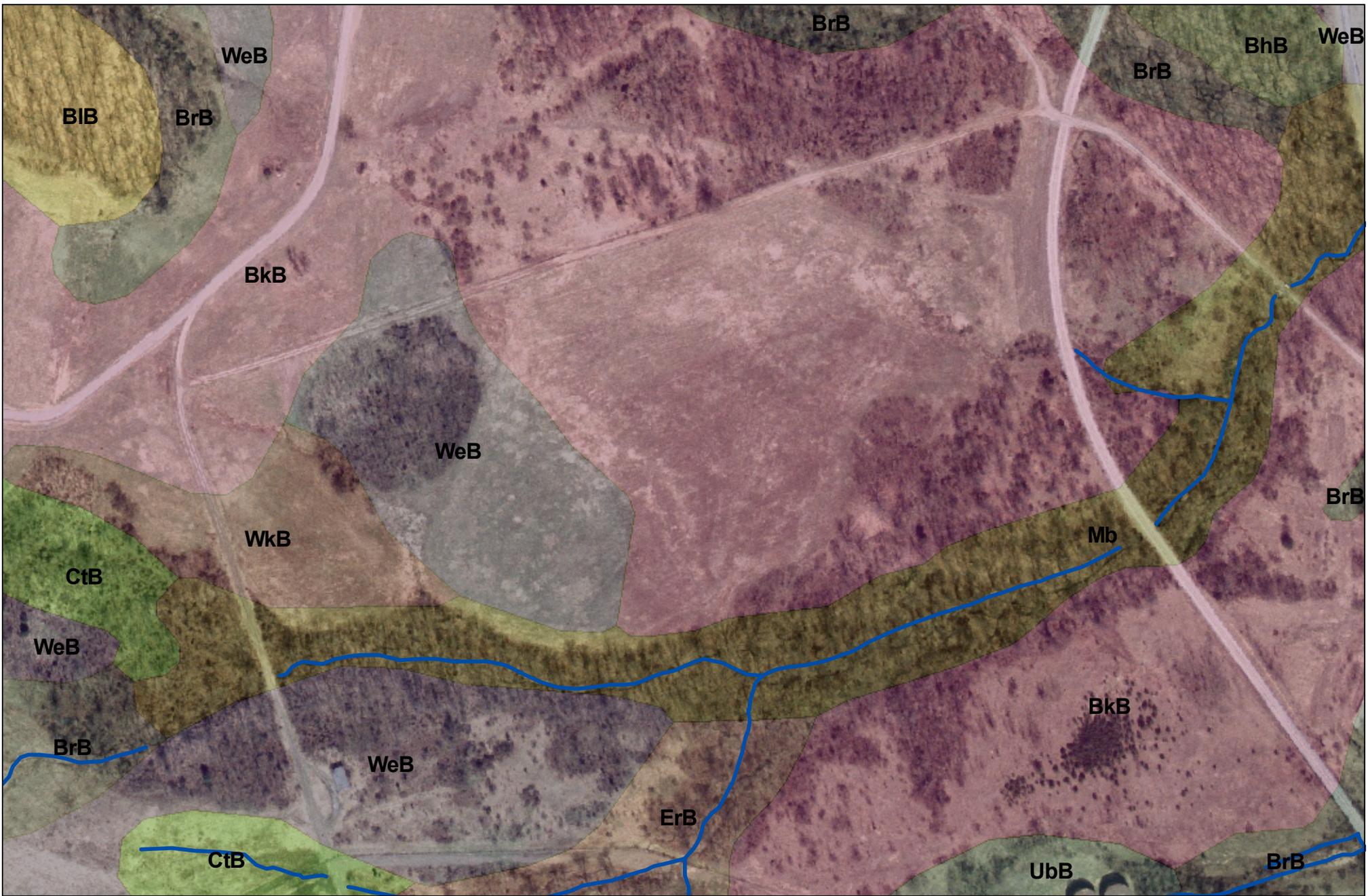
Modifiers used with facultative classes:

+ Found at wetter end of frequency spectrum within the category.

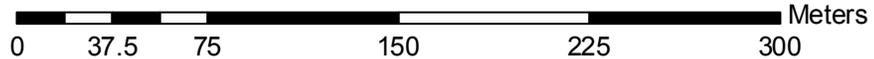
- Found at drier end of frequency spectrum within the category

---- Not identified to species.

Appendix C: Soil Series Map and Description



Soils at TRMF Site
1 inch equals 75 meters



Sources: Soils, USDA 1975. Aerial, USGS 2004.



BERKS SERIES

The Berks series consists of moderately deep, well drained soils formed in residuum weathered from shale, siltstone and fine grained sandstone on rounded and dissected uplands. Slope ranges from 0 to 80 percent. Permeability is moderate or moderately rapid. Mean annual precipitation is 42 inches. Mean annual temperature is 52 degrees F.

TAXONOMIC CLASS: Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

TYPICAL PEDON: Berks channery loam, on a south-facing slope of 3 to 8 percent in a cultivated field. (Colors are for moist soil unless otherwise noted.)

Ap--0 to 10 inches; brown (10YR 4/3) channery loam; weak fine granular structure; friable; 30 percent rock fragments; moderately acid; abrupt smooth boundary (6 to 12 inches thick).

Bw1--10 to 17 inches; yellowish brown (10YR 5/6) very channery loam; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; 35 percent rock fragments; slightly acid; gradual wavy boundary (4 to 12 inches thick).

Bw2--17 to 21 inches; yellowish brown (10YR 5/6) very channery silt loam; weak fine subangular blocky structure modified by rock fragments; slightly sticky and nonplastic; very few faint clay films on rock fragments; 50 percent rock fragments; slightly acid; abrupt wavy boundary (2 to 10 inches thick).

CB--21 to 26 inches; strong brown (7.5YR 5/6) extremely channery loam; structure obscured by rock fragments; friable; 60 percent rock fragments; slightly acid; clear irregular boundary (0 to 10 inches thick).

C--26 to 33 inches; yellowish brown (10YR 5/6) extremely channery loam; fines are concentrated in pockets between and as coatings on rock fragments; massive; friable; 75 percent rock fragments; moderately acid; clear wavy boundary (0 to 14 inches thick).

R-- 33 inches; very dark grayish brown (10YR 3/2) and light olive brown (2.5Y 5/6) fractured shale bedrock.

TYPE LOCATION: Lehigh County, Pennsylvania, Weisenberg Township, 1 mile south and east on T624 from New Smithville and 200 feet north of road.

RANGE IN CHARACTERISTICS: Solum thickness ranges from 12 to 40 inches. Depth to bedrock is 20 to 40 inches. Depth to the top of the cambic horizon range from 3 to 12 inches. Rock fragments range from 10 to 50 percent in the Ap and A horizons, from 15 to 75 percent in individual horizons of the B, and from 35 to 90 percent in the C horizon. The average volume of rock fragments in the particle-size control section is more than 35 percent. In unlimed soils reaction ranges from extremely acid to slightly acid throughout. The dominant clay minerals are illite, vermiculite and interstratified vermiculite chlorite. Small amounts of kaolinite are present.

The Ap or A horizons have hue of 10YR, value of 3 to 5, and chroma of 2 to 4. Texture is loam or silt loam in the fine earth fraction.

The B horizon has hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8. Hue of 5YR is restricted to the lower part of the soil. Texture is loam, silt loam or silty clay loam in the fine earth fraction. It contains 5 to 32 percent clay and 40 to 60 percent silt. Structure is weak or moderate, fine or medium subangular blocky structure in the Bw horizon and is usually obscured by the rock fragments in the CB horizon.

The C horizon, where present, has hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 8. Texture in the fine earth fraction is loam or silt loam.

COMPETING SERIES: These are the [Greenlee](#), [Handshoe](#), and [Northcove](#) series in the same family and the [Brownsville](#), [Calvin](#), [Cardiff](#), [Centralpark](#) (T), [Chamate](#), [Highsplint](#), [Konarock](#) (T), [Lippitt](#), [Parker](#), [Remote](#), [Sylco](#), [Watt](#), and [Wyoming](#) series that are currently in older classification slots. Brownsville, Greenlee, Handshoe and Northcove soils do not have a lithic contact within a depth of 40 inches. Calvin soils have hue of 7.5YR or redder throughout the B horizon. Cardiff, Highsplint, Parker, Sylco, and Wyoming soils do not have a lithic contact within a depth of 40 inches. Centralpark (T) soils have rock fragments of concrete and asphalt. Chamate and Remote soils are formed in a more moist climate. Konarock soils have rhythmite and tillite rock fragments. Lippitt soils have till over Gneiss, schist or gravel. Watt soils have colors with chroma of 3 or less in the B horizon.

GEOGRAPHIC SETTING: Berks soils are on summits, shoulders, and backslopes of dissected uplands formed in residuum weathered from shale interbedded with fine grained sandstone and siltstone. Slope gradient range from 0 to 80 percent. Climate is humid and temperate. Mean annual precipitation ranges from 40 to 44 inches, mean annual temperature ranges from 50 to 55 degrees F and the growing season is 170 to 214 days.

GEOGRAPHICALLY ASSOCIATED SOILS: [Bedington](#), [Blairton](#), [Brinkerton](#), [Comly](#), [Ernest](#), [Gilpin](#), [Muskingum](#), [Rushtown](#), [Shelocta](#), [Tarhollow](#) and [Weikert](#) soils are on nearby landscapes. Bedington, [Brownsville](#), Rushtown, Shelocta and Tarhollow soils all have bedrock at a depth of more than 40 inches and are on similar landscape positions. Blairton and Comly soils are moderately well drained. Brinkerton soils are poorly drained. Gilpin soils have fewer rock fragments and are on similar landscapes.

Weikert soils have bedrock at a depth of less than 20 inches and are on similar landscape positions.

DRAINAGE AND PERMEABILITY: Well drained. The potential for surface runoff is negligible to high. Permeability is moderate or moderately rapid. Depth to a seasonal high water table is more than 6 feet.

USE AND VEGETATION: Approximately 60 percent of Berks soils are in cropland and pasture, the remainder are in woodland or other uses. Principal crops are corn, wheat, oats, barley, Christmas trees and hay. Native vegetation is mixed, deciduous hardwood forest.

DISTRIBUTION AND EXTENT: Kentucky, Maryland, New Jersey, New York, Ohio, Pennsylvania, Virginia, West Virginia, Indiana, and Southern Illinois. MLRA's 115, 120, 121, 124, 125, 126, 127, 128, 130, 139, 147 and 148. The series is of large extent.

MLRA OFFICE RESPONSIBLE: Morgantown, West Virginia

SERIES ESTABLISHED: Berks County, Pennsylvania, 1909.

REMARKS: The Ashby, Kistler and Trexler soils, which were moderately shallow in some Pennsylvania published surveys are now included in the Berks Series.

Diagnostic horizons recognized in this pedon are:

Ochric epipedon - from a depth of 0 to 10 inches (Ap horizon).

Cambic horizon - from a depth of 10 to 21 inches (Bw, Bt horizons).

Lithic contact - at a depth of 33 inches (R horizon).

CEC class - active, but includes semiactive and subactive

R - some pedons have very few thin clay films and silt coats on upper surfaces of rock fragments.

ADDITIONAL DATA: Laboratory data is available for this pedon,

S59-PA-039-7(1-5), and for pedon S59-PA-039-2(1-4). Other pedons from areas mapped Berks are available that show weak argillic horizons:

S65-PA-028-5(1-4), S65-PA-028-7(1-3), S62-PA-029-17(1-4),

S62-PA-020-18(1-4).

MAURERTOWN SERIES

Soils of the Maurertown series are very deep and poorly drained. They formed in clayey alluvial deposits on low stream terraces and flood plains. Slopes range from 0 to 2 percent.

TAXONOMIC CLASS: Fine, mixed, semiactive, mesic Typic Endoaqualfs

TYPICAL PEDON: Maurertown silty clay loam, on a nearly level area in a pasture on the flood plain of the Shenandoah River. (Colors are for moist soil)

Ap--0 to 6 inches; dark grayish brown (10YR 4/2) silty clay loam; weak very fine and fine subangular blocky structure; friable, slightly sticky, slightly plastic; many fine roots; Common fine and few medium discontinuous pores; slightly acid; abrupt smooth boundary. (4 to 8 inches thick)

Btg1--6 to 13 inches; olive gray (5Y 4/2) silty clay loam; common fine faint yellowish brown (10YR 5/6) mottles; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; many fine roots; many fine and medium and common coarse continuous pores; many distinct clay films on faces of peds; slightly acid; abrupt smooth boundary.

Btg2--13 to 27 inches; dark gray (5Y 4/1) silty clay; many fine prominent strong brown (7.5YR 5/8) mottles; weak medium prismatic structure parting to moderate medium and coarse subangular blocky; firm, sticky, plastic; few fine roots; common fine and few medium discontinuous pores; many distinct clay films on faces of peds; common fine manganese concretions; moderately acid; clear smooth boundary.

Btg3---27 to 43 inches; dark gray (5Y 4/1) silty clay loam; many medium and coarse prominent olive brown (2.5Y 4/4) and strong brown (7.5YR 5/6) mottles; weak medium prismatic structure parting to moderate medium and coarse subangular blocky; firm, sticky, plastic; few fine roots; common fine and few medium discontinuous pores; many distinct

clay films on faces of peds; common fine manganese concretions; moderately acid; clear smooth boundary.

Btg4--43 to 65 inches; gray (5Y 5/1) silty clay; many medium and coarse prominent strong brown (7.5YR 5/6) and olive brown (2.5Y 4/4) mottles; weak fine and medium

subangular blocky structure; firm, sticky, plastic; few fine roots; few fine discontinuous pores; many distinct clay films on faces of peds; common fine manganese concretions; moderately acid. (Combined thickness of the Btg horizon is 20 to 65 inches)

TYPE LOCATION: Shenandoah County, Virginia; about .5 mile south of Zion Church at the intersection of VA-645 and VA-654, 2,000 feet east of VA- 645.

RANGE IN CHARACTERISTICS: The thickness of the solum ranges from 40 to 60 inches or more. Depth to bedrock or unconforming substrata is more than 60 inches. The soil ranges from moderately acid through neutral.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 or 2. It is loam, silt loam, or silty clay loam.

The BAg horizon, where present, is neutral or has hue of 10YR through 5Y, value of 4 through 6, and chroma of 0 through 2. It is loam, silt loam, silty clay loam, or clay loam.

The Btg horizon is neutral or has hue of 10YR through 5Y, value of 4 through 6, and chroma of 0 through 2. It is silty clay loam, silty clay, or clay. Some pedons have a clay loam texture in the upper part of the Bt horizon.

The C horizon has a range for color and texture the same as that given for the Bt horizon. Gravel or cobble-size rock fragments make up 0 to 15 percent of the C horizon of some pedons.

COMPETING SERIES: These are the [Albano](#), [Pandora](#), and [Watchung](#) series in the same family. Albano soils have sola 20 to 40 inches thick. Pandora soils have free carbonates. Watchung soils have moderate to moderately slow permeability and in addition have rock fragments from basic rocks.

GEOGRAPHIC SETTING: Maurertown soils are on low stream terraces and flood plains of slackwater areas along streams and intermittent drainageways. Slopes range from 0 to 2 percent. The soils formed in clayey alluvial deposits. Mean annual precipitation ranges from 35 to 40 inches and mean annual temperature ranges from 48 to 56 degrees F.

GEOGRAPHICALLY ASSOCIATED SOILS: In addition to the competing [Toms](#) and [Tygart](#) soils, these are the well drained [Berks](#), [Gilpin](#), and [Weikert](#) soils on nearby uplands and the [Allegheny](#), [Cotaco](#), and [Monongahela](#) soils on adjacent terraces. Except for Tygart and Toms, all of these soils have less clay and less gray colors throughout than Maurertown soils. In addition, Berks and Weikert soils are shallower to bedrock and have more rock fragments, and Monongahela soils have a fragipan.

DRAINAGE AND PERMEABILITY: Poorly drained with slow runoff. Permeability in the Btg horizon is very slow. An apparent high water table ranges from the surface to a

depth of 6 inches from November through June of most years. Flooding ranges from none to common.

USE AND VEGETATION: Most areas are in pasture. Native vegetation is mostly red maple, sweetgum, water oak, and yellow-poplar.

DISTRIBUTION AND EXTENT: Virginia and possibly Pennsylvania and West Virginia. The series is of small extent.

MLRA OFFICE RESPONSIBLE: Morgantown, West Virginia

SERIES ESTABLISHED: Shenandoah County, Virginia, 1988.

REMARKS: 1. These soils have previously been included in the Purdy series.

2. The major diagnostic horizons and features recognized in this pedon are:
Ochric epipedon - The zone from the surface to a depth of 6 inches (Ap horizon).
Argillic horizon - The zone from 6 to 65 inches (Btg horizon).

SIR = VA0221

MLRA = 147

REVISED = 4/2/93, MHC

ADDITIONAL DATA: Particle size, chemical, and clay mineralogy data from the site location are available from Virginia Polytechnic Institute and State University.

National Cooperative Soil Survey
U.S.A.

Established Series

Rev. AWD-WRK-REP-ART

05/2004

WEIKERT SERIES

The Weikert series consist of shallow, well drained soils formed in material that weathered from interbedded gray and brown acid shale, siltstone, and fine-grained sandstone on gently sloping to very steep areas on uplands. Slope ranges from 0 to 100 percent. Permeability is moderately rapid. Mean annual precipitation is about 42 inches, and the mean annual air temperature is about 52 degrees F.

TAXONOMIC CLASS: Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts

TYPICAL PEDON: Weikert channery silt loam, in a cultivated field on 8 to 15 percent slopes. (Colors are for moist soil unless otherwise noted.)

Ap--0 to 7 inches; brown (10YR 4/3) channery silt loam; weak fine granular structure; friable, nonsticky and nonplastic; many fine and medium roots; 30 percent angular and subangular shale channers; strongly acid, clear smooth boundary. (5 to 9 inches thick)

Bw--7 to 14 inches; yellowish brown (10YR 5/4) very channery silt loam; weak fine subangular blocky structure; friable, nonsticky and nonplastic; common fine roots; 50 percent angular and subangular shale channers; strongly acid; gradual wavy boundary. (3 to 12 inches thick)

C--14 to 18 inches; yellowish brown (10YR 5/4) extremely channery silt loam; massive; friable; nonsticky and nonplastic; few fine roots; common distinct sily and clay deposits on channers; 70 percent angular and subangular shale channers; very strongly acid; clear wavy boundary. (0 to 8 inches thick)

R--18 inches; dark gray (10YR 4/1) fractured acid shale and siltstone bedrock.

TYPE LOCATION: Franklin County, Pennsylvania; Hamilton Township, 3 miles west of Chambersburg, 2000 feet west of the intersection of Pennsylvania routes 4008 and 4010, 1000 feet south of route 4008; Chambersburg, PA topographic quadrangle; Latitude 39 degrees, 57 minutes, and 46 seconds N. and Longitude 77 degrees, 44 minutes, and 3 seconds W. NAD 27

RANGE IN CHARACTERISTICS: Solum thickness ranges from 8 to 20 inches. Depth to bedrock ranges from 10 to 20 inches. Rock fragments range from 5 to 50 percent in the A or Ap horizon, from 35 to 60 percent in the Bw horizon, and from 60 to 85 percent in the C horizon. The sand fraction and rock fragments have a low content of feldspars,

hydrobiotite, and chlorite. Unlimed reaction ranges from moderately acid to very strongly acid in the A or Ap horizon and moderately acid to extremely acid in the Bw and C horizons.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3 through 5, and chroma of 2 through 4. Texture is silt loam, or channery or very channery silt loam. Undisturbed pedons have a thin dark A horizon underlain by a 2 to 5 inch thick yellowish brown E horizon.

The Bw horizon has hue of 7.5YR or 10YR, value of 4 through 6, and chroma of 3 through 6. Texture is very channery silt loam or very channery loam. The fine-earth fraction has about 10 to 25 percent clay, 40 to 60 percent silt, and 20 to 40 percent sand. Structure of the Bw is weak or moderate, fine or medium subangular blocky. Moist consistence is friable or very friable, nonsticky or slightly sticky, and nonplastic or slightly plastic.

The C horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 4 through 6, and chroma of 3 through 8. Texture is extremely channery silt loam or extremely channery loam with common interstitial pores. The fine-earth fraction is much like the horizon above but has massive or platy bedrock controlled structure.

Some pedons have a Cr horizon beginning at depths of less than 20 inches. Fractures are less than 4 inches apart but displacement of the pieces is rare. Some of the fragments are coated with silt films.

The R consists of shale, siltstone, fine-grained sandstone, or alternate beds of such material. The bedrock is sometimes fractured.

COMPETING SERIES: These are the [Arnot](#), [Klinesville](#), [Nassau](#), and [Sylvatus](#) series in the same family. Arnot and Nassau soils are formed in a thin mantle of glacial till or congeliturbate. Arnot and Nassau soils appear similar in the field but analytical data show 10 to 40 percent of the clay fraction of Weikert is kaolinite, whereas this mineral is lacking in the Arnot and Nassau soils. Sylvatus soils contain fragments of metasediments, primarily phyllite and slate. Klinesville soils have inherited hues redder than 7.5YR.

[Bugley](#), [Rohan](#), and [Unicoi](#) are a related family. They are all semiactive. In addition, Bugley soils have rock fragments of schist in the solum. Rohan soils have carbonaceous bedrock. Unicoi soils have a much higher content of feldspar, hydrobiotite, and chlorite in the sand fraction.

GEOGRAPHIC SETTING: Weikert soils are on gently sloping to very steep convex dissected uplands formed in weathered residuum from interbedded gray and brown acid shale, siltstone, and fine-grained sandstone. Slope gradients range from 0 to 100 percent. The climate is humid and temperate with an mean annual precipitation of 36 to 50 inches, mean annual air temperatures of 46 to 57 degrees F., and a growing season of 120 to 200 days.

GEOGRAPHICALLY ASSOCIATED SOILS: These include [Allenwood](#), [Bedington](#), [Berks](#), [Cavode](#), [Ernest](#), [Gilpin](#), [Hartleton](#), [Muskingum](#), [Rayne](#), [Westmoreland](#), and [Wharton](#) series. All these soils are deeper than 20 inches to bedrock. In addition, Allenwood, Bedington, Gilpin, Rayne, and Westmoreland soils have argillic horizons and are nonskeletal. The subsoils of Cavode, Ernest, and Wharton soils have low chroma redoximorphic features.

DRAINAGE AND PERMEABILITY: Well drained. The potential for surface runoff is negligible to high. Permeability is moderately rapid to rapid.

USE AND VEGETATION: Most is cleared and used for cropland and pasture or is idle. Forested areas are mixed, deciduous hardwoods.

DISTRIBUTION AND EXTENT: Pennsylvania, Maryland, Ohio, Indiana, West Virginia, Virginia, and Kentucky. The series is of large extent. MLRA's 120, 124, 125, 126, 127, 128, 130, 140, 147, 148.

MLRA OFFICE RESPONSIBLE: Morgantown, West Virginia

SERIES ESTABLISHED: Union County, Pennsylvania, 1939.

REMARKS: In 1994 the Type Location was visited and redescribed as part of the MLRA 147 update in Pennsylvania, West Virginia, and Maryland.

Some pedons sampled as Weikert have a CEC class of semiactive.

In some areas the Weikert series may include somewhat excessively drained soils.

Soils that are now within the range of the Weikert series were correlated as Montevallo (thermic) in several published soil surveys.

Diagnostic horizons and features recognized in this pedon are:

Ochric epipedon - from a depth of 0 to 7 inches (Ap horizon).

Cambic horizon - from a depth of 7 to 14 inches (Bw horizon).

Lithic contact at a depth of 18 inches (R horizon)

ADDITIONAL DATA: Lab samples number S93PA-055-039 and S93PA-055-040, taken from the same county as the type location, were used as the basis for placing this series into the active CEC activity class.

Appendix D: Project Information Form and Wetland Data Forms

New Impact Area Descriptor / New Mitigation Area Descriptor

There are no current impacts to jurisdictional areas.

Basis for Jurisdiction

The referenced wetlands all met the standard three-parameter approach as per the 1987 Corps of Engineers Wetland Delineation Manual and pertinent Department of Army Guidance (1991) and have been determined to be jurisdictional. The atypical situations section of the 87 Corps Manual was used to perform my part of the determination. Field verification of hydrophytic vegetation, hydric soils and wetland hydrology criteria were made in several areas directly bordering and within the assessment area during the observation period. Some of the wetlands are depicted on supporting National Wetlands Inventory mapping as (PFO1A).

The wetlands are all adjacent to an unbroken surface tributary system to interstate waters. The referenced waterway is an unbroken surface tributary system to interstate waters. The main surface tributary (UNT A) is depicted as a blue line perennial stream while the smaller tributaries are shown only as a drainage feature on the pertinent USGS topographic map. Field observations verified the determination that the primary surface tributary is a perennial stream.

- UNT A – Perennial tributary
- UNT B – Intermittent tributary to UNT A
- UNT C - Intermittent tributary to UNT A
- UNT D - Intermittent tributary to UNT A

The sequence of drainage is UNT A to Muddy Run (**intrastate waters**) an intermittent tributary to Muddy Run (**intrastate waters**) a perennial tributary to Conodoquinet Creek (**intrastate waters**) a perennial tributary Susquehanna River (**perennial and interstate waters**) a tributary to the Chesapeake Bay (**perennial and interstate waters**). These waters are all jurisdictional pursuant to Section 404 of the Clean Water Act.

Supporting Data Reviewed and/or Compiled with this Document

- USGS Aerial Photography
 - Color Infrared National High Altitude Program 1980 - 1986*
 - 1st Cycle Color Infrared - National Aerial Photo Program 1987 - 1990*
 - 2nd Cycle Black & White - National Aerial Photo Program 1991 - 1997*
 - 3rd Cycle Black & White - National Aerial Photo Program 1998-2002*
- Other Aerial Photography
- Soil Survey Data (PSU Soil Map)
- NWI Mapping
- Data Forms
- Photos taken
- Sketch / Diagrams
- Cease and Desist Letter Required
- Warning Letter Required
- Field Notes

Comments:

- No violations of Section 404 CWA and/or Section 10 RHA were observed in the assessment area.
- I met with Sharon Madden (USACE Planning Division) and Sam Pelesky (Letterkenny AD) to perform a delineation of WUS, including wetlands on January 8-9, 2007.

- Five wetland areas were identified. Wetlands 1-2 are connected and contiguous.
 - Wetland 1,3 and 4 are located in a forested riparian corridor following the primary UNT to Muddy Run, which we have labeled as UNT – A.
 - Two narrow linear wetlands following secondary tributaries are located within a large idle field.
- Two significant precipitation events have occurred in the past 72 hours leaving most surface drainage features obviously flowing a bit high. Noticeably less flows the second day of the assessment. Numerous small GWD's were observed.
- The wooded riparian area is a mixture of upland forest and PFO, which is illustrated on pertinent NWI mapping. The woodlands are mixed aged to mature forest.
 - The upland forest is generally dominated by *Carya ovata* and *Prunus serotina* in the canopy. Autumn olive and *Rubus* species dominate the shrub and herbaceous layers.
 - The wooded wetlands are dominated by *Quercus palustris* and *Fraxinus pennsylvanica* in the canopy. *Quercus bicolor*, *Onoclea sensibilis* and *Poa trivialis* dominate the lower layers.
 - Several invasive species are abundant in many areas such as *Rosa multiflora*, autumn olive and *Lonicera japonica*.
- In the wetter areas, morphological plant adaptations were prominent on multiple age classes of *Quercus palustris* and *Fraxinus pennsylvanica*. They include elevated root systems and fluting and flaring of the trunks. Hypertrophied lenticels were observed on several roots of *Fraxinus pennsylvanica* but they were not predominant. The area around W3 (Wetland 1) is clearly the wettest area on the site and the most straightforward jurisdictional determination.
- In the riparian PFO, the boundaries along the north side of the wetlands (from the stream to the landward most point) were flagged and GPS points recorded by Sharon Madden. Small inclusions of uplands were included in some cases. However, since the project proponent is not intending to disturb the forested areas, it was not necessary to pull out the upland areas. I advised Sharon that if future needs require working in these areas, a more definitive delineation must be performed in this area.
- Vegetation characterization was difficult in a number of areas because of the recent mowing. However, the clumpy nature of various sedges and rushes in these areas aided greatly in most cases.
- Soils were examined by digging soil pits with a sharp shooter and/or by using a dutch auger. Due to the sun angle at this time of the year, the intermittent sunlight and windy conditions, it was difficult to examine soil colors. Some of the soils were reexamined the second day of the assessment to verify the previous day's findings. Both upland and wetland samples were examined.
- Further compounding soil characterizations were the effects of historic disturbances. Shale is used to cap many of the roads on the base and fragments and fines from this practice have made their way into the drainage corridors and into the soil profiles. Remnants of field ditching were observed and it is evident that some of these drainage ways have been filled with these materials over time.

- Most of the wet areas were verified to have hydric soils with less than or equal to 2 chroma matrices and with redoximorphic features. At least the upper soil layers were saturated.
- Primary hydrology field indicators included wetland drainage patterns, saturated soils and shallow ponding. Secondary hydrology field indicators included blackened leaves/vegetation, positive FACN test and oxidized rhizospheres (uncommon).
- Ponding on the site, especially in the fields, was exaggerated because of sever rutting of the drainage ways from the mowing and plowing process. All ruts were filled to the surface with water making the determination of the extent of long-term hydrology more difficult.
- Four jurisdictional surface tributaries to interstate waters were identified in the assessment area. UNT A is the primary receiving waters for UNT's B-D. UNT D does not confluence with UNT A until both exit the assessment area via culverts under the Railroad bed at the east end of the site.
- To date, I am only aware of one proposed impact planned within jurisdictional areas and assessment area. A minor road crossing is planned through Wetland 2. This would require authorization from this office.
- Results of this delineation and boundary verification will be written up and submitted to Planning Division so that they may complete their report to the project proponent.

ROUTINE WETLAND DATA FORM

(1987 CORPS Wetland Delineation Manual)

Project /Site: Training & Readiness Maintenance Facility
 Owner: Letterkenny Army Depot
 Investigators: Frank Plewa, Sharon Madden, Sam Pelesky

Date: January 8, 2007
 County: Franklin
 State: Pennsylvania

Do Normal Circumstances Exist at the Site? Yes
 Is the Site Significantly Disturbed (atypical)? Yes
 Is the Area a Potential Problem Area no

Community ID: PEM – idle field
 Transect ID: n/a
 Plot ID: W1 (wetland sample point)

W1 (wetland sample point) is located at the western end of the site (at the upstream end of the riparian corridor) ~ 75-100" east of Bayonet Road. This is an emergent component of the larger wetland/hydric soil unit identified on the associated mapping as Wetland 1. This habitat compartment is located within the large field area and has recently been mowed.

VEGETATION

	Dominant Species	Strata	Ind		Dominant Species	Strata	Ind
1.	<i>Juncus effusus</i>	Herb	Facw	6.			
2.	<i>Onoclea sensibilis</i>	Herb	Facw	7.			
3.				8.			
4.				9.			
5.				10.			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) = 100 %

Remarks: This area has been recently mowed. As a result, several species could not be identified. Other non-dominant species encountered included; *Scirpus cyperinus* Facw, *Agrimonia parviflora* Fac, *Panicum* sp., *Juncus tenuis* Fac-, *Solidago* sp., and *Pycnanthemum* sp.

HYDROLOGY

Recorded Data (describe in remarks)	Wetland Hydrology Primary Indicators (one required):
<input type="checkbox"/> Stream, Lake or Tide Gauge Data	<input checked="" type="checkbox"/> Inundated
<input type="checkbox"/> Aerial Photographs	<input checked="" type="checkbox"/> Saturated in the Upper 12 Inches
<input type="checkbox"/> Other	<input type="checkbox"/> Water Marks
<input type="checkbox"/> No Recorded Data Available	<input type="checkbox"/> Drift Lines
	<input type="checkbox"/> Sediment Deposits
	<input type="checkbox"/> Drainage Patterns in Wetlands

Hydrology – blackened leaves, upper two soil layers saturated to surface, scattered shallow ponding

Field Observations:	Secondary Indicators (2 or more required):
Depth of Surface Water 0-3 in.	<input type="checkbox"/> Oxidized Root Channels in the Upper 12 Inches
Depth to Free Water in the Pit 7 in.	<input checked="" type="checkbox"/> Water Stained Leaves
Depth to Saturated Soils 0 in.	<input type="checkbox"/> Local Soil Survey Data
	<input type="checkbox"/> FAC Neutral Test
	<input type="checkbox"/> Other (explain in remarks)

Remarks: Observation was made outside of the growing season. However, the combination of all field indicators present a strong indication that wetland hydrology is present.

ROUTINE WETLAND DATA FORM

(1987 CORPS Wetland Delineation Manual)

Project /Site: Training & Readiness Maintenance Facility
 Owner: Letterkenny Army Depot
 Investigators: Frank Plewa, Sharon Madden, Sam Pelesky

Date: January 8, 2007
 County: Franklin
 State: Pennsylvania

Do Normal Circumstances Exist at the Site? no
 Is the Site Significantly Disturbed (atypical)? yes
 Is the Area a Potential Problem Area no

Community ID: PEM
 Transect ID: n/a
 Plot ID: W2 (wetland sample point)

This sample area is located in a drainage corridor flowing north to south through the idle field east of W1. This area is a linear wetland (primarily PEM) bisected by alternating confined and unconfined overland flow. The waterway appears to be intermittent flow carrying several small groundwater discharges. The flows from this drainage feature confluence with the primary UNT to Muddy Run ~ 30-40 yards from the sample point. It is a wetland contiguous with the Wetland 1 system. This area has also been primarily just mowed but a small area just south of a small forested upland area to the north has been plowed. There has been plowing both sides of the corridor.

VEGETATION

	Dominant Species	Strata	Ind		Dominant Species	Strata	Ind
1.	<i>Juncus effusus</i>	Herb	Facw	6.			
2.				7.			
3.				8.			
4.				9.			
5.				10.			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) = 100 %

Remarks: This area has been recently mowed. As a result, several species could not be identified. Other non-dominant species observed include the following: *Scirpus cyperinus* Facw, *Panicum* sp., *Juncus tenuis* Fac-, *Fraxinus pennsylvanica* FacW (Single Tree).

HYDROLOGY

Recorded Data (describe in remarks)	Wetland Hydrology Primary Indicators (one required):
<input type="checkbox"/> Stream, Lake or Tide Gauge Data	<input checked="" type="checkbox"/> Inundated
<input type="checkbox"/> Aerial Photographs	<input checked="" type="checkbox"/> Saturated in the Upper 12 Inches
<input type="checkbox"/> Other	<input type="checkbox"/> Water Marks
<input type="checkbox"/> No Recorded Data Available	<input type="checkbox"/> Drift Lines
	<input type="checkbox"/> Sediment Deposits
	<input type="checkbox"/> Drainage Patterns in Wetlands

Field Observations:	Secondary Indicators (2 or more required):
Depth of Surface Water <u>0-3</u> in.	<input type="checkbox"/> Oxidized Root Channels in the Upper 12 Inches
Depth to Free Water in the Pit <u>3</u> in.	<input checked="" type="checkbox"/> Water Stained Leaves
Depth to Saturated Soils <u>0</u> in.	<input type="checkbox"/> Local Soil Survey Data
	<input checked="" type="checkbox"/> FAC Neutral Test
	<input type="checkbox"/> Other (explain in remarks)

Remarks: Hydrology – GWD flowing through the drainage but no defined bed and banks within the field. However, a defined B&B can be observed in the wooded section above/upslope of the field. Area is rutted perpendicular to the slope and ruts are ponded. We identified this drainage as UNT - B.

SOILS

Map Unit Name
(Series and Phase): Maurertown Silt loam (Mb) Drainage Class: Poorly drained

Taxonomy (Subgroup): Typic Ochraqualfs Field Observations Confirmed Yes - to some extent
Mapped Type?

PROFILE DESCRIPTION:

Depth (inches)	Soil Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance / Contrast	Texture, Concentrations, Structures, etc...
0-9	Ap	2.5Y 3/2	7.5YR 4/4	small/distinct/common	SL - saturated
9-13+	B	10YR 6/1-6/2	10YR 5/8	medium/distinct/common	SiCL - saturated

Hydric Soil Indicators	Hydric Soil Indicators
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low Chroma Colors	<input type="checkbox"/> Concentrations <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input checked="" type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (explain)

Remarks: water in soil pit @ 3" after 10 minutes

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	yes		
Hydric Soils Present?	yes		
Wetland Hydrology Present?	yes	Is Sampling Point Within a Wetland?	yes

Remarks: Wetland 2 is represented on the associated GPS mapping as Flags 6-19. This wetland area extends from its border with Wetland 1 at the northern edge of the wooded riparian corridor extending north through the field into a small wooded upland area. From this point, the jurisdictional area is primarily a defined bed and banks waterway with some narrow wetland fringe. The jurisdiction was cut off at a point where GWD was no longer apparent at the surface. Hydrophytic vegetation extends further upslope in the form of a few plants following an erosion gully but were not determined to be jurisdictional. The flow in this area appears to be merely ephemeral.

ROUTINE WETLAND DATA FORM

(1987 CORPS Wetland Delineation Manual)

Project /Site: Training & Readiness Maintenance Facility
 Owner: Letterkenny Army Depot
 Investigators: Frank Plewa, Sharon Madden, Sam Pelesky

Date: January 8, 2007
 County: Franklin
 State: Pennsylvania

Do Normal Circumstances Exist at the Site? **Yes**
 Is the Site Significantly Disturbed (atypical)? **No**
 Is the Area a Potential Problem Area **No**

Community ID: PFO – riparian forest (GPS point 201)
 Transect ID: n/a
 Plot ID: W3 (Wetland Sample Point)

This sample area is located ~ 30 yards inside the wooded riparian corridor within Wetland 1 near the confluence of UNT's A & B.

VEGETATION

	Dominant Species	Strata	Ind		Dominant Species	Strata	Ind
1.	<i>Fraxinus pennsylvanica</i>	Tree	Facw	6.			
2.	<i>Onoclea sensibilis</i>	Herb	Facw	7.			
3.	<i>Poa trivialis</i>	Herb	Facw	8.			
4.				9.			
5.				10.			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) = 100 %

Remarks: The vegetation and hydrology were evaluated within 30' radius plot. Additional non-dominant species include the following: *Ulmus americana* Facw (Sapling), *Quercus palustris* Facw (Shrub), *Acer negundo* Fac (Shrub), *Rosa multiflora* Facu (Shrub), *Lonicera japonica* Fac- (Woody vine), *Scirpus cyperinus* Facw (Herb), *Veronica noveboracensis* Facw (Herb), *Carex lurida* Obl (Herb) and *Agrimonia parviflora* Fac (Herb).

Morphological adaptations on *Fraxinus* are predominant on multiple age classes of this and several other species (elevated roots, fluting and flaring of the trunks and some instances of hypertrophied lenticels were).

HYDROLOGY

Recorded Data (describe in remarks)	Wetland Hydrology Primary Indicators (one required):
<input type="checkbox"/> Stream, Lake or Tide Gauge Data	<input checked="" type="checkbox"/> Inundated
<input type="checkbox"/> Aerial Photographs	<input checked="" type="checkbox"/> Saturated in the Upper 12 Inches
<input type="checkbox"/> Other	<input type="checkbox"/> Water Marks
<input type="checkbox"/> No Recorded Data Available	<input type="checkbox"/> Drift Lines
	<input type="checkbox"/> Sediment Deposits
	<input checked="" type="checkbox"/> Drainage Patterns in Wetlands

Hydrology – blackened leaves, upper two soil layers saturated to surface, scattered shallow ponding

Field Observations:	Secondary Indicators (2 or more required):
Depth of Surface Water 0-3 in.	<input type="checkbox"/> Oxidized Root Channels in the Upper 12 Inches
Depth to Free Water in the Pit 0 in.	<input checked="" type="checkbox"/> Water Stained Leaves
Depth to Saturated Soils 0 in.	<input type="checkbox"/> Local Soil Survey Data
	<input checked="" type="checkbox"/> FAC Neutral Test
	<input type="checkbox"/> Other (explain in remarks)

Remarks: Groundwater discharges are flowing throughout the area.

SOILS

Map Unit Name
(Series and Phase): Maurertown Silt loam (Mb) Drainage Class: Poorly drained

Taxonomy (Subgroup): Typic Ochraqualfs Field Observations Confirmed Mapped Type? No

PROFILE DESCRIPTION:

Depth (inches)	Soil Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance / Contrast	Texture, Concentrations, Structures, etc...
0-2	A	10YR 2/2	No redox	N/a	SL - saturated
2-8	B	10YR 4/1	7.5YR 4/4 10YR 5/6	Sm-med/distinct/common Small/distinct/few	SL - saturated
8-15+	B	10YR 5/1	7.5YR 4/4 10YR 5/6	Sm-med/distinct/common Small/distinct/few	SiCL - saturated

Hydric Soil Indicators	Hydric Soil Indicators
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low Chroma Colors	<input type="checkbox"/> Concentrations <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input checked="" type="checkbox"/> Listed on Local Hydric Soils List <input checked="" type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (explain)

Remarks: water in soil pit @ the surface immediately

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	yes		
Hydric Soils Present?	yes		
Wetland Hydrology Present?	yes	Is Sampling Point Within a Wetland?	yes

Remarks: Wetland 1 is represented on the associated GPS mapping as Flags 1-6, and Flags 19-24. Flags 6-19 illustrate the location and configuration of Wetland 2 located to the north. The referenced boundary flagging represents only the wetlands located on the northern side of the primary UNT to Muddy Run. It should be noted that wetlands extend to the south of the stream but were not delineated as these areas are outside of the project footprint. The bulk of Wetland 1 is PFO and located within the riparian forested corridor adjacent the referenced stream, which is identified as an Unnamed Tributary to Muddy Creek (UNT – A).

ROUTINE WETLAND DATA FORM

(1987 CORPS Wetland Delineation Manual)

Project /Site: Training & Readiness Maintenance Facility
 Owner: Letterkenny Army Depot
 Investigators: Frank Plewa, Sharon Madden, Sam Pelesky

Date: January 8, 2007
 County: Franklin
 State: Pennsylvania

Do Normal Circumstances Exist at the Site? yes
 Is the Site Significantly Disturbed (atypical)? yes
 Is the Area a Potential Problem Area Yes

Community ID: Forested – GPS Point 1001
 Transect ID: n/a
 Plot ID: U4 (upland sample point)

VEGETATION

	Dominant Species	Strata	Ind		Dominant Species	Strata	Ind
1.	<u><i>Carya ovata</i></u>	Tree	Facu	6.			
2.	<u><i>Carya ovata</i></u>	Sapling	Facu	7.			
3.	<u><i>Prunus serotina</i></u>	Tree	Facu	8.			
4.	<u><i>Lonicera japonica</i></u>	Woody vine	Fac-	9.			
5.				10.			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) = 0 %

Remarks: Vegetation and hydrology evaluated within 30' radius plot. Additional non-dominant species that were encountered included; *Fraxinus pennsylvanica* Facw (Tree), *Rosa multiflora* Facu (Shrub), *Rubus sp.* Facu (Herb), *Vitis sp.* (Woody vine).

HYDROLOGY

Recorded Data (describe in remarks)	Wetland Hydrology Primary Indicators (one required):
<input type="checkbox"/> Stream, Lake or Tide Gauge Data	<input type="checkbox"/> Inundated
<input type="checkbox"/> Aerial Photographs	<input checked="" type="checkbox"/> Saturated in the Upper 12 Inches
<input type="checkbox"/> Other	<input type="checkbox"/> Water Marks
<input type="checkbox"/> No Recorded Data Available	<input type="checkbox"/> Drift Lines
	<input type="checkbox"/> Sediment Deposits
	<input type="checkbox"/> Drainage Patterns in Wetlands

Field Observations:	Secondary Indicators (2 or more required):
Depth of Surface Water _____ in.	<input type="checkbox"/> Oxidized Root Channels in the Upper 12 Inches
Depth to Free Water in the Pit _____ in.	<input type="checkbox"/> Water Stained Leaves
Depth to Saturated Soils _____ in.	<input type="checkbox"/> Local Soil Survey Data
	<input type="checkbox"/> FAC Neutral Test
	<input type="checkbox"/> Other (explain in remarks)

Remarks: Stream is severely incised at this point and there is an old ditch just outside of plot. Despite the observation of water table at 7" below surface and some saturated soil conditions in deeper soil layers, it appears from the nature of the vegetation that this area has been drained in combination from the old ditch and incised stream. Saturation was limited to small sections within the soil profile generally where large ped faces were located. Hydrology indicator was probably due to recent heavy precipitation events as no other long indicators were present.

SOILS

Map Unit Name
(Series and Phase): Maurertown Silt loam (Mb) Drainage Class: Poorly

Taxonomy (Subgroup): Typic Ochraqualfs Field Observations Confirmed
Mapped Type? generally

PROFILE DESCRIPTION:

Depth (inches)	Soil Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance / Contrast	Texture, Concentrations, Structures, etc...
0-3	A	10YR 4/3	No redox	N/a	SL – Moist
3-8"	B	10YR 5/2-5/3	10YR 4/4	Small/distinct/common	SL – Moist
8-16	B	10YR 5/1	7.5YR 4/6	medium/distinct/few	SL – Moist
16-27+	B	10 YR 5/1	7.5YR 4/6 Fe/Mg concretions	Coarse/distinct/few common	SiCL – Moist

Hydric Soil Indicators	Hydric Soil Indicators
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low Chroma Colors	<input type="checkbox"/> Concentrations <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input checked="" type="checkbox"/> Listed on Local Hydric Soils List <input checked="" type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (explain)

Remarks: water in soil pit @ 7" below surface. The lighting conditions were getting poor, difficulty characterizing colors.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? no
 Hydric Soils Present? yes
 Wetland Hydrology Present? no
Is Sampling Point Within a Wetland? no

Remarks: This sample point is located on a gentle slope north of UNT – A and ~ midway from the upstream and downstream limits of the assessment area. Wetland 1 lies just west of this area and Wetland 3 lies a short distance to the east.

ROUTINE WETLAND DATA FORM

(1987 CORPS Wetland Delineation Manual)

Project /Site: Training & Readiness Maintenance Facility
 Owner: Letterkenny Army Depot
 Investigators: Frank Plewa, Sharon Madden, Sam Pelesky

Date: January 8, 2007
 County: Franklin
 State: Pennsylvania

Do Normal Circumstances Exist at the Site? yes no Community ID: PFO
 Is the Site Significantly Disturbed (atypical)? yes no Transect ID: n/a
 Is the Area a Potential Problem Area Yes no Plot ID: W5 (wetland sample points)

W5 is located within a small PFO wetland (Wetland 4) which encompasses what we are calling UNT C. The waterway was flagged upslope to a point where the channel became indistinct and we felt the discharge was ephemeral. The bulk of this area is a saturated/ ponded terrace adjacent to and just upslope of UNT - A.

VEGETATION

	Dominant Species	Strata	Ind		Dominant Species	Strata	Ind
1.	<i>Quercus palustris</i>	Tree	Facw	6.			
2.	<i>Ulmus Americana</i>	Sapling	Facw	7.			
3.	<i>Lonicera japonica</i>	Woody vine	Fac-	8.			
4.				9.			
5.				10.			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) = 66 %

Remarks: Vegetation and hydrology evaluated within 15' radius plot. See field notes for other plants found in the herbaceous layer. Other non-dominant species encountered include; *Rosa multiflora* Facu (Shrub), *Rubus sp.*, *Lonicera tartarica* Facu (Shrub), *Poa trivialis* Facw (Herb), *Carex sp.*, *Carex sp.* and *Allium canadense* Facu (Herb).

HYDROLOGY

Recorded Data (describe in remarks)	Wetland Hydrology Primary Indicators (one required):
<input type="checkbox"/> Stream, Lake or Tide Gauge Data	<input checked="" type="checkbox"/> Inundated
<input type="checkbox"/> Aerial Photographs	<input checked="" type="checkbox"/> Saturated in the Upper 12 Inches
<input type="checkbox"/> Other	<input type="checkbox"/> Water Marks
<input type="checkbox"/> No Recorded Data Available	<input type="checkbox"/> Drift Lines
	<input type="checkbox"/> Sediment Deposits
	<input type="checkbox"/> Drainage Patterns in Wetlands

Field Observations:	Secondary Indicators (2 or more required):
Depth of Surface Water <u>0-3</u> in.	<input type="checkbox"/> Oxidized Root Channels in the Upper 12 Inches
Depth to Free Water in the Pit <u>7</u> in.	<input checked="" type="checkbox"/> Water Stained Leaves
Depth to Saturated Soils <u>0</u> in.	<input type="checkbox"/> Local Soil Survey Data
	<input type="checkbox"/> FAC Neutral Test
	<input type="checkbox"/> Other (explain in remarks)

Remarks: Despite the marginal vegetation, observations revealed that the area we believe the area clearly exhibits wetland hydrology in addition to the verification of hydric soils. Water in soil pit was observed @ 7" below the surface.

SOILS

Map Unit Name
(Series and Phase): Maurertown Silt loam (Mb) Drainage Class: Poorly

Taxonomy (Subgroup): Typic ochraqualfs Field Observations Confirmed
Mapped Type? No

PROFILE DESCRIPTION:

Depth (inches)	Soil Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance / Contrast	Texture, Concentrations, Structures, etc...
1-0	O				Very dark brown to black
0-4	A	10YR 4/2			SiL
4-7	B	2.5Y 5/3	2.5Y 5/2	Coarse, common, faint	SiCL
7-10	B	2.5Y 5/2	10YR 4/4	Medium, common, distinct	SiCL
10-16+	B	10YR 6/2	10YR 5/6	Small, common, distinct	SiCL

Hydric Soil Indicators	Hydric Soil Indicators
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low Chroma Colors	<input type="checkbox"/> Concentrations <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input checked="" type="checkbox"/> Listed on Local Hydric Soils List <input checked="" type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (explain)

Remarks: Soil was examined but characterization was not performed due to decreased lighting conditions. Soils were saturated. Numerous ponded areas were observed in this area.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? yes
 Hydric Soils Present? yes
 Wetland Hydrology Present? yes Is Sampling Point Within a Wetland? yes

Remarks: Flags 30-36 located by GPS.

ROUTINE WETLAND DATA FORM

(1987 CORPS Wetland Delineation Manual)

Project /Site: Training & Readiness Maintenance Facility
 Owner: Letterkenny Army Depot
 Investigators: Frank Plewa, Sharon Madden, Sam Pelesky

Date: January 9, 2007
 County: Franklin
 State: Pennsylvania

Do Normal Circumstances Exist at the Site? no
 Is the Site Significantly Disturbed (atypical)? yes
 Is the Area a Potential Problem Area no

Community ID: Idle field (GPS point 2000)
 Transect ID: n/a
 Plot ID: U6 (Upland sample point)

This is an upland area located just outside of Wetland 5 and just upslope of W7. This is located at the eastern end of the field within 50 yards of the railroad grade, which forms the eastern boundary of the assessment area. The area has been mowed recently. Adjacent upland areas have been recently plowed.

VEGETATION

	Dominant Species	Strata	Ind		Dominant Species	Strata	Ind
1.	See remarks			6.			
2.				7.			
3.				8.			
4.				9.			
5.				10.			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) = n/a

Remarks: This area has been recently mowed. As a result, several species could not be identified nor could dominants be evaluated. Species encountered included; *Elaeagnus umbellate* – Upl, *Lonicera japonica* – Fac-, *Rubus sp.*, *Solidago sp.*, Unknown grass spp. A small area (~ 10 foot radius plot) was examined.

HYDROLOGY

Recorded Data (describe in remarks)	Wetland Hydrology Primary Indicators (one required):
<input type="checkbox"/> Stream, Lake or Tide Gauge Data	<input type="checkbox"/> Inundated
<input type="checkbox"/> Aerial Photographs	<input type="checkbox"/> Saturated in the Upper 12 Inches
<input type="checkbox"/> Other	<input type="checkbox"/> Water Marks
<input type="checkbox"/> No Recorded Data Available	<input type="checkbox"/> Drift Lines
	<input type="checkbox"/> Sediment Deposits
	<input type="checkbox"/> Drainage Patterns in Wetlands

Hydrology – blackened leaves, upper two soil layers saturated to surface, scattered shallow ponding

Field Observations:	Secondary Indicators (2 or more required):
Depth of Surface Water _____ in.	<input type="checkbox"/> Oxidized Root Channels in the Upper 12 Inches
Depth to Free Water in the Pit _____ in.	<input type="checkbox"/> Water Stained Leaves
Depth to Saturated Soils _____ in.	<input type="checkbox"/> Local Soil Survey Data
	<input type="checkbox"/> FAC Neutral Test
	<input type="checkbox"/> Other (explain in remarks)

Remarks: No wetland hydrology indicators were observed.

ROUTINE WETLAND DATA FORM

(1987 CORPS Wetland Delineation Manual)

Project /Site: Training & Readiness Maintenance Facility
 Owner: Letterkenny Army Depot
 Investigators: Frank Plewa, Sharon Madden, Sam Pelesky

Date: January 9, 2007
 County: Franklin
 State: Pennsylvania

Do Normal Circumstances Exist at the Site? no
 Is the Site Significantly Disturbed (atypical)? no
 Is the Area a Potential Problem Area no

Community ID: PEM (GPS point 2001)
 Transect ID: n/a
 Plot ID: W7 (wetland sample point)

W7 is located adjacent to U6 at the eastern end of the field and the assessment area. W7 is located within Wetland 5 which is a linear wetland following what we will refer to as UNT D. UNT D is an intermittent waterway which flows east and discharges from the site through a small culvert under the railroad. It confluences with UNT – A east of the assessment area. The waterway flows NW to SE with a narrow PEM wetland lining both sides. It originates within the idle field as several small groundwater discharges. This area has been mowed and the upper areas plowed.

VEGETATION

	Dominant Species	Strata	Ind		Dominant Species	Strata	Ind
1.	<i>Juncus effusus</i>	Herb	Facw	6.			
2.	<i>Scirpus cyperinus</i>	Herb	Facw	7.			
3.				8.			
4.				9.			
5.				10.			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) = 100 %

Remarks: This area has been recently mowed and some of the upper areas have been plowed. As a result, several species could not be identified. Other non-dominant species observed included two species of *Carex*.

HYDROLOGY

Recorded Data (describe in remarks)	Wetland Hydrology Primary Indicators (one required):
<input type="checkbox"/> Stream, Lake or Tide Gauge Data	<input checked="" type="checkbox"/> Inundated
<input type="checkbox"/> Aerial Photographs	<input checked="" type="checkbox"/> Saturated in the Upper 12 Inches
<input type="checkbox"/> Other	<input type="checkbox"/> Water Marks
<input type="checkbox"/> No Recorded Data Available	<input type="checkbox"/> Drift Lines
	<input type="checkbox"/> Sediment Deposits
	<input type="checkbox"/> Drainage Patterns in Wetlands

Field Observations:	Secondary Indicators (2 or more required):
Depth of Surface Water <u>0-6</u> in.	<input type="checkbox"/> Oxidized Root Channels in the Upper 12 Inches
Depth to Free Water in the Pit <u>8</u> in.	<input checked="" type="checkbox"/> Water Stained Leaves
Depth to Saturated Soils <u>0</u> in.	<input type="checkbox"/> Local Soil Survey Data
	<input checked="" type="checkbox"/> FAC Neutral Test
	<input type="checkbox"/> Other (explain in remarks)

Remarks: Hydrology – GWD via mostly undefined overland flow through the field. Defined bed and banks were present within the shrubby areas the last 200 feet until discharging under RR. We identified this drainage as UNT - D.

SOILS

Map Unit Name
(Series and Phase): Maurertown Silt loam (Mb) Drainage Class: Poorly drained

Taxonomy (Subgroup): Typic ochraqualfs Field Observations Confirmed Yes – to some extent
Mapped Type?

PROFILE DESCRIPTION:

Depth (inches)	Soil Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance / Contrast	Texture, Concentrations, Structures, etc...
0-3"	A	2.5Y 4/1	No redox	N/a	SL – Saturated
3-5	B	2.5Y 5/2	10YR 5/6	medium/distinct/common	SL – Saturated
5-10+	B	2.5Y 5/1	2.5Y 6/4	Medium/distinct/few	SL – Saturated

Hydric Soil Indicators	Hydric Soil Indicators
<input type="checkbox"/> Histosol	<input type="checkbox"/> Concentrations
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input checked="" type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low Chroma Colors	<input type="checkbox"/> Other (explain)

Remarks: Water was observed in the soil pit @ 8." Encountered shale at 10" making further examination difficult

WETLAND DETERMINATION

Hydrophytic Vegetation Present? yes
 Hydric Soils Present? yes
 Wetland Hydrology Present? yes
Is Sampling Point Within a Wetland? yes

Remarks: Wetland 5 is represented on the associated GPS mapping as Flags 37-51. This wetland area extends from the railroad grade west and north to an area within the field where groundwater discharges and hydric soils were no longer apparent.

ROUTINE WETLAND DATA FORM

(1987 CORPS Wetland Delineation Manual)

Project /Site: Training & Readiness Maintenance Facility
 Owner: Letterkenny Army Depot
 Investigators: Frank Plewa, Sharon Madden, Sam Pelesky

Date: January 9, 2007
 County: Franklin
 State: Pennsylvania

Do Normal Circumstances Exist at the Site? **Yes**
 Is the Site Significantly Disturbed (atypical)? **no**
 Is the Area a Potential Problem Area **no**

Community ID: Scrub/shrub (GPS point 2004)
 Transect ID: n/a
 Plot ID: U8 (Upland sample point)

This is an upland area located on a gentle slope just north of W5 and outside of Wetland 4. This is located at the eastern end of the riparian forested corridor within 50 yards of the railroad grade, which forms the eastern boundary of the assessment area. This was a makeup plot completed today because light conditions the previous day prevented and accurate characterization.

VEGETATION

	Dominant Species	Strata	Ind		Dominant Species	Strata	Ind
1.	<i>Elaeagnus umbellate</i>	Shrub	Upl	6.			
2.	<i>Crataegous sp.</i>	Shrub	??	7.			
3.	<i>Lonicera japonica</i>	Woody vine	Fac-	8.			
4.	<i>Lonicera japonica</i>	Herb	Fac-	9.			
5.				10.			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) = n/a

Remarks: Species encountered included; *Quercus bicolor* Facw (shrub), and *Rubus sp.* A - 30 foot radius plot area was examined.

HYDROLOGY

Recorded Data (describe in remarks)	Wetland Hydrology Primary Indicators (one required):
<input type="checkbox"/> Stream, Lake or Tide Gauge Data	<input type="checkbox"/> Inundated
<input type="checkbox"/> Aerial Photographs	<input type="checkbox"/> Saturated in the Upper 12 Inches
<input type="checkbox"/> Other	<input type="checkbox"/> Water Marks
<input type="checkbox"/> No Recorded Data Available	<input type="checkbox"/> Drift Lines
	<input type="checkbox"/> Sediment Deposits
	<input type="checkbox"/> Drainage Patterns in Wetlands

Hydrology - blackened leaves, upper two soil layers saturated to surface, scattered shallow ponding

Field Observations:	Secondary Indicators (2 or more required):
Depth of Surface Water _____ in.	<input type="checkbox"/> Oxidized Root Channels in the Upper 12 Inches
Depth to Free Water in the Pit _____ in.	<input type="checkbox"/> Water Stained Leaves
Depth to Saturated Soils _____ in.	<input type="checkbox"/> Local Soil Survey Data
	<input type="checkbox"/> FAC Neutral Test
	<input type="checkbox"/> Other (explain in remarks)

Remarks: No wetland hydrology indicators were observed.

SOILS

Map Unit Name
(Series and Phase): Berks Shaly Silt Loam Drainage Class: Well drained

Taxonomy (Subgroup): Typic Distrochrepts Field Observations Confirmed
Mapped Type? No

PROFILE DESCRIPTION:

Depth (inches)	Soil Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance / Contrast	Texture, Concentrations, Structures, etc...
0-6"	A	10YR 4/3	No redox	N/a	SL – Moist to dry
9-16+"	B	7.5YR 4/4	No redox	N/a	SL – dry

Hydric Soil Indicators	Hydric Soil Indicators
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low Chroma Colors	<input type="checkbox"/> Concentrations <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (explain)

Remarks: No water in soil pit was observed.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	no		Is Sampling Point Within a Wetland?	no
Hydric Soils Present?	no			
Wetland Hydrology Present?	no			

Remarks: Clearly an upland area.

ROUTINE WETLAND DATA FORM

(1987 CORPS Wetland Delineation Manual)

Project /Site: Training & Readiness Maintenance Facility
 Owner: Letterkenny Army Depot
 Investigators: Frank Plewa, Sharon Madden, Sam Pelesky

Date: January 9, 2007
 County: Franklin
 State: Pennsylvania

Do Normal Circumstances Exist at the Site? no
 Is the Site Significantly Disturbed (atypical)? yes
 Is the Area a Potential Problem Area no

Community ID: Idle field (GPS point 2005)
 Transect ID: n/a
 Plot ID: U9 (Upland sample point)

This is an upland area located in the field ~ 25 yards upslope (north) of W3 (Wetland 1). The area has been mowed and plowed recently. Most of the adjacent upland areas have been recently plowed.

VEGETATION

	Dominant Species	Strata	Ind		Dominant Species	Strata	Ind
1.	See remarks			6.			
2.				7.			
3.				8.			
4.				9.			
5.				10.			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) = n/a

Remarks: Most of the vegetation in this area has been destroyed by mowing or plowing. Only a few upland grasses were observed.

HYDROLOGY

Recorded Data (describe in remarks)	Wetland Hydrology Primary Indicators (one required):
<input type="checkbox"/> Stream, Lake or Tide Gauge Data	<input type="checkbox"/> Inundated
<input type="checkbox"/> Aerial Photographs	<input type="checkbox"/> Saturated in the Upper 12 Inches
<input type="checkbox"/> Other	<input type="checkbox"/> Water Marks
<input type="checkbox"/> No Recorded Data Available	<input type="checkbox"/> Drift Lines
	<input type="checkbox"/> Sediment Deposits
	<input type="checkbox"/> Drainage Patterns in Wetlands

Hydrology – blackened leaves, upper two soil layers saturated to surface, scattered shallow ponding

Field Observations:	Secondary Indicators (2 or more required):
Depth of Surface Water _____ in.	<input type="checkbox"/> Oxidized Root Channels in the Upper 12 Inches
Depth to Free Water in the Pit _____ in.	<input type="checkbox"/> Water Stained Leaves
Depth to Saturated Soils _____ in.	<input type="checkbox"/> Local Soil Survey Data
	<input type="checkbox"/> FAC Neutral Test
	<input type="checkbox"/> Other (explain in remarks)

Remarks: No wetland hydrology indicators were observed.

SOILS

Map Unit Name (Series and Phase): Berks Shaly Silt Loam Drainage Class: Well drained

Taxonomy (Subgroup): Typic Distrochrepts Field Observations Confirmed Mapped Type? Generally Yes

PROFILE DESCRIPTION:

Depth (inches)	Soil Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance / Contrast	Texture, Concentrations, Structures, etc...
0-9"	Ap	10YR 4/3	No redox	N/a	SL - Moist
9-16+"	B	10YR 6/4	10YR 6/2 depletions	Small/faint/few	SL - Moist

Hydric Soil Indicators	Hydric Soil Indicators
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low Chroma Colors	<input type="checkbox"/> Concentrations <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (explain)

Remarks: No water in soil pit was observed.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	no		Is Sampling Point Within a Wetland?	no
Hydric Soils Present?	no			
Wetland Hydrology Present?	no			

Remarks: Clearly an upland area.

ROUTINE WETLAND DATA FORM

(1987 CORPS Wetland Delineation Manual)

Project /Site: Training & Readiness Maintenance Facility
Owner: Letterkenny Army Depot
Investigators: Frank Plewa, Sharon Madden, Sam Pelesky

Date: January 9, 2007
County: Franklin
State: Pennsylvania

Do Normal Circumstances Exist at the Site? no
Is the Site Significantly Disturbed (atypical)? yes
Is the Area a Potential Problem Area no

Community ID: Idle field (GPS point 2006)
Transect ID: n/a
Plot ID: U10 (Upland sample point)

This is an upland area located in the field on a gentle slope just east of Wetland 2 and upslope of W2. The area has been mowed and is plowed upslope. Most of the adjacent upland areas on either side of the drainage way have been recently plowed.

VEGETATION

	Dominant Species	Strata	Ind		Dominant Species	Strata	Ind
1.	See remarks			6.			
2.				7.			
3.				8.			
4.				9.			
5.				10.			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) = n/a

Remarks: Most of the vegetation in this area has been destroyed by mowing or appear to be agricultural grasses.

HYDROLOGY

Recorded Data (describe in remarks)	Wetland Hydrology Primary Indicators (one required):
<input type="checkbox"/> Stream, Lake or Tide Gauge Data	<input type="checkbox"/> Inundated
<input type="checkbox"/> Aerial Photographs	<input type="checkbox"/> Saturated in the Upper 12 Inches
<input type="checkbox"/> Other	<input type="checkbox"/> Water Marks
<input type="checkbox"/> No Recorded Data Available	<input type="checkbox"/> Drift Lines
	<input type="checkbox"/> Sediment Deposits
	<input type="checkbox"/> Drainage Patterns in Wetlands

Hydrology – blackened leaves, upper two soil layers saturated to surface, scattered shallow ponding

Field Observations:	Secondary Indicators (2 or more required):
Depth of Surface Water _____ in.	<input type="checkbox"/> Oxidized Root Channels in the Upper 12 Inches
Depth to Free Water in the Pit _____ in.	<input type="checkbox"/> Water Stained Leaves
Depth to Saturated Soils _____ in.	<input type="checkbox"/> Local Soil Survey Data
	<input type="checkbox"/> FAC Neutral Test
	<input type="checkbox"/> Other (explain in remarks)

Remarks: No wetland hydrology indicators were observed.

SOILS

Map Unit Name (Series and Phase): Berks Shaly Silt Loam Drainage Class: Well drained

Taxonomy (Subgroup): Typic Distrochrepts Field Observations Confirmed Mapped Type? Generally Yes

PROFILE DESCRIPTION:

Depth (inches)	Soil Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance / Contrast	Texture, Concentrations, Structures, etc...
0-7"	Ap	10YR 4/3	No redox	N/a	SL - Moist
9-14+"	B	2.5Y 5/3	10YR 5/2 depletions	med/faint/few	SL - Moist

Hydric Soil Indicators	Hydric Soil Indicators
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low Chroma Colors	<input type="checkbox"/> Concentrations <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (explain)

Remarks: No water in soil pit was observed. Shale bedrock prevented further sampling.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? no
 Hydric Soils Present? no
 Wetland Hydrology Present? no
Is Sampling Point Within a Wetland? no

Remarks: Clearly an upland area.

Appendix E: Letter of Jurisdictional Determination

DISTRICT OFFICE: **BALTIMORE**
FILE NUMBER: **NAB-2007-138-3**

PROJECT LOCATION INFORMATION:

State: **PENNSYLVANIA**
County: **FRANKLIN**
Center coordinates of site (latitude/longitude): **40.016408 / 77.647192**
Approximate size of area (parcel) reviewed, including uplands: **15+ ACRES**
Name of nearest waterway: **UNT TO MUDDY RUN**
Name of watershed: **SUSQUEHANNA RIVER**

JURISDICTIONAL DETERMINATION

Completed: Desktop determination Date:
Site visit(s) Date(s): **JANUARY 8-9 2007**

Jurisdictional Determination (JD):

- Preliminary JD - Based on available information, *there appear to be* (or) *there appear to be no* "waters of the United States" and/or "navigable waters of the United States" on the project site. A preliminary JD is not appeal able (Reference 33 CFR part 331). **JURISDICTIONAL WATERS VERIFIED**
- Approved JD – An approved JD is an appeal able action (Reference 33 CFR part 331).
Check all that apply:
- There are* "navigable waters of the United States" (as defined by 33 CFR part 329 and associated guidance) within the reviewed area. Approximate size of jurisdictional area: _____.
- There are* "waters of the United States" (as defined by 33 CFR part 328 and associated guidance) within the reviewed area. Approximate size of jurisdictional area: _____.
- There are* "isolated, non-navigable, intra-state waters or wetlands" within the reviewed area.
 Decision supported by SWANCC/Migratory Bird Rule Information Sheet for Determination of No Jurisdiction.

BASIS OF JURISDICTIONAL DETERMINATION:

A. Waters defined under 33 CFR part 329 as "navigable waters of the United States":

- The presence of waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

B. Waters defined under 33 CFR part 328.3(a) as "waters of the United States":

- (1) The presence of waters, which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
- (2) The presence of interstate waters including interstate wetlands¹.
- (3) The presence of other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate commerce including any such waters (check all that apply):
- (i) which are or could be used by interstate or foreign travelers for recreational or other purposes.
- (ii) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- (iii) which are or could be used for industrial purposes by industries in interstate commerce.
- (4) Impoundments of waters otherwise defined as waters of the US.
- (5) The presence of a tributary to a water identified in (1) – (4) above.
- (6) The presence of territorial seas.
- (7) The presence of wetlands adjacent² to other waters of the US, except for those wetlands adjacent to other wetlands.

Rationale for the Basis of Jurisdictional Determination (applies to any boxes checked above). *If the jurisdictional water or wetland is not itself a navigable water of the United States, describe connection(s) to the downstream navigable waters. If B(1) or B(3) is used as the Basis of Jurisdiction, document navigability and/or interstate commerce connection (i.e., discuss site conditions, including why the water body is navigable and/or how the destruction of the water body could affect interstate or foreign commerce). If B(2, 4, 5 or 6) is used as the Basis of Jurisdiction, document the rationale used to make the determination. If B(7) is used as the Basis of Jurisdiction, document the rationale used to make adjacency determination:*

The sequence of drainage is the unnamed tributaries to Muddy Run (intrastate waters), which are intermittent tributaries to Muddy Run (intrastate waters) a perennial tributary to Conodoquinet Creek (intrastate waters) a perennial tributary Susquehanna River (perennial and interstate waters) a tributary to the Chesapeake Bay (perennial and interstate waters). These waters are all jurisdictional pursuant to Section 404 of the Clean Water Act.

Lateral Extent of Jurisdiction: (Reference: 33 CFR parts 328 and 329)

- Ordinary High Water Mark indicated by:
- clear, natural line impressed on the bank
 - the presence of litter and debris
 - changes in the character of soil
 - destruction of terrestrial vegetation
 - shelving
 - other:
- High Tide Line indicated by:
- oil or scum line along shore objects
 - fine shell or debris deposits (foreshore)
 - physical markings/characteristics
 - tidal gages
 - other:
- Mean High Water Mark indicated by:
- survey to available datum; physical markings; vegetation lines/changes in vegetation types.
- Wetland boundaries, as shown on the attached wetland delineation map and/or in a delineation report prepared by:

Basis For Not Asserting Jurisdiction:

- The reviewed area consists entirely of uplands.
- Unable to confirm the presence of waters in 33 CFR part 328(a)(1, 2, or 4-7).
- Headquarters declined to approve jurisdiction on the basis of 33 CFR part 328.3(a)(3).
- The Corps has made a case-specific determination that the following waters present on the site are not Waters of the United States:
 - Waste treatment systems, including treatment ponds or lagoons, pursuant to 33 CFR part 328.3.
 - Artificially irrigated areas, which would revert to upland if the irrigation ceased.
 - Artificial lakes and ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.
 - Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons.
 - Water-filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States found at 33 CFR 328.3(a).
 - Isolated, intrastate wetland with no nexus to interstate commerce.
 - Prior converted cropland, as determined by the Natural Resources Conservation Service. Explain rationale:
 - Non-tidal drainage or irrigation ditches excavated on dry land. Explain rationale:
 - Other (explain):

DATA REVIEWED FOR JURISDICTIONAL DETERMINATION (mark all that apply):

- Maps, plans, plots or plat submitted by or on behalf of the applicant.
- Data sheets prepared/submitted by or on behalf of the applicant.
 - This office concurs with the delineation report, dated _____, prepared by (company):
 - This office does not concur with the delineation report, dated _____, prepared by (company):
- Data sheets prepared by the Corps.
- Corps' navigable waters' studies:
- U.S. Geological Survey Hydrologic Atlas:
- U.S. Geological Survey 7.5 Minute Topographic maps: **ROXBURY QUAD**
- U.S. Geological Survey 7.5 Minute Historic quadrangles:
- U.S. Geological Survey 15 Minute Historic quadrangles:
- USDA Natural Resources Conservation Service Soil Survey: **FRANKLIN COUNTY**
- National wetlands inventory maps: **ROXBURY QUAD**
- State/Local wetland inventory maps:
- FEMA/FIRM maps (Map Name & Date):
- 100-year Floodplain Elevation is: _____ (NGVD)
- Aerial Photographs (Name & Date): **USGS 1981, 1994, 1999**
- Other photographs (Date):
- Advanced Identification Wetland maps:
- Site visit/determination conducted on: **JANUARY 8-9, 2007**
- Applicable/supporting case law:
- Other information (please specify):

¹Wetlands are identified and delineated using the methods and criteria established in the Corps Wetland Delineation Manual (87 Manual) (i.e., occurrence of hydrophytic vegetation, hydric soils and wetland hydrology).

²The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the U.S. by man-made dikes or barriers, natural river berms, beach dunes, and the like are also adjacent.

Appendix F: Photographs



Portion of Wetland 1 that extends into field. Looking west towards Booster Road.



Wooded riparian corridor of Wetland 1, with the Unnamed Tributary to Muddy Run. Looking west.



Wetland 2, looking north from Wetland 1 towards Bayonet Road. Note wet pockets.



Wetland 2, looking south towards Wetland 1. Note ponding in ruts in field.



Wetland 2 and Unnamed Tributary B at the southern end of the wooded patch, looking north.



Wetland 2 and Unnamed Tributary B flowing through wooded patch. Looking southeast.



Wetland 2 and Unnamed Tributary B, looking northwest towards intersection of Booster Road and Bayonet Road.



Wetland 3, looking north from Unnamed Tributary to Muddy Run.



Wetland 4, looking north at indistinct channel of Unnamed Tributary C.



Unnamed Tributary to Muddy Run looking west from railroad tracks with Wetland 4 on the right (north) bank.



Wetland 5, looking south from Bayonet Road. Note change in soil color from light at the bottom of the picture to dark inside the wetland flags.



Wetland 5, looking north towards Bayonet Road, at beginning of Unnamed Tributary D.



Wetland 5 and Unnamed Tributary D where it flows through a culvert under the railroad tracks. Looking west from railroad tracks.



Unnamed Tributary to Muddy Run looking east from railroad tracks.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX D – FLORA AND FAUNA FOUND AT LEAD

(Source: Tetra Tech, 2001)

Flora Species Found at LEAD

Native and Wild, Non-native Plants at Letterkenny Army Depot that Provide Food and Cover for Wildlife

Common Name	Scientific Name
<u>Trees</u>	
Red Oak	<i>Quercus rubra</i>
Tulip Poplar (Yellow Poplar)	<i>Liriodendron tulipifera</i>
Chestnut Oak	<i>Quercus prinus</i>
Black Oak	<i>Quercus velutina</i>
White Ash	<i>Fraxinus americana</i>
White Oak	<i>Quercus alba</i>
Hickory	<i>Carya spp.</i>
Black Birch	<i>Betula lenta</i>
Eastern Hemlock	<i>Tsuga canadensis</i>
Elm	<i>Ulmus spp.</i>
Red Maple	<i>Acer rubrum</i>
White Pine	<i>Pinus strobus</i>
Black Walnut	<i>Juglan nigra</i>
Black Gum	<i>Nyssa sylvatica</i>
Basswood	<i>Tilia americana</i>
Black Cherry	<i>Prunus serotina</i>
Sassafras	<i>Sassafras albidum</i>
Hawthorn	<i>Crataegus spp.</i>
Pear	<i>Pyrus spp.</i>
Scotch Pine	<i>Pinus sylvestris</i>
Eastern Red Cedar	<i>Juniperus virginiana</i>
Box Elder	<i>Acer negundo</i>
Black Locust	<i>Robinia pseudoacacia</i>
Hackberry	<i>Celtis occidentalis</i>
Pin Oak	<i>Quercus palustris</i>
Willow	<i>Salix spp.</i>
Hornbeam	<i>Carpinus caroliniana</i>
Choke Cherry	<i>Prunus virginiana</i>

Native and Wild, Non-native Plants at Letterkenny Army Depot that Provide Food and
Cover for Wildlife

Common Name	Scientific Name
Sycamore	<i>Platanus occidentalis</i>
Redbud	<i>Cercis canadensis</i>
Sumac	<i>Rhus spp.</i>
Witch-hazel	<i>Hamamelis virginiana</i>
Larch	<i>Larix spp.</i>
Dogwood	<i>Cornus spp.</i>
Virginia Pine	<i>Pinus virginiana</i>
Tree-of-heaven	<i>Ailanthus altissima</i>
Butternut	<i>Juglans cinerea</i>
Spruce	<i>Picea spp.</i>
Apple	<i>Morus spp.</i>
Aspen	<i>Populus spp.</i>
<u>Shrubs</u>	
Wild Rose	<i>Rosa pranticola</i>
Autumn Olive	<i>Elaeagnus umbellata</i>
Poison Ivy	<i>Toxicodendron radicans</i>
Privet	<i>Ligustrum obtusifolium</i>
Raspberry	<i>Rubus spp.</i>
Greenbrier	<i>Smilax spp.</i>
Grape	<i>Vitis spp.</i>
Multiflora Rose	<i>Rosa multiflora</i>
Blueberry	<i>Vaccinium spp.</i>
Blackberry (Allegheny)	<i>Rubus allegheniensis</i>
Huckleberry	<i>Gaylussacia spp.</i>
Blackhaw	<i>Viburnum prunifolium</i>
Japanese Barberry	<i>Berberis thunbergii</i>
Dewberry	<i>Rubus spp.</i>
Spicebush	<i>Lindera benzoin</i>

Native and Wild, Non-native Plants at Letterkenny Army Depot that Provide Food and Cover for Wildlife

Common Name	Scientific Name
<u>Herbaceous Plants</u>	
Common Rush	<i>Juncus effusus</i>
Sneezeweed	<i>Helenium autumnale</i>
Knap Weed	<i>Centaurea maculosa</i>
Goldenrod	<i>Solidago spp.</i>
Milkweed	<i>Asclep</i>
Cattail	<i>Typha spp.</i>
Thistle	<i>Cirsium spp.</i>
Clover	<i>Trifolium spp.</i>
Plantain	<i>Plantago spp.</i>
Ragweed	<i>Ambrosia spp.</i>
Wheat Grass	<i>Agropyron spp.</i>
Beardgrass	<i>Andropogon glomeratus</i>
Broomsedge	<i>Andropogon virginicus</i>
Field Pussytoes	<i>Antennaria plantaginifolia</i>
Rattlesnake Weed	<i>Hieracium venosum</i>
Sedge	Family <i>Cyperaceae</i>
Foxtail	<i>Alopecurus pratensis</i>
Red Top	<i>Agrostis stolonifera</i>
Daisy (Ox-eye)	<i>Chrysanthemum leucanthemum</i>
Mosses	Division <i>Bryophyta</i>
Ferns	Division <i>Pteridophyta</i>
Lichens	Division <i>Lichenes</i>

Source: Pennsylvania State University, 1991.

Bird Species Found at LEAD

A List of Birds Found at LEAD by the Pennsylvania State University¹
and the Conococheague Audubon Society²

Common Name	Scientific Name (Family Name in Bold)
	<i>Accipitridae</i>
	<i>Accipitrinae</i>
Cooper's hawk	<i>Accipiter cooperii</i>
Sharp-shinned hawk	<i>Accipiter striatus</i>
	<i>Buteoninae</i>
Red-shouldered hawk	<i>Buteo lineatus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Broad-winged hawk	<i>Buteo platypterus</i>
	<i>Circinae</i>
Northern harrier	<i>Circus cyaneus</i>
	<i>Alcedinidae</i>
Belted kingfisher	<i>Ceryle alcyon</i>
	<i>Anatidae</i>
	<i>Anserinae</i>
Canada goose	<i>Branta canadensis</i>
	<i>Anatinae</i>
American black duck	<i>Anas rubripes</i>
Northern pintail	<i>Anas acuta</i>
American wigeon	<i>Anas americana</i>
Mallard	<i>Anas platyrhynchos</i>
Wood duck	<i>Aix sponsa</i>
Blue-winged teal	<i>Anas discors</i>
Green-winged teal	<i>Anas crecca</i>
	<i>Aythiinae</i>
Common Goldeneye	<i>Bucephala clangula</i>
Ring-necked duck	<i>Aythya collaris</i>
Redhead	<i>Aythya americana</i>
	<i>Merginae</i>
Hooded merganser	<i>Lophochytes cucullatus</i>
	<i>Apodidae</i>
Chimney swift	<i>Chaetura pelagica</i>
	<i>Ardeidae</i>
Great blue heron	<i>Ardea herodias</i>
Green-backed heron	<i>Butorides striatus</i>

Great egret	<i>Casmerodrus albus</i>
	<i>Bombycillidae</i>
Cedar waxwing	<i>Bombycilla cedrorum</i>
	<i>Caprimulgidae</i>
Common nighthawk	<i>Chordeiles minor</i>
Whip-poor-will	<i>Caprimulgus vociferus</i>
	<i>Cathartidae</i>
Black vulture	<i>Coragyps atratus</i>
Turkey vulture	<i>Cathartes aura</i>
	<i>Certhiidae</i>
Brown creeper	<i>Certhis americana</i>
	<i>Charadriidae</i>
Killdeer	<i>Charadrius vociferus</i>
	<i>Columbidae</i>
Rock dove	<i>Columa livia</i>
Mourning dove	<i>Zenaida macroura</i>
	<i>Cuculidae</i>
Black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>
Yellow-billed cuckoo	<i>Coccyzus americanus</i>
	<i>Corvidae</i>
Blue jay	<i>Cyanocitta cristata</i>
American crow	<i>Corvus brachyrhynchos</i>
Fish crow	<i>Corvus ossifragus</i>
Northern raven	<i>Corvus corax</i>
	<i>Falconidae</i>
	<i>Falconinae</i>
American kestrel	<i>Falco sparverius</i>
	<i>Fringillidae</i>
Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>
Indigo bunting	<i>Passerina cyanea</i>
Northern cardinal	<i>Cardinalis cardinalis</i>
Purple finch	<i>Carpodacus purpureus</i>
House finch	<i>Carpodacus mexicanus</i>
American goldfinch	<i>Carduelis tristis</i>
Rufous-sided towhee	<i>Pipilo erythrophthalmus</i>
Chipping sparrow	<i>Spizella passerina</i>
Field sparrow	<i>Spizella pusilla</i>

Vesper sparrow	<i>Poocetes gramineus</i>
Grasshopper sparrow	<i>Ammodramus savannarum</i>
Henslow's sparrow	<i>Ammodramus henslowii</i>
Savannah sparrow	<i>Passerculus sandwichensis</i>
Fox sparrow	<i>Passerella iliaca</i>
White-throated sparrow	<i>Zonotrichia albicollis</i>
White-crowned sparrow	<i>Zonotrichia leucophrys</i>
Song sparrow	<i>Melospiza melodia</i>
Swamp sparrow	<i>Melospiza georgiana</i>
Dark-eyed junco	<i>Junco hyemalis</i>
<hr/>	
<i>Gaviidae</i>	
Common loon	<i>Gavia immer</i>
<hr/>	
<i>Hirundininae</i>	
Tree swallow	<i>Tachycineta bicolor</i>
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>
Bank swallow	<i>Riparia riparia</i>
Cliff swallow	<i>Hirundo pyrrhonota</i>
Barn swallow	<i>Hirundo rustica</i>
<hr/>	
<i>Icterinae</i>	
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Eastern meadowlark	<i>Sturnella magna</i>
Common grackle	<i>Quiscalus quiscula</i>
Brown-headed cowbird	<i>Molothrus ater</i>
Northern oriole	<i>Icterus galula</i>
Orchard oriole	<i>Icterus spurius</i>
<hr/>	
<i>Laridae</i>	
<i>Sterninae</i>	
Terns	<i>Sterninae spp.</i>
<hr/>	
<i>Meleagridinae</i>	
Eastern wild turkey	<i>Meleagris gallopavo</i>
<hr/>	
<i>Mimidae</i>	
Gray catbird	<i>Dumetella carolinensis</i>
Northern mockingbird	<i>Mimus polyglottos</i>
Brown thrasher	<i>Toxostoma rufum</i>
<hr/>	
<i>Pandionidae</i>	
Osprey	<i>Pandion haliaetus</i>
<hr/>	

	<i>Paridae</i>
Black-capped chickadee	<i>Parus atricapillus</i>
Tufted titmouse	<i>Parus bicolor</i>
	<i>Parulidae</i>
Blue-winged warbler	<i>Vermivora pinus</i>
Yellow warbler	<i>Dendroica petchia</i>
Cerulean warbler	<i>Dendroica cerulea</i>
Chestnut-sided warbler	<i>Dendroica pennsylvanica</i>
Yellow-rumped warbler	<i>Dendroica coronata</i>
Black-and-white warbler	<i>Mniotilta varia</i>
American redstart	<i>Setophaga ruticilla</i>
Northern parula	<i>Parula americana</i>
Worm-eating warbler	<i>Helmitheros vermivorus</i>
Ovenbird	<i>Seiurus aurocapillus</i>
Northern waterthrush	<i>Seiurus noveboracensis</i>
Kentucky warbler	<i>Oporornis formosus</i>
Common yellowthroat	<i>Geothlypis trichas</i>
Hooded warbler	<i>Wilsonia citrina</i>
Yellow-breasted chat	<i>Icteria virens</i>
Pine warbler	<i>Dendroica pinus</i>
Palm warbler	<i>Dendroica palmarum</i>
	<i>Passeridae</i>
House sparrow	<i>Passer domesticus</i>
	<i>Phalacrocoracidae</i>
Double-crested cormorant	<i>Phalacrocorax auritus</i>
	<i>Phasianidae</i>
Northern bobwhite quail	<i>Colinus virginianus</i>
Ring-necked pheasant	<i>Phasianus colchicus</i>
	<i>Picidae</i>
Red-bellied woodpecker	<i>Melanerpes carolinus</i>
Downy woodpecker	<i>Picoides pubescens</i>
Hairy woodpecker	<i>Picoides villosus</i>
Northern flicker	<i>Colaptes auratus</i>
Pileated woodpecker	<i>Dryocopus pileatus</i>
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>
	<i>Podicipedidae</i>
Pied-billed grebe	<i>Podilymbus</i>

	<i>Rallidae</i>
American coot	<i>Fulica americana</i>
	<i>Scolopacidae</i>
Spotted sandpiper	<i>Actitis macularia</i>
American woodcock	<i>Scolopax minor</i>
	<i>Sittidae</i>
White-breasted nuthatch	<i>Sitta corolinensis</i>
	<i>Strigidae</i>
Great horned owl	<i>Bubo virginianus</i>
Northern saw-whet owl	<i>Aegolius acadicus</i>
Northern screech-owl	<i>Otus asio</i>
	<i>Sturnidae</i>
European starling	<i>Sturnus vulgaris</i>
	<i>Sylviidae</i>
Ruby-crowned kinglet	<i>Regulus calendula</i>
Golden-crowned kinglet	<i>Regulus satrapa</i>
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>
	<i>Tetraoninae</i>
Ruffed grouse	<i>Bonasa umbellus</i>
	<i>Thraupinae</i>
Scarlet tanager	<i>Piranga olivacea</i>
	<i>Trochilidae</i>
Ruby-throated hummingbird	<i>Archilochus colubris</i>
	<i>Troglodytidae</i>
Carolina wren	<i>Thryothorus ludovicianus</i>
House wren	<i>Troglodytes aedon</i>
Winter wren	<i>Troglodytes troglodytes</i>
	<i>Turdidae</i>
Eastern bluebird	<i>Sialia sialis</i>
Veery	<i>Catharus fuscescens</i>
Wood thrush	<i>Hylocichla mustelina</i>
Hermit thrush	<i>Catharus fuscescens</i>
American robin	<i>Turdus migratorius</i>
	<i>Tyrannidae</i>
Eastern Wood-pewee	<i>Contopus borealis</i>
Acadian flycatcher	<i>Empidonax virescens</i>
Alder flycatcher	<i>Empidonax alnorum</i>

Least flycatcher	<i>Empidonax minimum</i>
Eastern phoebe	<i>Sayornis phoebe</i>
Great crested flycatcher	<i>Myiarchus crinitus</i>
Eastern kingbird	<i>Tyrannus tyrannus</i>

Vireonidae

White-eyed vireo	<i>Vireo griseus</i>
Solitary vireo	<i>Vireo solitarius</i>
Yellow-throated vireo	<i>Vireo flavifrons</i>
Warbling vireo	<i>Vireo gilvus</i>
Red-eyed vireo	<i>Vireo olivaceus</i>

¹ Pennsylvania State University, 1991. Note: This list of bird species are those species which were found during 1987 wildlife inventories.

² Conococheague Audubon Society, 1995-2000. Note: Species recorded by the Conococheague Audubon Society are from spring bird counts only; therefore this list is limited by seasonality of particular bird species.

³ Bolded names listed under bolded underlined names are subfamilies.

Mammals Found at LEAD

Table 3-2
Mammals Found at LEAD by the Pennsylvania State University During 1987
Wildlife Inventories¹ and Bat Survey Conducted in 2000²

Common Name	Scientific Name
Marsupialia	<i>Didelphidae</i>
Virginia opossum	<i>Didelphis virginiana</i>
Insectivora	<i>Soricidae</i>
Masked shrew	<i>Sorex cinereus</i>
Insectivora	<i>Soricidae</i>
Short-tailed shrew	<i>Blarina brevicauda</i>
Lagomorpha	<i>Leporidae</i>
Eastern cottontail	<i>Sylvilagus floridanus</i>
Rodentia	<i>Sciuridae</i>
Eastern chipmunk	<i>Tamias striatus</i>
Woodchuck	<i>Marmota monax</i>
Gray squirrel	<i>Sciurus carolinensis</i>
Red squirrel	<i>Tamiasciurus hudsonicus</i>
	<i>Castoridae</i>
Beaver	<i>Castor canadensis</i>
	<i>Cricetidae</i>
Deer mouse	<i>Peromyscus maniculatus</i>
White-footed mouse	<i>Peromyscus leucopus</i>
Muskrat	<i>Ondatra zibethicus</i>
Carnivora	<i>Canidae</i>
Red fox	<i>Vulpes vulpes</i>
Gray fox	<i>Vulpes cinereoargenteus</i>
Coyote	<i>Canis latrans</i>
	<i>Procyonidae</i>
Raccoon	<i>Procyon lotor</i>
	<i>Mustelidae</i>
Long-tailed weasel	<i>Mustela frenata</i>
Mink	<i>Mustela vison</i>
Striped skunk	<i>Mephitis mephitis</i>
Artiodactyla	<i>Cervidae</i>
White-tailed deer	<i>Odocoileus virginianus</i>
Chiroptera	<i>Vespertilionidae</i>
Big brown bat	<i>Eptesicus fuscus</i>
Red bat	<i>Lasiurus borealis</i>
Northern long-eared bat	<i>Myotis septentrionalis</i>

¹ Source: Pennsylvania State University, 1991. Note: This list is limited by the lack of more current survey results.

² Source: Tetra Tech, 2000. Note: A survey was conducted for Indiana bats, which were not found on the installation, but the bat species that were found during that survey were recorded. See Appendix C.

Reptiles Present in Franklin County

Reptiles Present in Franklin County That May Be Found on LEAD¹

Common Name	Scientific Name
<u>Turtles</u>	
Common snapping	<i>Chelydra s. serpentina</i>
Stinkpot	<i>Sternotherus odoratus</i>
Spotted	<i>Clemmys guttata</i>
Wood	<i>Clemmys insculpta</i>
Bog	<i>Clemmys muhlenbergi</i> ²
Eastern box	<i>Terrapene carolina</i>
Map	<i>Graptemys geographica</i>
Midland painted	<i>Chrysemys picta marginata</i>
Red-bellied	<i>Pseudemys rubriventris</i> ³
<u>Lizards</u>	
Northern fence	<i>Sceloporus undulatus hyacinthius</i>
Northern coal skink	<i>Eumeces anthracinus</i> ⁴
Five-lined skink	<i>Eumeces fasciatus</i>
<u>Snakes</u>	
Northern water	<i>Nerodia sipedon</i>
Northern brown	<i>Storeria dekayi</i>
Northern red-bellied	<i>S. occipitomaculata</i>
Eastern ribbon	<i>Thamnophis sauritus</i>
Eastern garter	<i>T. s. sirtalis</i>
Eastern hognose	<i>Heterodon platyrhinos</i>
Northern ringneck	<i>Diadophis punctatus edwardsi</i>
Northern black racer	<i>Coluber constrictor</i>
Eastern smooth green	<i>Ophiodrys vernalis</i>
Black rat	<i>Elaphe obsoleta</i>
Eastern milk	<i>Lampropeltis triangulum</i>
Northern copperhead	<i>Agkistrodon contortrix mokeson</i>
Timber rattlesnake	<i>Crotalus horridus</i>

¹ This is a limited list based on historical data and only provides an indication of the reptile species that may be found in the area. No recent survey results are currently available.

² Extreme western edge of range comes into The Great Valley. (The Great Valley is in Franklin and Cumberland counties.)

³ One account in Franklin County on West Branch of Conococheague Creek in 1968 by Pennsylvania Fish Commission.

⁴ Scattered and extremely localized; uncertain locality given by S.F. Baird in 1850 in western Franklin County on easternmost ridge of the Valley and Ridge section.

Source: Pennsylvania State University, 1991.

Amphibians Present in Franklin County

Amphibians Present in Franklin County That May Be Found on LEAD¹

Common Name	Scientific Name
<u>Salamanders</u>	
Jefferson	<i>Ambystoma jeffersonianum</i>
Spotted	<i>Ambystoma maculatum</i>
Marbled	<i>Ambystoma opacum</i>
Red-spotted newt	<i>Notophthalmus viridescens</i>
Northern dusky	<i>Desmognathus fuscus</i>
Mountain dusky	<i>Desmognathus ochrophaeus</i> ²
Redbacked	<i>Plethodon cinereus</i>
Slimy	<i>Plethodon glutinosus</i>
Valley and Ridge	<i>Plethodon hoffmani</i> ³
Four-toed	<i>Hemidactylium scutatum</i> ⁴
Northern spring	<i>Gyrinophilus porphyriticus</i>
Northern red	<i>Pseudotriton ruber</i>
Northern two-lined	<i>Eurycea bislineata</i>
Long-tailed	<i>Eurycea longicauda</i>
<u>Toads and Frogs</u>	
Eastern American toad	<i>Bufo a. americanus</i>
Fowler's toad	<i>B. woodhousei fowleri</i>
Northern cricket frog	<i>Acris crepitans</i>
Northern spring peeper	<i>Hyla crucifer</i>
Gray treefrog	<i>Hyla versicolor</i>
Striped chorus frog	<i>Pseudacris triseriata</i>
Bullfrog	<i>Rana catesbeiana</i>
Green frog	<i>Rana clamitans melanota</i>
Pickrel frog	<i>Rana palustris</i>
Wood frog	<i>Rana sylvatica</i>
Eastern spadefoot	<i>Scaphiopus holbrookii</i> ⁵

¹ This is a limited list based on historical data and only provides an indication of the amphibian species that may be found in the area. No recent survey results are currently available.

² A few scattered populations in the Valley and Ridge section; absent from southeastern Pennsylvania.

³ In the Letterkenny area would be restricted to the Valley and Ridge mountains.

⁴ Special habitat requirements of forest pools and bogs.

⁵ Scattered and extremely localized.

Source: Pennsylvania State University, 1991.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX E – AGENCY CONSULTATION



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY

LETTERKENNY ARMY DEPOT
1 OVERCASH AVENUE
CHAMBERSBURG, PENNSYLVANIA 17201

December 22, 2006

Directorate of Public Works - Environmental Management Division

Mr. John David Denismore, Supervisor
U.S. Fish & Wildlife Service
Pennsylvania Field Office
315 Allen Street, Suite 322
State College, Pennsylvania 16801-4850

Dear Mr. Denismore:

The Department of the Army (DA) is preparing an Environmental Assessment (EA) for the proposed construction of several facilities resulting from Base Realignment and Closure (BRAC) recommendations. On September 8, 2005, the Defense Base Closure and Realignment Commission ("BRAC Commission") recommended that certain realignment actions occur at Letterkenny Army Depot in Chambersburg, Pennsylvania. These recommendations were approved by the President on September 23, 2005, and forwarded to Congress. The Congress did not alter any of the BRAC Commission's recommendations, and on November 9, 2005, the recommendations became law. To enable implementation of these recommendations, the Army proposes to provide necessary facilities to support changes in force structure at Letterkenny Army Depot.

The EA will analyze and document environmental effects associated with the Army's proposed realignment actions at Letterkenny Army Depot. The EA is being prepared in strict accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 USC 4321 et seq.); the Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508); Army Regulation (AR) 200-2; and the Army 2006 Base Realignment and Closure Manual for Compliance with the National Environmental Policy Act.

The following presents the BRAC-related projects planned as part of the realignment actions and their locations on Letterkenny Army Depot (see enclosure).

- a. **Guided Missile Maintenance Facility** - To support this realignment, it is necessary to construct a Theater Readiness Monitoring Facility (TRMF). Square footage (SF) of the TRMF is identified on existing DD1391 as 40,000 SF but has been further refined to approximately 35,000 SF. Facility includes substantial dividing walls, can and decan areas, loading dock, test bays, operation bays, Electromagnetic Radio Frequency (RF) shielding, grounding, raised floor areas, controlled humidity, clean room, administrative area, break room, rest room, explosion proof lighting, cold storage area, inert gas lines, cranes, storage areas, chemical agent resistant coatings (CARC) paint area, fire protection to include alarm, sprinkler system, fire pump, intrusion detection, emergency generator and building information systems. Supporting facilities include lighting protection, external security lighting, paved access road, 0.75-acre (~ 80 spaces) operational parking, and security fence.

- b. **Covered Missile Storage Facility.** Construct a 2,000 SF storage facility for Tactical Missiles. Storage of missiles to be worked through the TRMF require quantity-distance compliant storage that may not be available in existing earth-covered magazines depending upon the conventional storage requirements imposed upon Letterkenny Munitions Center (LEMC). This project is needed to ensure that adequate storage space for the new mission is available.
- c. **Hazardous Materials Storage Facility.** Construction of a 2,000 SF new covered hazardous waste storage pad is required to classify, store, and hold for disposal hazardous wastes that will be generated by the transferred mission. These wastes include lubricants, cleaning agents, and other liquids along with solid wastes generated by blasting and painting operations.
- d. **Health Clinic Addition.** Construction of a 690-square-foot addition to Building 332, the existing Health Clinic (located adjacent to building 331), is required to accommodate increased BRAC staffing and provide storage area for additional employee health records. The increase in staff and records volume is necessary to provide health services to the additional personnel associated with the new missions.

In accordance with the National Environmental Policy Act, Endangered Species Act, and Fish and Wildlife Coordination Act, an evaluation of the potential effects (both beneficial and adverse) associated with implementing this action is required. We are requesting your input concerning any biological concerns regarding this action, such as the presence of federally listed threatened or endangered species, or critical habitat. The affected areas where the construction projects associated with the BRAC05 realignment actions are shown in the enclosure.

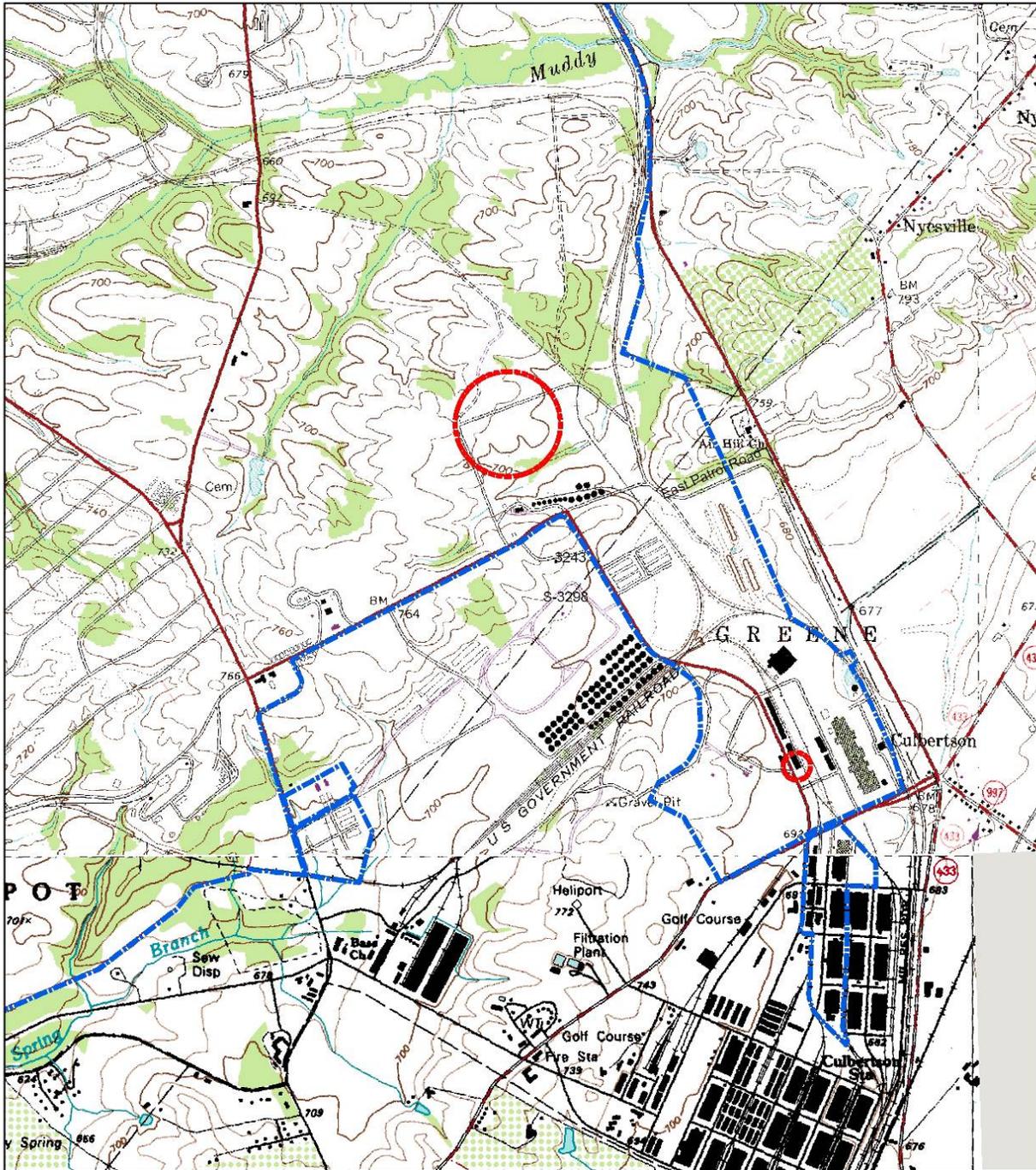
I would like to thank you in advance for your cooperation in this matter. Your prompt consideration and response would be greatly appreciated. Please provide any comments on issues you feel the Army should consider in its EA to me. Your prompt consideration and response within 30 days from the date of this letter is greatly appreciated. If you need additional information, please call me at (717) 267-9022. Thank you for your cooperation.

Sincerely,

Randall Quinn, Environmental Coordinator
Environmental Management Division,
Letterkenny Army Depot

Enclosure

Enclosure Project Locations for BRAC Proposed Action Alternative



Legend

- Project Areas
- LEAD Boundary

0 1,000 2,000
Feet



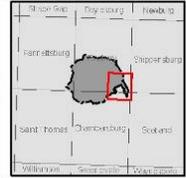
Letterkenny Army Depot Quadrangle Map (Chambersburg and Roxbury)

Sources: LEAD, GeoCommunity, ESRI
Coordinate System: NAD 1983, StatePlane
Pennsylvania South FIPS 3702 Feet
Prepared By: The Louis Berger Group

MAP INDEX



QUAD INDEX



THIS PAGE INTENTIONALLY LEFT BLANK



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, Pennsylvania 16801-4850

January 18, 2007

Mr. Randall Quinn, Environmental Coordinator
Environmental Management Division
Department of the Army
Letterkenny Army Depot
1 Overcash Avenue
Chambersburg, PA 17201

RE: USFWS Project #2007-0755

Dear Mr. Quinn:

This responds to your letter dated December 22, 2006, requesting information on fish and wildlife resources within the area affected by the proposed realignment activities at the Letterkenny Army Depot, located in Chambersburg, Franklin County, Pennsylvania. The following comments are provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of federally endangered and threatened species, and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*) to ensure protection of fish and wildlife resources.

Federally Listed and Proposed Species

The proposed project is within the known range of the bog turtle (*Clemmys muhlenbergii*), a species that is federally listed as threatened. Based on our review of the information provided, including the project description and location, no adverse effects on this species are likely to occur if there will be no direct or indirect impacts to wetlands. If any wetlands will be affected, further information should be submitted to this office for review.

Aquatic Resources

National Wetlands Inventory maps indicate that palustrine forested wetlands occur within the boundaries of the proposed project. Although NWI maps were prepared using aerial photography, and are therefore not always completely accurate, the Soil Survey for Franklin County also indicates that wetlands are likely to occur there. Weikert Shaley Silt Loam (hydric inclusions) occur within the boundaries of the proposed project area. This soil type is typically found in spring-seep areas and may indicate the presence of

wetlands on the site. Any final determination of whether wetlands are present on the proposed project site should include a site visit by a qualified individual trained in wetland identification. Furthermore, the proposed project area includes a stream. We recommend that you avoid, and minimize unavoidable impacts to, aquatic resources when planning and constructing the structures necessary for the Base Realignment Project.

The Department of the Army has a responsibility under Executive Order 11990 (Protection of Wetlands) to “provide leadership and take action to minimize the destruction, loss or degradation of wetlands . . . in carrying out the agency’s responsibilities for . . . providing federally undertaken, financed, or assisted construction and improvements.” Any development should be designed to leave streams and wetlands in their natural state, and include the use of appropriate upland buffers. Such measures help to reduce development impacts in important aquatic habitats, and prevent downstream flooding and water quality degradation.

Work in streams and wetlands require permits from the Pennsylvania Department of Environmental Protection and/or the Army Corps of Engineers. We suggest that you contact the DEP and the Corps at the addresses found in the enclosed list for information on permit requirements. By copy of this letter, we are informing these agencies of the proposed project. Please be advised that the Service generally recommends that the Corps and DEP not grant permits to destroy streams and wetlands.

To avoid potential delays in reviewing your project, please use the above-referenced USFWS project tracking number in any future correspondence regarding this project.

If you have any questions regarding this matter, please contact Jennifer Kagel of my staff at 814-234-4090.

Sincerely,


for David Densmore
Supervisor

Enclosure

STATE AND FEDERAL WETLAND REGULATORY AGENCIES – PENNSYLVANIA

Pennsylvania Department of Environmental Protection

DEP Regional Offices	County Coverage
Northwest Regional Office 230 Chestnut Street Meadville, PA 16335-3481	Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango and Warren
Southwest Regional Office 400 Waterfront Drive Pittsburgh, PA 15222-4745	Allegheny, Armstrong, Beaver, Cambria, Fayette, Greene, Indiana, Somerset, Washington and Westmoreland
Northcentral Regional Office 208 West Third Street, Suite 101 Williamsport, PA 17701-6448	Bradford, Cameron, Clearfield, Centre, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga and Union
Southcentral Regional Office 909 Elmerton Avenue Harrisburg, PA 17110-8200	Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry and York
Northeast Regional Office 2 Public Square Wilkes-Barre, PA 18711-0790	Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne and Wyoming
Southeast Regional Office 2 East Main Street Norristown, PA 19401	Bucks, Chester, Delaware, Montgomery and Philadelphia

U.S. Army Corps of Engineers

U.S. Army Corps of Engineers Offices	Area Covered
U.S. Army Corps of Engineers Baltimore District, Regulatory Branch P.O. Box 1715 Baltimore, MD 21203	Susquehanna River watershed
U.S. Army Corps of Engineers Philadelphia District, Regulatory Branch 100 Penn Square East Philadelphia, PA 19107-3390	Delaware River watershed
U.S. Army Corps of Engineers Pittsburgh District, Regulatory Branch William S. Moorhead Federal Building 1000 Liberty Ave. Pittsburgh, PA 15222-4186	Ohio River watershed



DEPARTMENT OF THE ARMY
LETTERKENNY ARMY DEPOT
1 OVERCASH AVENUE
CHAMBERSBURG PA 17201-4150
March 9 2007

REPLY TO
ATTENTION OF

A
Environmental Management Division

Ms. Pam Shellenberger
United States Department of the Interior
Fish and Wildlife Service
Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, Pennsylvania 16801-4850

RE: USFWS Project Number 2007-0755

Dear Ms. Shellenberger:

This is in reference to your letter dated January 18, 2007 (USFWS Project # 2007-0755) requesting further information concerning wetlands that may be affected by the proposed BRAC 05 Realignment activities at Letterkenny Army Depot (LEAD) and the potential to impact the bog turtle (*Clemmys muhlenbergii*), a species listed as federally threatened.

Enclosed is a wetland delineation that was performed by the US Army Corp of Engineers (USACE) on the proposed site on January 8 and 9, 2007. The delineation considered the potential for direct impacts based on 35 percent design plan. Five wetland areas, totaling 1.9 acres, were noted to occur within the wetland survey boundary.

Minor long-term impact to USACE delineated wetlands and unnamed tributaries are expected with the implementation of the proposed project (LEAD, 2007 Wetland Delineation). The primary area of concern is a road crossing that will bisect a 0.35 acre palustrine emergent wetland and an unnamed intermittent tributary (see Wetland 2 in attached figure). The road which is expected to cross the wetland area will provide the only access to and from the site.

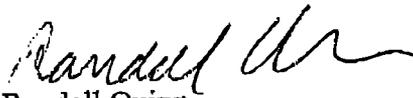
The portion of Wetland 2 that will be impacted is characterized as part of a gently sloping agricultural field that was formerly leased for hay production. The soils in this location are part of the Weikert series (WkB and WeB) which consist of shallow, well drained soils formed in material that weathered from interbedded gray and brown acid shale, siltstone, and fine-grained sandstone on gently sloping to very steep areas on uplands. Vegetation at the site is dominated by upland agricultural grasses. Due to recent mowing, common rush (*Juncus effusus*) was the only identifiable wet, facultative hydrophyte (FACW) species present on the site. Although soils were saturated at this location with low chroma colors, it was not consistent with habitat preferred by the bog turtle as described in the USFWS Guideline for Bog Turtle Surveys.

In the spring of 2000, as part of LEAD's Integrated Natural Resources Management Plan (INRMP), an extensive study was performed at LEAD to delineate potential habitat for the bog turtle, rank the quality of habitat, and evaluate the population levels. Nine areas were identified

as potentially having suitable habitat. The proposed site was not part of that survey because it was considered unsuitable habitat. The survey was conducted by a qualified permitted bog turtle surveyor who was listed with your agency. During this survey, no bog turtles were found. Areas on LEAD that were most likely to have bog turtles were sampled according to USFWS protocols, with no evidence of turtles. The survey results indicated that the habitat on LEAD would not pass Phase 2 of USFWS survey protocols. Since 2000, LEAD has continued to perform surveys for turtles and other wetland-dependent wildlife on the installation. These surveys have resulted in observing other turtle species in the same genus as the bog turtle including the spotted turtle (*Clemmys guttata*) and the wood turtle (*Clemmys insculpta*), although no evidence of bog turtles has been found.

Based on the lack of suitable habitat at the proposed site and previous studies conducted at LEAD, we believe that there will be no adverse effects to the bog turtle with respect to this project. Please let us know if you concur with this determination. If you have any further questions or would prefer to have a site visit, you may contact Mr. Craig Kindlin of my staff at (717) 267-8832.

Sincerely,



Randall Quinn
Chief, Environmental Management Division

Enclosure

CF:

Beverly H. Stout, Mobile District, Corps of Engineers, Military Planning and Environmental Compliance, P. O. Box 2288, Mobile, AL 3628-0001
Julia Yuan, Environmental Scientist, The Louis Berger Group, Inc., 2445 M Street NW, Washington, DC 20037



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, Pennsylvania 16801-4850

April 2, 2007

Randall Quinn
Department of the Army
Letterkenny Army Depot
1 Overcash Avenue
Chambersburg, PA 17201-4150

RE: USFWS Project #2007-0755

Dear Mr. Quinn:

This responds to your letter of March 9, 2007, which provided the Fish and Wildlife Service with information regarding the proposed BRAC 05 Realignment activities at Letterkenny Army Depot (LEAD), located in Franklin County, Pennsylvania. The proposed project is within the known range of the bog turtle (*Clemmys muhlenbergii*), a species that is federally listed as threatened. The following comments are provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of endangered and threatened species.

In 2000, a qualified bog turtle surveyor conducted a bog turtle habitat survey of all wetlands on the LEAD site. This survey found no potential bog turtle habitat on the site. Therefore, based on our review of this report, we conclude that implementation of the proposed project will not affect the bog turtle.

This determination is valid for two years from the date of this letter. If the proposed project has not been fully implemented prior to this, an additional review by this office is recommended. Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

If the Phase 1 habitat assessment did not include all wetlands in all areas that will be directly or indirectly affected by the proposed project and project-associated features (e.g., roads, water and sewer lines, utility lines, stormwater and sedimentation basins, buildings and other structures, driveways, parking lots, yards/lawns, wells), the scope of the Phase 1 survey should be expanded to include these areas. If any wetlands are located, the results of the expanded wetland and Phase 1 investigation should be submitted to our office for review so that we can confirm whether the above determination is still valid.

This response relates only to endangered and threatened species under our jurisdiction, based on an office review of the proposed project's location. No field inspection of the project area has been conducted by this office. Consequently, this letter is not to be construed as addressing potential Service concerns under the Fish and Wildlife Coordination Act or other authorities.

To avoid potential delays in reviewing your project, please use the above-referenced USFWS project tracking number in any future correspondence regarding this project.

Please contact Pam Shellenberger of my staff at 814-234-4090 if you have any questions or require further assistance regarding this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "David Densmore", followed by a long horizontal line extending to the right.

David Densmore
Supervisor



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
LETTERKENNY ARMY DEPOT
1 OVERCASH AVENUE
CHAMBERSBURG, PENNSYLVANIA 17201

January 9, 2007

Directorate of Public Works - Environmental Management Division

Mr. Carl Richardson
Pennsylvania Fish and Boat Commission
1601 Elmerton Avenue
PO Box 67000
Harrisburg, PA 17106-7000

Dear Mr. Richardson:

The Department of the Army (DA) is preparing an Environmental Assessment (EA) for the proposed construction of several facilities resulting from Base Realignment and Closure (BRAC) recommendations. On September 8, 2005, the Defense Base Closure and Realignment Commission ("BRAC Commission") recommended that certain realignment actions occur at Letterkenny Army Depot in Chambersburg, Pennsylvania. These recommendations were approved by the President on September 23, 2005, and forwarded to Congress. The Congress did not alter any of the BRAC Commission's recommendations, and on November 9, 2005, the recommendations became law. To enable implementation of these recommendations, the Army proposes to provide necessary facilities to support changes in force structure at Letterkenny Army Depot.

The EA will analyze and document environmental effects associated with the Army's proposed realignment actions at Letterkenny Army Depot. The EA is being prepared in strict accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 USC 4321 et seq.); the Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508); Army Regulation (AR) 200-2; and the Army 2006 Base Realignment and Closure Manual for Compliance with the National Environmental Policy Act.

The following are the BRAC-related projects planned as part of the realignment actions and their locations on Letterkenny Army Depot (see enclosed map). You will note that the first three projects, the **Theater Readiness Monitoring Facility (TRMF), Covered Missile Storage Facility, and Hazardous Materials Storage Facility** are collocated.

- a. **Theater Readiness Monitoring Facility** - To support this realignment, it is necessary to construct a TRMF of approximately 35,000 SF. The facility includes substantial dividing walls, can and decan areas, loading dock, test bays, operation bays, Electromagnetic Radio Frequency (RF) shielding, grounding, raised floor areas, controlled humidity, clean room, administrative area, break room, rest room, explosion proof lighting, cold storage area, inert gas lines, cranes, storage areas, chemical agent resistant coatings (CARC) paint area, fire protection to include alarm, sprinkler system, fire pump, intrusion detection, emergency generator and building information systems. Supporting facilities include external security lighting, paved access road, and a 0.75-acre parking lot (~ 80 spaces).

- b. **Covered Missile Storage Facility.** It will also be necessary to construct a 2,000 SF temporary holding facility for Tactical Missiles to be worked through the TRMF. This facility requires quantity-distance compliant storage that may not be available in existing earth-covered magazines depending upon the conventional storage requirements imposed upon Letterkenny Munitions Center (LEMC). This project is needed to ensure that adequate in-process storage space for the new mission is available.
- c. **Hazardous Materials Storage Facility.** A 2,000 SF new covered hazardous material storage building is required to classify, store, and hold hazardous materials that will be used by the transferred mission. These materials include lubricants, cleaning agents, paints and other materials needed in the normal process of operations.
- d. **Health Clinic Addition.** Construction of a 690-square-foot addition to Building 332, the existing Health Clinic (located adjacent to building 331), is required to accommodate increased BRAC staffing and provide storage area for additional employee health records. The increase in staff and records volume is necessary to provide health services to the additional personnel associated with the new missions.

In accordance with the National Environmental Policy Act, Endangered Species Act, and Fish and Wildlife Coordination Act, an evaluation of the potential effects (both beneficial and adverse) associated with implementing this action is required. We are requesting your input concerning any biological concerns regarding this action, such as the presence of State- and Federally- listed threatened or endangered fish, reptile, amphibian, and aquatic invertebrate species, or critical habitat. The affected areas where the construction projects associated with the BRAC05 realignment actions are shown in the enclosure.

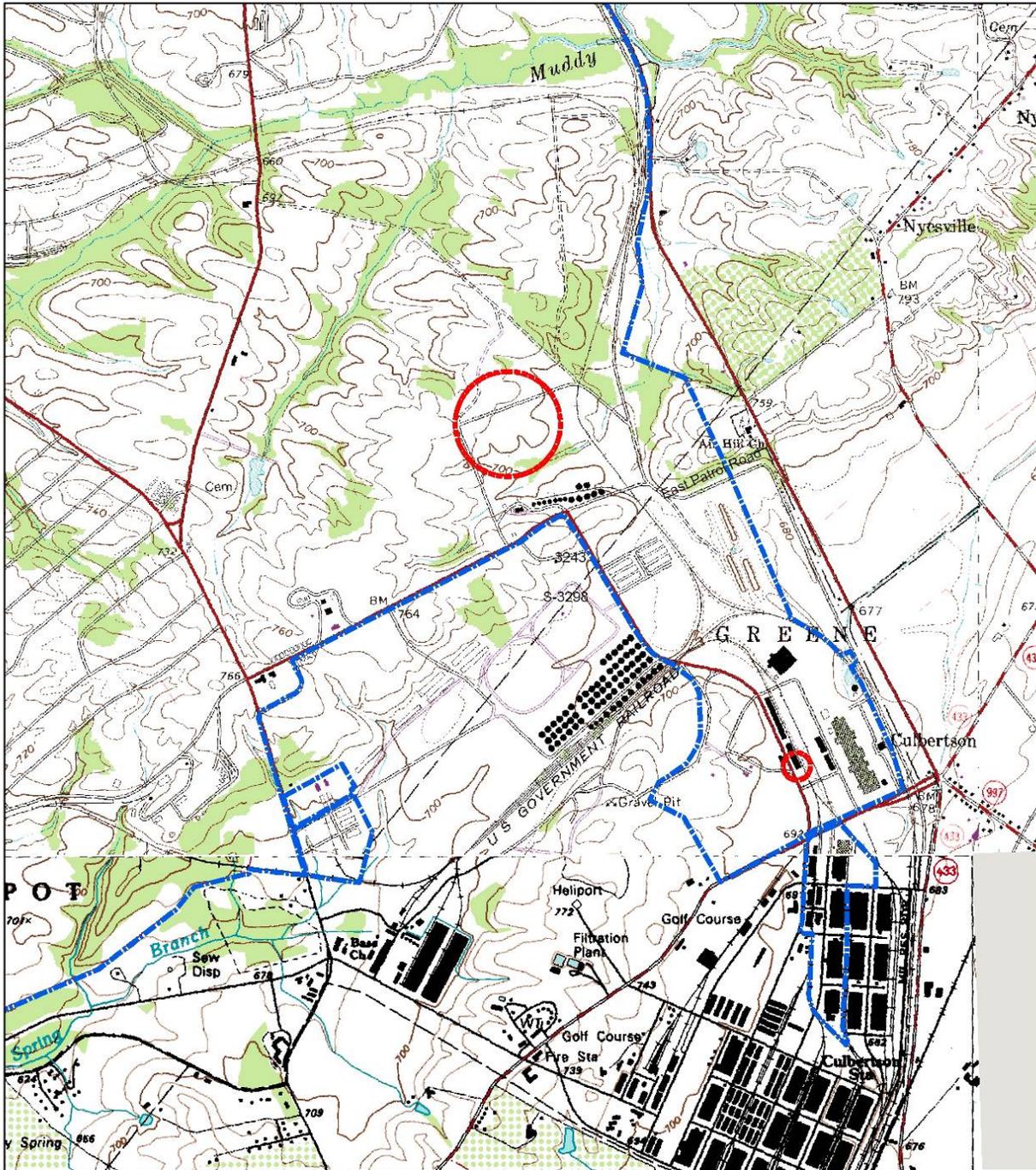
I would like to thank you in advance for your cooperation in this matter. Your prompt consideration and response would be greatly appreciated. Please provide any comments on issues you feel the Army should consider in its EA to me. Your prompt consideration and response within 30 days from the date of this letter is greatly appreciated. If you need additional information, please call me at (717) 267-9022. Thank you for your cooperation.

Sincerely,

Randall Quinn, Environmental Coordinator
Environmental Management Division,
Letterkenny Army Depot

Enclosure

Enclosure Project Locations for BRAC Proposed Action Alternative



Legend

- Project Areas
- LEAD Boundary

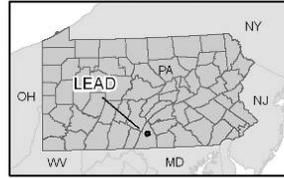
0 1,000 2,000
Feet



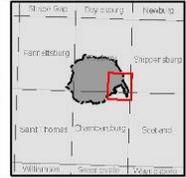
Letterkenny Army Depot Quadrangle Map (Chambersburg and Roxbury)

Sources: LEAD, GeoCommunity, ESRI
Coordinate System: NAD 1983, StatePlane
Pennsylvania South FIPS 3702 Feet
Prepared By: The Louis Berger Group

MAP INDEX



QUAD INDEX



THIS PAGE INTENTIONALLY LEFT BLANK



established 1866

Pennsylvania Fish & Boat Commission

Division of Environmental Services
Natural Diversity Section
450 Robinson Lane
Bellefonte, PA 16823-9620
(814) 359-5237 Fax: (814) 359-5175

January 25, 2007

IN REPLY REFER TO
SIR # 24629

RANDALL QUINN
DEPARTMENT OF THE ARMY
LETTERKENNY ARMY DEPOT
1 OVERCASH AVENUE
CHAMBERSBURG, PA 17201

**RE: Species Impact Review (SIR) - Rare, Candidate, Threatened and Endangered Species
PROPOSED REALIGNMENT ACTIONS AT LETTERKENNY DEPOT
CHAMBERSBURG, FRANKLIN County, Pennsylvania**

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflict" or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code. The absence of recorded information from our files does not necessarily imply actual conditions on site. Future field investigations could alter this determination. The information contained in our files is routinely updated. A Species Impact Review is valid for one year only.

X **NO ADVERSE IMPACTS EXPECTED FROM THE PROPOSED PROJECT**

____ Except for occasional transient species, rare, candidate, threatened or endangered species under our jurisdiction are not known to exist in the vicinity of the project area. Therefore, no biological assessment or further consultation regarding rare species is needed with the Commission. Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

X An element occurrence of a rare, candidate, threatened, or endangered species under our jurisdiction is known from the vicinity of the proposed project. However, given the nature of the proposed project, the immediate location, or the current status of the nearby element occurrence(s), no adverse impacts are expected to the species of special concern.

If you have any questions regarding this review, please contact the biologist indicated below:

____	Jeff Schmid	814-359-5236	<u> X </u>	Tina Walther	814-359-5186
____	Nevin Welte	814-359-5234	____	Bob Morgan	814-359-5129

I am enclosing a copy of our "SIR Request Form", which is to be used for all future species impact review requests. Please make copies of the attached form and use with all future project reviews. Thank you in advance for your cooperation and attention to this important matter of species conservation and habitat protection.

SIGNATURE: Christopher A. Urban DATE: January 25, 2007
Christopher A. Urban
Chief, Natural Diversity Section

Our Mission:

www.fish.state.pa.us

To provide fishing and boating opportunities through the protection and management of aquatic resources.

COMMONWEALTH OF PENNSYLVANIA
FISH AND BOAT COMMISSION
 NATURAL DIVERSITY SECTION
SPECIES IMPACT REVIEW (SIR) REQUEST FORM

- A. This form provides the site information necessary to perform a computer database search for species of special concern listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, the Pennsylvania Fish and Boat Code or the Wildlife Code.
- B. Use only **one form** for each proposed project or location. Complete the information below and **mail** form to:

Natural Diversity Section
 Division of Environmental Services
 PA Fish and Boat Commission
 450 Robinson Lane
 Bellefonte, PA 16823
 Fax: (814) 359-5175

- C. This form, a cover letter including a project narrative, and accompanying maps should be sent to the above address for environmental reviews that **only** concern **reptiles, amphibians, fishes and aquatic invertebrates**. Reviews for other natural resources must be submitted to other appropriate agencies.
- D. The absence of recorded information from our databases and files does not necessarily imply actual conditions on site. Future field investigations could alter this determination. The information contained in our files is routinely updated. A review is valid for one year.
- E. **Please send us only one (1) copy of your request** – either by fax or by mail – not both. Mail is preferred to improve legibility of maps. Facsimile submission will not improve our response turn-around time.
- F. **Allow 30 days for completion of the review from the date of PFBC receipt**. Large projects and workload may extend this review timeframe.
- G. **In any future correspondence with us following your receipt of the SIR response, please refer to the assigned SIR number at the top left of our cover letter.**
- H. **FORMS THAT ARE NOT COMPLETED IN FULL WILL NOT BE REVIEWED.**

PLEASE PRINT OR TYPE: If available, provide the potential conflict **PNDI Search Number:** _____
 PFBC response should be sent to:
 Company/Agency: _____ Form Preparer: _____
 Address: _____
 Phone (8:00 AM to 4:00 PM): _____

Project Description: _____

Indicate if the project is: Transportation or Non-transportation (check one)
 Will the proposed project encroach directly or indirectly (e.g., runoff) upon wetlands or waterways? Circle one for each:
Wetlands: Yes No Unknown **Waterways:** Yes No Unknown
 County: _____ Township/Municipality: _____

Name of the United States Geological Survey (U.S.G.S.) 7.5 Minute Quadrangle Map where project is located: _____
 Project size (in acres): _____

Attach an 8.5" by 11" photocopy (**DO NOT REDUCE**) of the section of the U.S.G.S. Quadrangle Map which identifies the project location. On this map, indicate the location of the project center (if linear, depict both ends) and outline the approximate boundaries of the project area.

Specify latitude/longitude of the project center. **Latitude:** _____ ° / _____ ' / _____ " N
 Indicate latitude/longitude in degrees-minutes-seconds format only. **Longitude:** _____ ° / _____ ' / _____ " W

Three steps are needed to convert from decimal degrees to degrees-minutes-seconds: (1) Degrees will be the whole number. (2) To get minutes, multiply the decimal degree portion by 60. (3) Multiply the decimal minute portion by 60 to get seconds.
 Example: (Latitude) 40.93748 = 40°; 0.93748 x 60 = 56.2488' = 56'; 0.2488 x 60 = 14.928 = 15" = 40°56'15" N
 (Longitude) 75.94740 = 75°; 0.94740 x 60 = 56.844' = 56'; 0.844 x 60 = 50.64 = 51" = 75°56'51" W

FOR PFBC USE ONLY

SIR#	Quad Name	Data Source	Search Result-Potential Species Conflict	Action



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
LETTERKENNY ARMY DEPOT
1 OVERCASH AVENUE
CHAMBERSBURG, PENNSYLVANIA 17201

January 9, 2007

Directorate of Public Works - Environmental Management Division

Mr. Rob Chriswell, Land Management Supervisor
Pennsylvania Game Commission
Southcentral Regional Office
8627 William Penn Highway
Huntingdon, PA 16652

Dear Mr. Chriswell:

The Department of the Army (DA) is preparing an Environmental Assessment (EA) for the proposed construction of several facilities resulting from Base Realignment and Closure (BRAC) recommendations. On September 8, 2005, the Defense Base Closure and Realignment Commission ("BRAC Commission") recommended that certain realignment actions occur at Letterkenny Army Depot in Chambersburg, Pennsylvania. These recommendations were approved by the President on September 23, 2005, and forwarded to Congress. The Congress did not alter any of the BRAC Commission's recommendations, and on November 9, 2005, the recommendations became law. To enable implementation of these recommendations, the Army proposes to provide necessary facilities to support changes in force structure at Letterkenny Army Depot.

The EA will analyze and document environmental effects associated with the Army's proposed realignment actions at Letterkenny Army Depot. The EA is being prepared in strict accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 USC 4321 et seq.); the Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508); Army Regulation (AR) 200-2; and the Army 2006 Base Realignment and Closure Manual for Compliance with the National Environmental Policy Act.

The following are the BRAC-related projects planned as part of the realignment actions and their locations on Letterkenny Army Depot (see enclosed map). You will note that the first three projects, the **Theater Readiness Monitoring Facility (TRMF), Covered Missile Storage Facility, and Hazardous Materials Storage Facility** are collocated.

- a. **Theater Readiness Monitoring Facility** - To support this realignment, it is necessary to construct a TRMF of approximately 35,000 SF. The facility includes substantial dividing walls, can and decan areas, loading dock, test bays, operation bays, Electromagnetic Radio Frequency (RF) shielding, grounding, raised floor areas, controlled humidity, clean room, administrative area, break room, rest room, explosion proof lighting, cold storage area, inert gas lines, cranes, storage areas, chemical agent resistant coatings (CARC) paint area, fire protection to include alarm, sprinkler system, fire pump, intrusion detection, emergency generator and building information systems. Supporting facilities include external security lighting, paved access road, and a 0.75-acre parking lot (~ 80 spaces).

- b. **Covered Missile Storage Facility.** It will also be necessary to construct a 2,000 SF temporary holding facility for Tactical Missiles to be worked through the TRMF. This facility requires quantity-distance compliant storage that may not be available in existing earth-covered magazines depending upon the conventional storage requirements imposed upon Letterkenny Munitions Center (LEMC). This project is needed to ensure that adequate in-process storage space for the new mission is available.
- c. **Hazardous Materials Storage Facility.** A 2,000 SF new covered hazardous material storage building is required to classify, store, and hold hazardous materials that will be used by the transferred mission. These materials include lubricants, cleaning agents, paints and other materials needed in the normal process of operations.
- d. **Health Clinic Addition.** Construction of a 690-square-foot addition to Building 332, the existing Health Clinic (located adjacent to building 331), is required to accommodate increased BRAC staffing and provide storage area for additional employee health records. The increase in staff and records volume is necessary to provide health services to the additional personnel associated with the new missions.

In accordance with the National Environmental Policy Act, Endangered Species Act, and Fish and Wildlife Coordination Act, an evaluation of the potential effects (both beneficial and adverse) associated with implementing this action is required. We are requesting your input concerning any biological concerns regarding this action, such as the presence of State- and Federally- listed threatened or endangered wildlife species, or critical habitat. The affected areas where the construction projects associated with the BRAC05 realignment actions are shown in the enclosure.

I would like to thank you in advance for your cooperation in this matter. Your prompt consideration and response would be greatly appreciated. Please provide any comments on issues you feel the Army should consider in its EA to me. Your prompt consideration and response within 30 days from the date of this letter is greatly appreciated. If you need additional information, please call me at (717) 267-9022. Thank you for your cooperation.

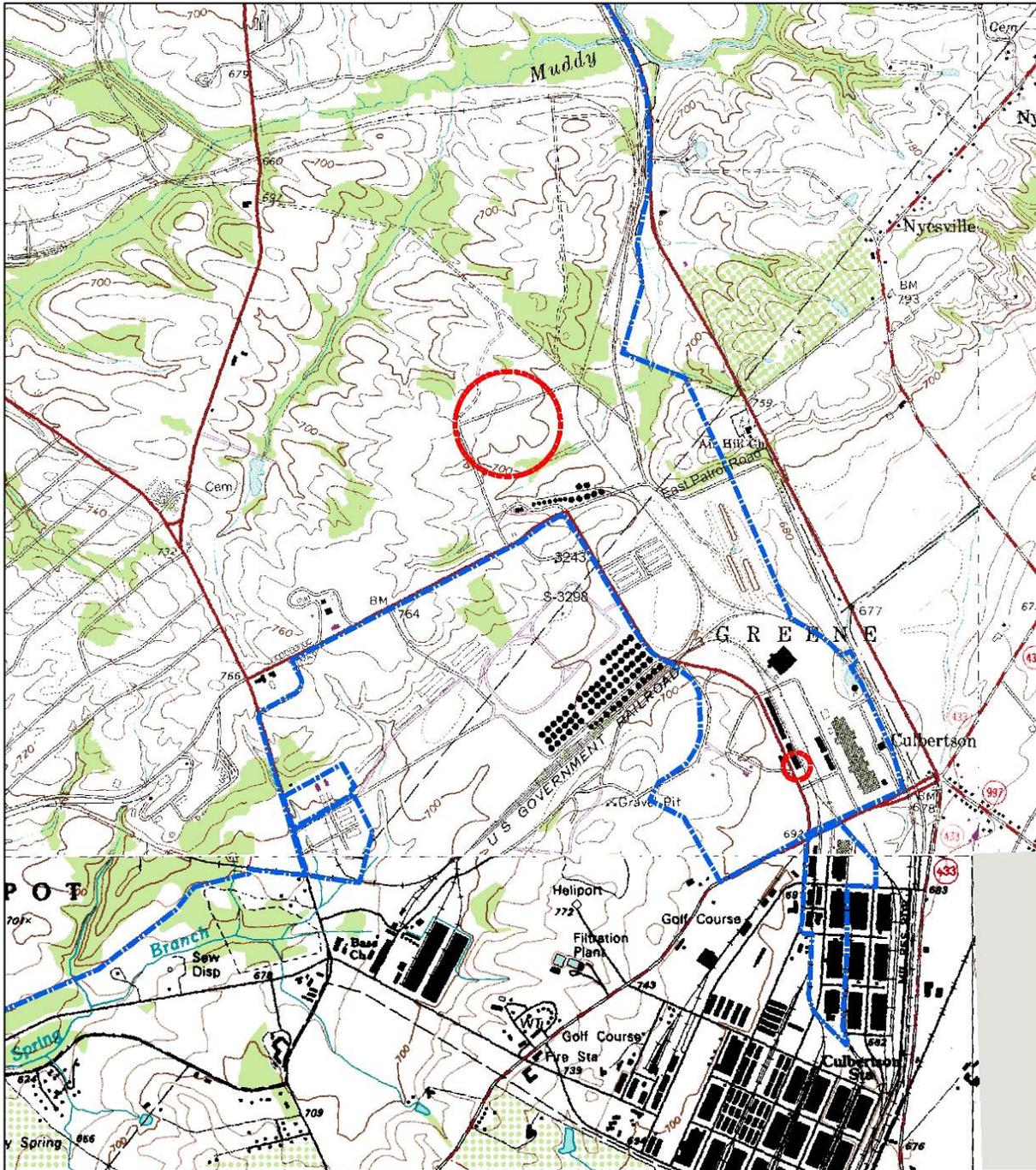
Sincerely,

Randall Quinn, Environmental Coordinator
Environmental Management Division,
Letterkenny Army Depot

Enclosure

Enclosure

Project Locations for BRAC Proposed Action Alternative



Legend

- Project Areas
- LEAD Boundary

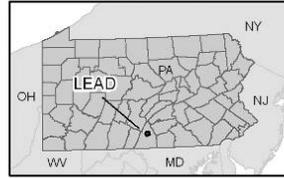
0 1,000 2,000
Feet



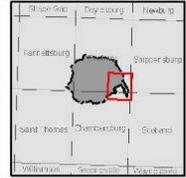
Letterkenny Army Depot Quadrangle Map (Chambersburg and Roxbury)

Sources: LEAD, GeoCommunity, ESRI
Coordinate System: NAD 1983, StatePlane
Pennsylvania South FIPS 3702 Feet
Prepared By: The Louis Berger Group

MAP INDEX



QUAD INDEX



THIS PAGE INTENTIONALLY LEFT BLANK



COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA GAME COMMISSION
2001 ELMERTON AVENUE, HARRISBURG, PA 17110-9797

February 13, 2007

Mr. Randall Quinn
Department of the Army
Letterkenny Army Depot
1 Overcash Avenue
Chambersburg, PA 17201

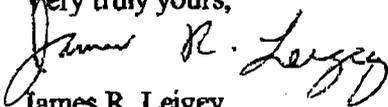
In re: PNDI Database Search
TRMF, CMSF, HMSF, and Health Clinic Projects
Letterkenny Army Depot
Franklin County, PA

Dear Mr. Quinn:

This is in response to your letter of January 9, 2007 regarding the potential impacts of your proposed project(s) on special concern species of birds or mammals.

Our office review has determined that your proposed project(s) should not cause any adverse impacts to any special concern species of birds or mammals. This determination may be reconsidered if project plans change or extend beyond the present study area, or if additional information becomes available on state-listed species.

If you have any questions, please contact me at (717) 783-5957. Please be advised that this determination is only valid for one year from the date of this letter.

Very truly yours,

James R. Leigey
Wildlife Impact Review Coordinator
Division of Environmental
Planning and Habitat Protection
Bureau of Wildlife Habitat Management

File

ADMINISTRATIVE BUREAUS:

PERSONNEL: 717-787-7836 ADMINISTRATION: 717-787-5670 AUTOMOTIVE AND PROCUREMENT DIVISION: 717-787-6584
LICENSE DIVISION: 717-787-2084 WILDLIFE MANAGEMENT: 717-787-5528 INFORMATION & EDUCATION: 717-787-6286 LAW ENFORCEMENT: 717-787-5740
LAND MANAGEMENT: 717-787-6818 REAL ESTATE DIVISION: 717-787-6568 AUTOMATED TECHNOLOGY SYSTEMS: 717-787-4076 FAX: 717-772-2411



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
LETTERKENNY ARMY DEPOT
1 OVERCASH AVENUE
CHAMBERSBURG, PENNSYLVANIA 17201

January 9, 2007

Directorate of Public Works - Environmental Management Division

Ms. Aura Stauffer, Chief
Ecological Services Section, Bureau of Forestry
Pennsylvania Department of Conservation and Natural Resources
6th Floor, Rachel Carson State Office Building
400 Market Street
Harrisburg, PA 17105-8552

Dear Ms. Stauffer:

The Department of the Army (DA) is preparing an Environmental Assessment (EA) for the proposed construction of several facilities resulting from Base Realignment and Closure (BRAC) recommendations. On September 8, 2005, the Defense Base Closure and Realignment Commission ("BRAC Commission") recommended that certain realignment actions occur at Letterkenny Army Depot in Chambersburg, Pennsylvania. These recommendations were approved by the President on September 23, 2005, and forwarded to Congress. The Congress did not alter any of the BRAC Commission's recommendations, and on November 9, 2005, the recommendations became law. To enable implementation of these recommendations, the Army proposes to provide necessary facilities to support changes in force structure at Letterkenny Army Depot.

The EA will analyze and document environmental effects associated with the Army's proposed realignment actions at Letterkenny Army Depot. The EA is being prepared in strict accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 USC 4321 et seq.); the Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508); Army Regulation (AR) 200-2; and the Army 2006 Base Realignment and Closure Manual for Compliance with the National Environmental Policy Act.

The following are the BRAC-related projects planned as part of the realignment actions and their locations on Letterkenny Army Depot (see enclosed map). You will note that the first three projects, the **Theater Readiness Monitoring Facility (TRMF), Covered Missile Storage Facility, and Hazardous Materials Storage Facility** are collocated.

- a. **Theater Readiness Monitoring Facility** - To support this realignment, it is necessary to construct a TRMF of approximately 35,000 SF. The facility includes substantial dividing walls, can and decan areas, loading dock, test bays, operation bays, Electromagnetic Radio Frequency (RF) shielding, grounding, raised floor areas, controlled humidity, clean room, administrative area, break room, rest room, explosion proof lighting, cold storage area, inert gas lines, cranes, storage areas, chemical agent resistant coatings (CARC) paint area, fire protection to include alarm, sprinkler system, fire pump, intrusion detection, emergency generator and building information systems. Supporting facilities include external security lighting, paved access road, and a 0.75-acre parking lot (~ 80 spaces).

- b. **Covered Missile Storage Facility.** It will also be necessary to construct a 2,000 SF temporary holding facility for Tactical Missiles to be worked through the TRMF. This facility requires quantity-distance compliant storage that may not be available in existing earth-covered magazines depending upon the conventional storage requirements imposed upon Letterkenny Munitions Center (LEMC). This project is needed to ensure that adequate in-process storage space for the new mission is available.
- c. **Hazardous Materials Storage Facility.** A 2,000 SF new covered hazardous material storage building is required to classify, store, and hold hazardous materials that will be used by the transferred mission. These materials include lubricants, cleaning agents, paints and other materials needed in the normal process of operations.
- d. **Health Clinic Addition.** Construction of a 690-square-foot addition to Building 332, the existing Health Clinic (located adjacent to building 331), is required to accommodate increased BRAC staffing and provide storage area for additional employee health records. The increase in staff and records volume is necessary to provide health services to the additional personnel associated with the new missions.

In accordance with the National Environmental Policy Act and Endangered Species Act, an evaluation of the potential effects (both beneficial and adverse) associated with implementing this action is required. We are requesting your input concerning any biological concerns regarding this action, such as the presence of State- and Federally- listed threatened or endangered plant species, or critical habitat. The affected areas where the construction projects associated with the BRAC05 realignment actions are shown in the enclosure.

I would like to thank you in advance for your cooperation in this matter. Your prompt consideration and response would be greatly appreciated. Please provide any comments on issues you feel the Army should consider in its EA to me. Your prompt consideration and response within 30 days from the date of this letter is greatly appreciated. If you need additional information, please call me at (717) 267-9022. Thank you for your cooperation.

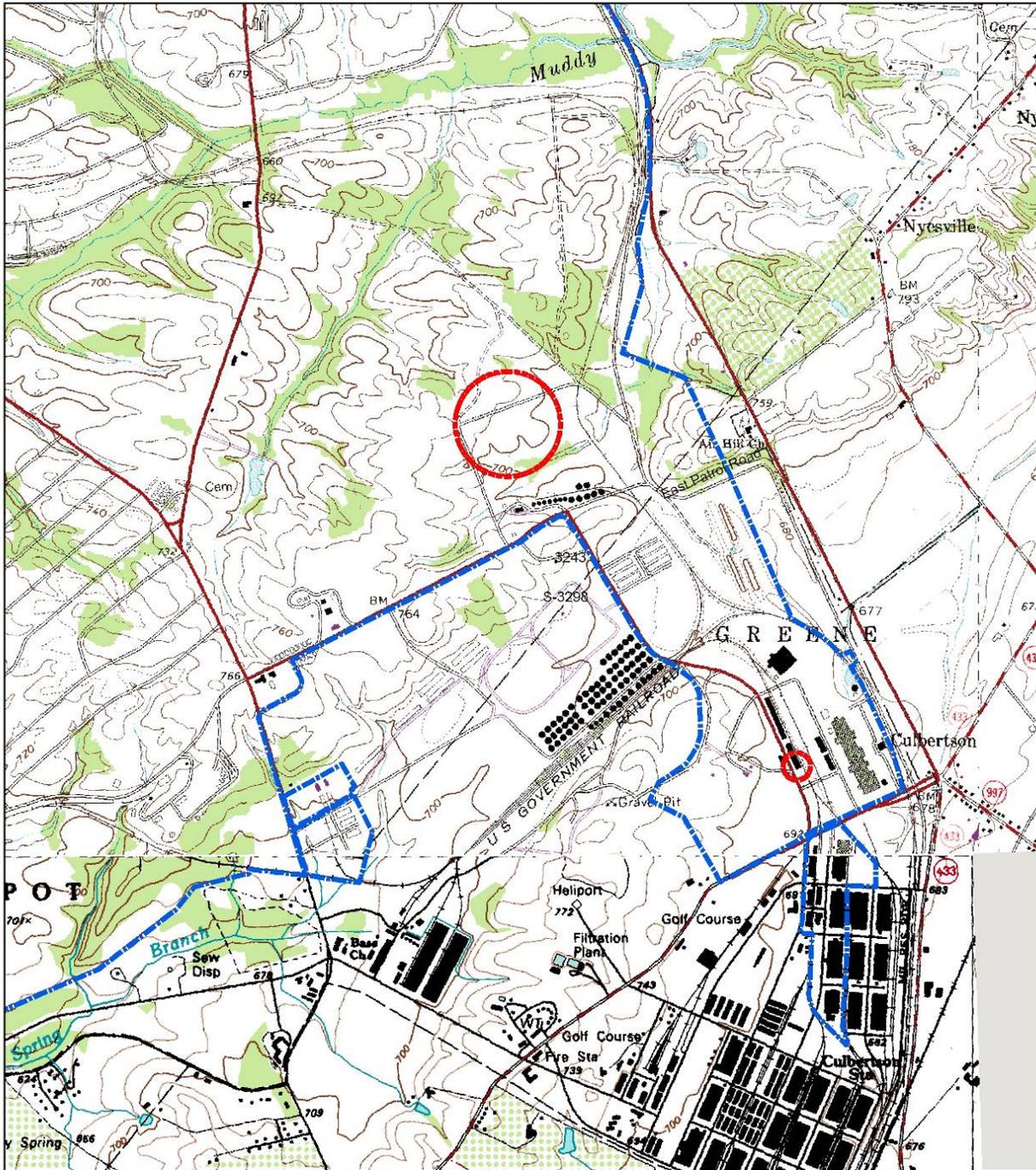
Sincerely,

Randall Quinn, Environmental Coordinator
Environmental Management Division,
Letterkenny Army Depot

Enclosure

Enclosure

Project Locations for BRAC Proposed Action Alternative



Legend

- Project Areas
- LEAD Boundary

0 1,000 2,000
 Feet



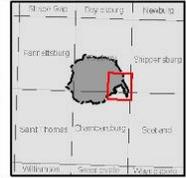
Letterkenny Army Depot Quadrangle Map (Chambersburg and Roxbury)

Sources: LEAD, GeoCommunity, ESRI
 Coordinate System: NAD 1983, StatePlane
 Pennsylvania South FIPS 3702 Feet
 Prepared By: The Louis Berger Group

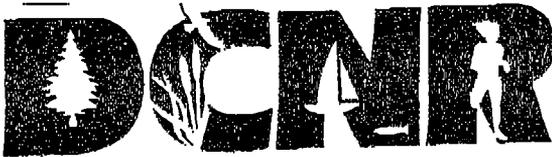
MAP INDEX



QUAD INDEX



THIS PAGE INTENTIONALLY LEFT BLANK



Pennsylvania Department of Conservation and Natural Resources

Bureau of Forestry

February 23, 2007

Randall Quinn
 Department of the Army
 Letterkenny Army Depot
 Environmental Management Division
 1 Overcash Avenue
 Chambersburg, PA 17201

Pennsylvania Natural Diversity Inventory Review, PNDI Number 19096
 Proposed Construction of BRAC Facilities (Theater Readiness Monitoring Facility, Covered Missile Storage Facility, Hazardous Materials Storage Facility, Health Clinic Addition)
 Chambersburg and Roxbury Twps.; Franklin County

Dear Mr. Quinn,

This responds to your request about a Pennsylvania Natural Diversity Inventory (PNDI) ER Tool "Potential Impact" or a species of special concern impact review. We screened this project for potential impacts to species and resources of special concern under the Department of Conservation and Natural Resources' responsibility, which includes plants, natural communities, terrestrial invertebrates and geologic features only.

NO PROJECT IMPACT ANTICIPATED

PNDI records indicate that no known occurrences of species or resources of special concern under DCNR's jurisdiction occur in the vicinity of the project. Therefore, we do not anticipate the project referenced above will impact plants, natural communities, terrestrial invertebrates and geologic features of special concern. No further coordination with DCNR is needed for this project.

PNDI records indicate special concern species or resources are located in the vicinity of the project. However, based on the information submitted to us concerning the nature of the project, the immediate location, and our detailed resource information, we determined that no impact is likely. No further coordination with DCNR is needed for this project.

POTENTIAL PROJECT IMPACT - UNDER FURTHER REVIEW

Based on our PNDI map review we determined potential impacts to species and/or resources of special concern. This project has been passed on to our review committee. The committee will contact the applicant/consultant directly if more information is needed to assess the project's potential impacts. Response time is typically less than a month after the date on this notification.

COMMENTS:

This response represents the most up-to-date summary of the PNDI data files and is good for one (1) year from the date of this letter. An absence of recorded information does not necessarily imply actual conditions on-site. A field survey of any site may reveal previously unreported populations. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered.

This finding applies to impacts to plants, natural communities, terrestrial invertebrates and geologic features only. To complete your review of state and federally-listed species of special concern, please be sure the U.S. Fish and Wildlife Service, the PA Game Commission and the Fish and Boat Commission has been contacted regarding this project either directly or by performing a search with the online PNDI ER Tool found at www.naturalheritage.state.pa.us.

Rebecca H. Bowen

Rebecca H. Bowen, Environmental Review Specialist FOR Chris Firestone, Plant Program Mgr
 DCNR/BOF/PNDI, PO Box 8552, Harrisburg, PA 17105 ~ Ph: 717-772-0258 ~ F: 717-772-0271 ~ c-rbowen@state.pa.us

Stewardship

Partnership

Service



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
LETTERKENNY ARMY DEPOT
1 OVERCASH AVENUE
CHAMBERSBURG, PENNSYLVANIA 17201

January 8, 2007

Directorate of Public Works - Environmental Management Division

Ms. Jean Cutler
State Historic Preservation Officer
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Keystone Commonwealth Building
400 North Street, 2nd Floor
Harrisburg, Pennsylvania 17120-0093

Dear Ms. Cutler:

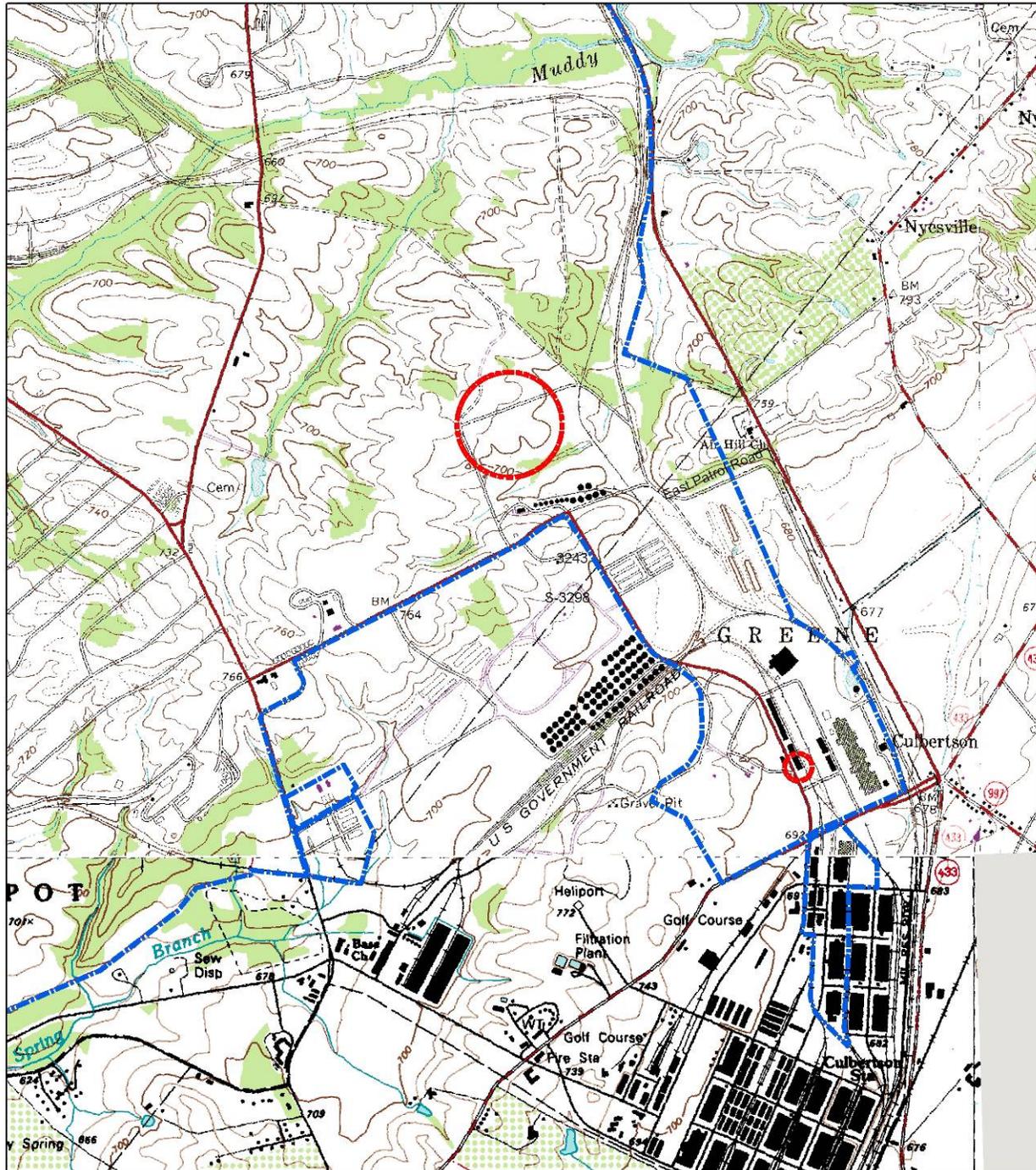
The Department of the Army (DA) is preparing an Environmental Assessment (EA) for the proposed construction of several facilities resulting from Base Realignment and Closure (BRAC) recommendations. On September 8, 2005, the Defense Base Closure and Realignment Commission ("BRAC Commission") recommended that certain realignment actions occur at Letterkenny Army Depot in Chambersburg, Pennsylvania. These recommendations were approved by the President on September 23, 2005, forwarded to Congress, and became law on November 9, 2005. To implement the recommendations, the Army proposes to provide various facilities to support changes in force structure at Letterkenny Army Depot.

The EA will analyze and document environmental effects associated with the Army's proposed realignment actions at Letterkenny Army Depot. It is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 USC 4321 et seq.); the Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508); Army Regulation (AR) 200-2; and the Army 2006 Base Realignment and Closure Manual for Compliance with the National Environmental Policy Act.

The following are the BRAC-related projects planned as part of the realignment actions and their locations on Letterkenny Army Depot (see enclosed map). You will note that the first three projects, the **Theater Readiness Monitoring Facility (TRMF)**, **Covered Missile Storage Facility**, and **Hazardous Materials Storage Facility** are collocated.

- a. **Theater Readiness Monitoring Facility** - To support this realignment, it is necessary to construct a TRMF of approximately 35,000 SF. The facility includes substantial dividing walls, can and decan areas, loading dock, test bays, operation bays, Electromagnetic Radio Frequency (RF) shielding, grounding, raised floor areas, controlled humidity, clean room, administrative area, break room, rest room, explosion proof lighting, cold storage area, inert gas lines, cranes, storage areas, chemical agent resistant coatings (CARC) paint area, fire protection to include alarm, sprinkler system, fire pump, intrusion detection, emergency generator and building information systems. Supporting facilities include external security lighting, paved access road, and a 0.75-acre parking lot (~ 80 spaces).
- b. **Covered Missile Storage Facility**. It will also be necessary to construct a 2,000 SF temporary holding facility for Tactical Missiles to be worked through the TRMF. This facility requires quantity-distance compliant storage that may not be available in existing earth-covered magazines depending

Enclosure 1: Project Locations for BRAC Proposed Action Alternative



<p>Legend</p> <p> Project Areas</p> <p> LEAD Boundary</p> <p>0 1,000 2,000 Feet</p> 	<p>Letterkenny Army Depot Quadrangle Map (Chambersburg and Roxbury)</p> <p>Sources: LEAD, GeoCommunity, ESRI</p> <p>Coordinate System: NAD 1983, StatePlane Pennsylvania South FIPS 3702 Feet</p> <p>Prepared By: The Louis Berger Group</p>	<p>MAP INDEX</p> 	<p>QUAD INDEX</p> 
--	---	--	--

upon the conventional storage requirements imposed upon Letterkenny Munitions Center (LEMC). This project is needed to ensure that adequate in-process storage space for the new mission is available.

- c. **Hazardous Materials Storage Facility.** A 2,000 SF new covered hazardous material storage building is required to classify, store, and hold hazardous materials that will be used by the transferred mission. These materials include lubricants, cleaning agents, paints and other materials needed in the normal process of operations.
- d. **Health Clinic Addition.** Construction of a 690-square-foot addition to Building 332, the existing Health Clinic (located adjacent to building 331), is required to accommodate increased BRAC staffing and provide storage area for additional employee health records. The increase in staff and records volume is necessary to provide health services to the additional personnel associated with the new missions.

In accordance with the Army BRAC Manual for NEPA Compliance, we assessed the “status of knowledge” on the potential for National Register of Historic Places (NRHP) eligible resources within the Area of Potential Effect of the four BRAC projects and found that it insufficient for the location of the three TRMF projects. Therefore, we carried out a Phase I Cultural Resource Investigation of the TRMF site to determine if there were any cultural resource issues connected with project implementation. The report, prepared by the Baltimore District of the U.S. Army Corps of Engineers and dated December, 2006, concluded that the TRMF and collocated facilities would have no effect on historic properties and that no further cultural resource investigations were warranted. It is hereby forwarded for your review (see enclosure).

With regard to the Health Clinic Addition, please note that, although located within the boundaries of the Letterkenny World War II Historic District it will be an addition to a temporary building built in 2002 and constructed on a site now occupied by hardstand and previously disturbed.

In accordance with Section 106 of the National Historic Preservation Act., the Army has determined that (a) construction and operation of the TRMF projects will have no effect upon resources on or eligible for the NRHP and (b) construction and operation of the Health Clinic Addition will no adverse effect upon NRHP resources. We hereby request your concurrence in these two determinations.

In addition, we solicit your comments on any further cultural resource issues connected with the BRAC projects for the purposes of the Environmental Assessment.

I would like to thank you in advance for your cooperation in this matter. Your response within 30 days from the date of this letter would be greatly appreciated. If you need additional information, please call me at (717) 267-9022. Thank you for your cooperation.

Sincerely,

Randall Quinn, Environmental Coordinator
Environmental Management Division,
Letterkenny Army Depot

Enclosures

THIS PAGE INTENTIONALLY LEFT BLANK

**Enclosure 2: Phase I Cultural Resource Investigation, Theater Readiness Monitoring Facility,
Letterkenny Army Depot**



Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093
www.phmc.state.pa.us

February 28, 2007

Mr. Randall Quinn
Environmental Management Division
Letterkenny Army Depot
1 Overcash Avenue
Chambersburg, Pennsylvania 17201

TO EXPEDITE REVIEW USE
BHP REFERENCE NUMBER

Re: File No. ER 1990-1527-055-HH
Phase I Cultural Resource
Investigation: Theater Readiness
Monitoring Facility, Letterkenny
Army Depot, Letterkenny, Greene
and Hamilton Townships, Franklin
County, Pennsylvania

Dear Mr. Quinn:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation as revised in 1999. These requirements include consideration of the project's potential effect upon both historic and archaeological resources.

We have reviewed the referenced document and concur with the agency's findings: No significant archaeological resources were found with the Area of Potential Effect (APE), and no additional archaeological investigations are warranted for that APE. In addition, the project should have no effect on the Letterkenny World War II Historic District. Therefore, construction/operation of the TRMF projects and the Health Club addition will have no effect upon NRHP resources.

Please send four copies of the final report (one unbound and three bound) for our files and distribution to the various repositories. Before finalizing these copies, however, please ensure that several minor modifications as described on the following page are addressed.

Randall Quinn
90-1527-055-HH
2/28/2007
Page 2

1. Please have all of the figures numbered on the graphics themselves and have all relevant features on them labeled. At present, only one figure is numbered, and there are no titles, explanatory labeling or relevant legends on the remainder.
2. Please insert an additional figure after your present Figure 1. This figure should show the location and configuration of the APE on a USGS quad base map. The base map used in Exhibit 1 of your 1/8/2007 correspondence would be sufficient if the generic circle is replaced with the true boundaries and configuration of the area surveyed.
3. Please add an additional appendix that consists of a completed PHMC-BHP report summary form. All archaeological reports, regardless of source, size or findings, must include a completed report summary form.
4. Please identify the archaeologist who conducted the survey for the agency.

Please call me at (717) 772-0925 if you have any questions or comments.

Sincerely,



Douglas C. McLearn, Chief
Division of Archaeology &
Protection

APPENDIX F – PHASE I CULTURAL RESOURCES INVESTIGATION

PHASE I CULTURAL RESOURCE INVESTIGATION

THEATER READINESS MONITORING FACILITY

**LETTERKENNY ARMY DEPOT
LETTERKENNY, GREENE, AND HAMILTON TOWNSHIPS
FRANKLIN COUNTY, PENNSYLVANIA**



Prepared for:

Letterkenny Army Depot
Letterkenny, Pennsylvania

Prepared by:

U.S. Army Corps of Engineers
Baltimore District
P.O. Box 1715
Baltimore, Maryland 21203-1715

December 2006

EXECUTIVE SUMMARY

This report describes the findings of a Phase I cultural resource investigation conducted at the Letterkenny Army Depot (LEAD) in Chambersburg, Franklin County, Pennsylvania. The cultural resource investigation was conducted in association with proposed new construction at LEAD. The investigation was conducted in accordance with the guidelines and specifications of the National Historic Preservation Act, as amended, and guidelines provided by the Pennsylvania State Historic Preservation Office.

The proposed new construction at LEAD consists of development of a 40,000 square foot Theater Readiness Monitoring Facility to permit the relocation of missile readiness capability from the Red River Depot to the Letterkenny Army Depot. A Phase I-level cultural resource investigation was conducted in the project's area of potential effect. The Phase I investigation consisted of pedestrian reconnaissance, controlled surface collection, and photographic documentation.

Historic maps available for LEAD failed to show any historic period cultural resources in the vicinity of the project site. With the exception of a single prehistoric artifact, and some general 20th century debris in the site boundaries, there was no evidence of any site utilization during either the pre-European or post-European periods at this location. Construction of the proposed Theater Readiness Monitoring Facility will have no effect to historic properties, and no further cultural resource investigations are recommended.

TABLE OF CONTENTS

Executive Summary	1
Table of Contents	2
List of Figures	3
List of Plates	4
Purpose.....	5
Project Description.....	6
Project Location and Setting	6
Environmental Background	7
Prehistoric and Historic Settlement Background.....	9
Previous Investigations	11
Prehistoric Period.....	11
Historic Period	14
Phase I Survey.....	18
Background Research	18
Field Methods	19
Site Investigation	20
Summary and Recommendations	21
References Cited	22

APPENDICES

Appendix A: Figures

Figure 1: Location of Letterkenny Army Depot

Figure 2: Project Area

Figure 3: Controlled Surface Collection Area

Appendix B: Plates

Plate 1: Photograph of Survey Area, Looking Southwest

Plate 2: Photograph of Survey Area, Looking Southeast

Plate 3: Photograph of Survey Area, Looking East

Plate 4: Banded Rhyolite Biface

PHASE I CULTURAL RESOURCE INVESTIGATION
THEATER READINESS MONITORING FACILITY
LETTERKENNY ARMY DEPOT
LETTERKENNY, GREENE, AND HAMILTON TOWNSHIPS
FRANKLIN COUNTY, PENNSYLVANIA

PURPOSE

The purpose of this report is to describe the findings of a Phase I cultural resource investigation conducted at the location of a potential military construction project at the Letterkenny Army Depot (LEAD), located in Letterkenny, Greene, and Hamilton Townships, Franklin County, Pennsylvania (Appendix A, Figure 1). The area of potential effect for the project was defined as the area of construction, and the area within the viewshed of the construction location.

The purpose of the proposed construction is to develop operational facilities that meet the current mission requirements at LEAD. The majority of ammunition handling and storage facilities currently used at LEAD were constructed in the 1940s and 1950s. With the passage of time, LEAD's changing mission, and the development of modern safety standards, these facilities have become sub-standard and out of compliance with current safety standards and mission requirements. In some cases, the facilities currently in use are outdated and the buildings do not meet current code requirements. Permanent facilities necessary to support LEAD's new mission as a deployment facility do not now exist.

LEAD is the major receiving, storage and shipping site on the East Coast for tactical missiles and conventional ammunition. It is a joint service operation and a first line shipment site in support of U.S. power projection military. In addition to bulk shipments, LEAD maintains continuous delivery of shipments to forts, training ranges and Reserve centers.

PROJECT DESCRIPTION

The Department of the Army has approved construction of a Theater Readiness Monitoring Facility, to be located within the secured area of LEAD. This project is being constructed to permit the movement of missile readiness capability from the Red River Army Depot to the Letterkenny Army Depot. Certification for Theater Readiness of PATRIOT and HAWK missiles is currently performed at Red River Army Depot. The decision by the Department of Defense to close Red River munitions operations and relocate missile certification to Letterkenny Army Depot requires construction of a Theater Readiness Monitoring Facility (TRMF). Due to the nature of the operation, the facility must be located within LEAD's Ammunition Storage Area, and quantity-distance safety requirements must apply. There are no existing facilities within the Ammunition

Storage Area that have all the capabilities required to accomplish this mission, nor are there facilities that can be converted from existing uses and modified to meet this requirement. As a result, new construction is the only viable option for the relocation of this mission to LEAD.

The TRMF facility is designed as a 40,000 square foot building, with supporting paving, walks, curbs and gutters, storm drainage, roadways, and parking areas. This facility will include substantial dividing walls, contamination and decontamination areas, a loading dock, test bays, operations bays, grounding, raised floor areas, controlled humidity, a clean room, administration area, break room, rest room, explosion proof lighting, cold storage area, inert gas lines, cranes, a storage area, fire protection systems, intrusion detection, and an emergency generator. The facility will require lighting protection, external security lighting, paved access road, operational parking, and security fencing.

In accordance with Federal Regulation 36 CFR 800.4 and on behalf of LEAD, the U.S. Army Corps of Engineers, Baltimore District (Baltimore District), performed a review of existing information and conducted a Phase I-level cultural resource investigation to determine the likelihood of historic properties existing in the area of potential effect of the project. This investigation included a review of site files maintained by the Pennsylvania Historical and Museum Commission, previous cultural resource investigations at LEAD, and historic maps and atlases. A Phase I-level cultural resource field investigation of the proposed construction site was also completed.

PROJECT LOCATION AND SETTING

The project area is located in Franklin County in south central Pennsylvania (Appendix A, Figure 1). LEAD is located northwest of the intersection of Interstate 81 and U.S. Route 30, north of Chambersburg, Pennsylvania. LEAD is located approximately 5 miles north of Chambersburg within the Cumberland Valley of south-central Pennsylvania. Chambersburg, the county seat, is the nearest community to LEAD. LEAD is regionally situated among the metropolitan areas of Pittsburgh, Pennsylvania, 130 miles to the northwest; Philadelphia, Pennsylvania, 135 miles to the east; Washington, DC, 90 miles to the south; and Baltimore, Maryland, 75 miles to the southeast.

The area around LEAD is served by Interstate 81, and U.S. Highways No. 11 and 30. State Routes 997 and 433 provide direct access to LEAD. The intersection of these two routes occurs at the primary entrance to LEAD. In addition, the Pennsylvania Turnpike is located 14 miles north of the facility.

The installation's 17,700 acres lie within Franklin County, Pennsylvania. The area surrounding the depot is primarily agricultural, except to the west, which is state forest and state game land. There are several unincorporated residential and commercial developments

contiguous to the depot. The largest development, the Cumberland Valley Business Park, is located immediately adjacent to the depot.

The proposed TRMF site is located within the 12,000-plus acre LEAD ammunition storage area in an upland setting.

ENVIRONMENTAL BACKGROUND

The project area is located in the central portion of the southern Cumberland Valley, on the eastern edge of the Appalachian Mountain Section of the Ridge and Valley Province. The Cumberland Valley is a part of the Great Valley Section of the Ridge and Valley Province, a section that runs in a northeasterly direction from the Maryland/Pennsylvania state line in Franklin County to Northhampton County on the Delaware River. The South Mountain section of the Blue Ridge Province is situated east of Chambersburg and marks the eastern edge of the Cumberland Valley.

The Cumberland Valley is characterized predominantly by southwest-trending limestone ridges and valleys. Shales, siltstones, and sandstones make up much of the western part of the valley, where the surface is rolling and hilly. Less resistant limestones and dolostones of the eastern part of the valley have eroded to a broader, flatter lowland perforated with sinkholes and caves. Weathering of the folded and faulted underlying geologic formations imparts an overall gently rolling aspect to the local topography. The majority of LEAD is located within the Martinsburg Shale terrain, except for bands of carbonate rocks along the eastern and western edges of the depot. Surface elevations throughout LEAD range from approximately 600 to 750 feet above mean sea level, except for the northwest portion of the installation, where the elevation increases abruptly to more than 2,300 feet above mean sea level in the vicinity of Broad Mountain.

Complex fracturing and high-angle faulting characterize the province. LEAD is located directly adjacent to the eastern edge of Broad Mountain. Northern portions of LEAD are drained by the Conodoguinet Creek and its tributaries, including Muddy Run and Keasey Run. These streams are part of the Susquehanna River watershed. The southern portions of LEAD are drained by Conococheague Creek, which is within the Potomac River watershed. Most water sources in the valley are low order streams or springs.

Geologic formations in Franklin County originate from the Precambrian, Cambrian, Ordovician, Silurian, and Devonian periods (Long 1975:120). These rocks, which form the floor of the valley, are sedimentary in origin and include limestone, dolomite, quartzite, and shale. The St. Paul Group and Chambersburg Formations (limestone and dolomite) and the Martinsburg Formation (shale and graywacke) underlie approximately 98 percent of LEAD. Most of the rock formations are of Middle Ordovician age. The majority of the depot, nearly 84 percent, lies in the morphologic region known as the Rugged Shaley Terrain, which consists mostly of the Martinsburg

Formation. The underlying geology consists of limestone, dolomite, and shale. Limestone in this area displays karst topography, such as solution openings and sinkholes. Lithic material suitable for the manufacture of stone tools may be found within these formations, and includes chert, jasper, quartzite, quartz, and rhyolite (Roberts 1981:2). In general, the Great Valley contains more varied and numerous lithic sources than other physiographic regions (Beauregard 1998).

The Hagerstown series, Weikert series, and Urban Land make up the dominant soils that occur at LEAD (Long 1975). The Hagerstown series includes well-drained upland silt loams and silty clay loams that developed from limestone. Soils of the Hagerstown series are associated with sinkholes and other karst features. The Weikert series includes well-drained upland shaly silt loams that developed from shale, siltstone, and sandstone. Soils of the Weikert series have a high risk of erosion and are shallow to bedrock. These soils occur primarily in the central section of the depot in association with shales. The Urban Land mapping unit occurs in the built-up areas of LEAD. Urban Land consists of soils that are so altered or obscured by urban development that identification of the original soils is not possible.

Soils in the project areas fall within the Weikert-Berks-Bedington association, which are nearly level to very steep soils typically found on valley floors. These soils are deep and well drained, and are formed in materials weathered from shale, interbedded shale, siltstone, and sandstone (Long 1975:120).

The major soil type located in the project area is Berks Shaly Silt Loam, 2 to 8 percent slopes. Berks Shaly Silt Loam soils are moderately deep, nearly level to sloping, well drained, and are of medium texture (Long 1975:80). These soils are formed from material weathered in shales, siltstone, and fine-grained sandstones (Long 1975:80). A typical Berks Series profile consists of a plowzone of dark brown shaly silt loam, a B2-horizon of yellowish brown, friable, very shaly silt loam, and a C-horizon of yellowish brown, very shaly silt loam with 70 percent shale fragments (Long 1975:107).

PREHISTORIC AND HISTORIC SETTLEMENT BACKGROUND

Previous Investigations

Nine cultural resource investigations have been previously conducted at LEAD. In 1981, John Milner and Associates conducted a Phase I-level archaeological reconnaissance of approximately 200 acres of LEAD in support of proposed future development (Roberts 1981). Three prehistoric archaeological sites and three historic archaeological sites were identified in this survey. The prehistoric archaeological sites include two possible Archaic campsites (36FR113 and 36FR114) and one possible multi-component site (36FR112). The three historic archaeological sites included the probable location of the Isaac Meyers House, an abandoned Franklin County roadway, and the Joseph W. Fegan stone quarry. The abandoned roadway and the quarry were not considered eligible for National Register listing.

In 1985, an archaeological overview and management plan for LEAD was prepared by the Pennsylvania State University and the Envirosphere Company (Klein 1985). This investigation, which was primarily based on documentary resources such as historic maps and atlases, determined that there are at least 345 potential historic archaeological sites at LEAD. The archaeological overview and management plan produced maps of LEAD showing the location of potential historic archaeological sites, based on the historic maps and atlases. These maps were digitized by the Baltimore District, and were used by LEAD to avoid potential historic archaeological sites in the selection of some of the construction sites for the five projects described in this report. The archaeological overview and management plan also determined that, although large areas of LEAD have been disturbed, it is likely that a large number of prehistoric archaeological sites also exist at LEAD.

The Baltimore District conducted a Phase I archaeological investigation of the north side of Cartridge Road in the northeast section of LEAD in 1993 (U.S. Army Corps of Engineers, Baltimore District 1993). The archaeological investigation was conducted in support of a proposed dualization of Cartridge Road. This investigation identified two historic archaeological sites. The Jno. Wingerton House, located at the west end of Cartridge Road, was determined to be ineligible for National Register listing. The Rush Hoover House, located near the middle of Cartridge Road, was determined to be potentially eligible for National Register listing. The Cartridge Road Phase I investigation also reexamined prehistoric site 36FR113, which was reported as being located on the north side of Cartridge Road near an unnamed tributary of Muddy Run (Roberts 1981:26-27). The Cartridge Road investigation determined that this prehistoric site no longer exists (U.S. Army Corps of Engineers, Baltimore District 1993:13).

A Cultural Resources Survey was conducted by the Baltimore District in 1997 for portions of LEAD subject to Base Realignment and Closure (BRAC) activities (Miller 1997). The BRAC project area is located in the southeast portion of LEAD, outside the ammunition storage area. The archaeological survey tested 114 acres including areas thought to have a high probability for historic archaeological sites, and sample areas with either a high or a low probability for prehistoric archaeological sites. Eleven historic archaeological sites were identified. Five of those sites did not contain significant information; the remaining six were thought to be potentially eligible for National Register listing. No prehistoric archaeological sites were identified, although an isolated rhyolite stemmed point was found (Miller 1997:91).

In June 1998, a Programmatic Agreement (PA) was entered into among the U.S. Army, the Pennsylvania State Historic Preservation Office, and the Advisory Council on Historic Preservation, regarding BRAC activities at LEAD. In this PA, all World War II-era permanent and semi-permanent construction at LEAD was determined to be eligible for listing in the National Register of Historic Places as a National Register District. The LEAD National Register District was considered eligible under Criterion A for its association with the events of World War II (1939-1945).

A Phase I-level cultural resource investigation was conducted by the Baltimore District in July 2000 at four locations at LEAD (U.S. Army Corps of Engineers, Baltimore District 2000). The four locations were being considered for the construction of an ammunition container storage and repair facility. A potentially National Register eligible historic archaeological site was identified in the northeast corner of the intersection of Virginia and Massachusetts Avenues. The site is possibly associated with the Wisler (Whisler) farmstead that appears on the 1858 Davidson and 1868 Beers atlases, or the Wilber Martin house appearing on the Brinton 1950 map of former LEAD homes (Davidson 1858, Beers 1868, Brinton 1950).

In 2001, a Phase I cultural resource investigation was conducted by the Baltimore District at the location of a proposed Field Ammunition Supply Area (FASA) to be used by the 351st Ordnance Company to conduct training activities related to the storage and handling of munitions. The Phase I investigation was conducted on approximately 30 acres of the larger, 589-acre parcel selected for the FASA. A light scatter of twentieth century artifacts was found, and two isolated prehistoric artifacts were also recovered. The prehistoric artifacts consisted of a jasper corner-notched projectile point and a rhyolite biface fragment. None of the artifacts or sites were found to be National Register eligible.

The current project area being investigated was one of the many sites investigated during the FASA Study. The results of that investigation are included in *Phase I Cultural Resource Investigation, Field Ammunition Supply Area Development. Letterkenny Army Depot, Franklin County, Pennsylvania* (U.S. Army Corps of Engineers, Baltimore District, 2001). The proposed construction consisted of a 200' x 200' concrete pad for ammunition storage, denoted as Site 1F1. A controlled surface collection was conducted at this location. A single late stage porphoritic rhyolite biface was collected, as well as a collection of window glass fragments. There was no evidence of a significant prehistoric or historic archeological site at this location (U.S. Army Corps of Engineers, Baltimore District, 2001:18).

The most recent previous cultural resource investigation at LEAD was conducted by the Baltimore District in 2004 (U.S. Army Corps of Engineers, Baltimore District 2004). The investigation consisted of a Phase I cultural resource investigation at the location of five projects: a Less-Than-Truckload Facility, a Deployment Facility, a Missile Demilitarization Facility, and two Controlled Humidity Warehouse Facilities. Cultural resource investigations at all five locations consisted of pedestrian reconnaissance, photographic documentation, and in locations of undisturbed soils, the excavation of shovel test pits. None of the five locations investigated resulted in the identification of any historic properties.

Prehistoric Period

Four major prehistoric archeological periods have been defined for Pennsylvania: Paleo-Indian, ca. 12,000 B.C. to 7,000 B.C.; Archaic, 7,000 B.C. to 2,000 B.C.; Transitional, 2,000 B.C. to 1,000 B.C.; and Woodland, 1,000 B.C. to historic contact

(around 1550 A.D.). Evidence for human occupation of the Cumberland Valley has been found for all four periods. Cultural resource investigations from Franklin County and other portions of the Cumberland Valley will be used to describe the various archaeological periods.

The Paleo-Indian period is the period of the first well-documented human occupation of Pennsylvania. The first inhabitants were probably few in number, and traveled over vast distances tracking large game animals, such as caribou, in addition to utilizing various small game and wild plant foods. The climate in this period was much different from modern conditions. Ice formations in the northern U.S. and Canada were slowly melting, and parts of Pennsylvania were covered by tundra vegetation. In the Cumberland Valley area, forests were predominantly composed of spruce-pine-hemlock species (Hay et al 1988). Floodplains and valley floors would have supported extensive grasslands, while upland areas were composed of a mosaic of conifers and deciduous trees and shrubs (Kinsey 1994:3).

Little archaeological evidence from this early era survives and is most commonly represented by sporadic finds of fluted spear points or butchering tools. Paleo-Indian sites in the Great Valley are thought to be associated with lithic quarries (Beauregard 1998:9; Wall 1991:7). Several fluted points have been found in the Cumberland Valley (Kinsey 1994), and four sites with fluted points have been identified in the Letterkenny vicinity (Roberts 1981:5). Floodplain settings and their adjacent high terraces would have been likely Paleo-Indian hunting locations (Custer 1991:5; Wall 1991:7). The karst topography of the Great Valley would have created bogs and swamps (Beauregard 1998) that would have been game-attractive. Paleo-Indian hunting and foraging sites in the Cumberland Valley could be found in well-drained areas adjacent to these settings (Wall 1991:7). Finally, Paleo-Indian sites would be expected near high-quality cryptocrystalline outcrops, which were used extensively by Paleo-Indian groups for stone tool manufacture.

After the polar ice caps retreated, Pennsylvania began to experience climatic change, which was reflected in the dominance of deciduous forests across the state. Archaic populations represent a series of gradual adaptations to these deciduous forest environments. A greater variety of food resources became available, and the Archaic peoples began to exploit a wider variety of these resources. Hunting, trapping, and fishing were all part of the Archaic subsistence base, each component varying with the season and with the particular location. An increase in Archaic populations may be inferred from the increase in the number of Archaic projectile point finds (Wall 1991:8).

Numerous Archaic-period sites have been identified in south central Pennsylvania, including locations along Bermudian, Conewago, Rock, and Marsh Creeks (Kinsey 1994:4). Wall (1991) has noted that Archaic sites in the Cumberland Valley are often found at the confluence of headwater drainages and on upland knolls. Archaic base camps are sometimes associated with high-quality cryptocrystalline outcrops and areas with maximum habitat overlap, such as floodplains and limestone-dominated areas (Wall 1991:9)

The Archaic Period is traditionally divided into Early, Middle, and Late sub-periods. As of 1996, no Early Archaic sites had been reported in Franklin County (Beauregard 1998:9). Although Early Archaic groups still show a preference for high-quality lithics, a greater variety of material available in the Cumberland Valley was used for stone tool manufacture (Wall 1991:8).

The Middle Archaic Period is little known in the Cumberland Valley and sites from this time period are sparse (Beauregard 1998). In the Maryland portion of the Great Valley, Middle Archaic sites are often found low- and high-order floodplains and interior wetlands (Custer 1996:159; Wall 1991:9). During the Middle Archaic, large interior swamps began to form in the Great Valley. These rich ecotones would have supported Middle Archaic base camps (Custer 1991:6-7).

By the end of the Archaic period populations were many times their original size, with bands exploiting well defined and ecologically variable territories. Rapid population growth is reflected by an increase in the number of Late Archaic sites over a wider range of settings (Wall 1991:9). Several types of sites were maintained, including base camps, collecting stations, quarries, and hunting and butchering sites (Hatch et al 1985). Little is known of Late Archaic site distribution on the Great Valley (Beauregard 1998:11). Fishing became more important, and Late Archaic sites in floodplain settings may represent seasonal fishing stations (Wall 1991:9). Late Archaic base camps in the Great Valley are located on smaller streams and rivers (Wall 1991:9).

Twenty-five sites dating to the Archaic Period have been identified in the Letterkenny area. Two probable Archaic Period sites are located on LEAD property. Site 36FR113 is a small prehistoric site containing a Bare Island-like rhyolite stemmed point, a small number of flakes, and a small amount of fire-cracked rock (Roberts 1981). Site 36FR114, another possible Archaic Period site, is reported as having three contracting stemmed points. Two of these points were made from rhyolite and one was made from argillite (Roberts 1981). A single flake tool, and rhyolite and quartz flakes were also recovered from this site.

Some researchers in the Middle Atlantic area recognize an additional cultural period falling generally in the Late Archaic/Early Woodland time period. This additional cultural period is called the Transitional Period. A primarily riverine orientation is hypothesized for the Transitional Period, as evidenced by the fishing component seen in the archeological assemblages of this period and the proximity of these Transitional sites to major rivers. Debitage of rhyolite, the use of steatite, and typical wide biface forms called "broadspears" all attest to the presence of Transitional Period peoples in the Cumberland Valley. No transitional sites have been recorded on LEAD property.

The Woodland Period denotes the time during which Native Americans in the region developed agriculture, and consequently became sedentary and established village social systems. The Woodland Period occupants of the region added agricultural crops to their list of food resources. Living in either dispersed loci, rock shelters, or in nucleated villages along the major river courses, Woodland groups maintained the vast hinterlands

for trapping, hunting, and collecting. Beginning in the Late Archaic, sites in the Great Valley show a shift from interior swamps to a greater focus on the floodplains and terraces of major streams (Beauregard 1998:11). It is also at this time that artifacts manufactured from non-local lithic materials appear in the Great Valley (Beauregard 1998:11). Like the preceding Archaic Period, the Woodland Period is often divided into three sub-periods: Early, Middle and Late. Twelve Woodland sites have been identified in the vicinity of LEAD (Roberts 1981).

Early Woodland sites in central Pennsylvania are focused on the islands, floodplains, and terraces of large riverine zones such as the Susquehanna River (Custer 1996:245). However, Early Woodland base camps are also located on smaller stream floodplains in interior areas of the Great Valley (Custer 1996:245). These camps were probably used on a seasonal or transient basis, as was the pattern in the Maryland portion of the Great Valley (Custer 1996:245). Unlike other areas, no Early or Middle Woodland mound sites are known for the Cumberland Valley (Wall 1991:10), although they have been identified in the Maryland portion of the Great Valley (Custer 1996:246).

Like the Early Woodland, Middle Woodland site locations show a preference for major riverine locals (Custer 1996:245), and this settlement pattern continues into the Late Woodland Period. Limited evidence of horticulture has been found in the Ohio Valley, and it was likely practiced in the Cumberland Valley as well (Wall 1991:11). The technology of food production, even with incipient horticulture, usually requires a community to establish permanent central base camps (Michels 1968:76).

The Late Woodland Period is characterized by the development of small hamlets with an agricultural base. This development resulted in a single, homogeneous cultural sphere during the latter part of the Late Woodland, as evidenced by the widespread distribution of Shenk's Ferry ceramics. Some Iroquoian groups were also in Franklin County during the Late Woodland (Beauregard 1998:13). During the early part of European contact, Shenk's Ferry groups had been largely replaced by the Susquehannocks, who became the dominant Native American social group of eastern and central Pennsylvania (Beauregard 1998:13). Late Woodland sites in Franklin County are found primarily on floodplains, although sites are associated with chert outcrops, interior springs, and wetlands (Wall 1991:10).

Site 36FR112 is a site on LEAD property with a Late Woodland component. The site contained two chert triangle projectile points, as well as rhyolite, chert, chalcedony, jasper, and quartz flakes (Roberts 1981). A small amount of fire-cracked rock was also found at the site. A single rhyolite expanding stemmed point, and a glass trade bead were also found at 36FR112, suggesting that the site may have been occupied both during the Archaic period, and after the arrival of Europeans in Pennsylvania.

Archaeological evidence indicates that throughout all prehistoric periods the Cumberland Valley area was used for a variety of prehistoric activities. Given the diurnal, seasonal, and cyclical changes in location and density of many of the resources throughout this time, areas like the Cumberland Valley no doubt provided prehistoric

peoples with sufficient ecological diversity to offer an attractive variety of subsistence resources.

Historic Period

The following description of the historic period is summarized from *An Archaeological Overview and Management Plan for the Letterkenny Army Depot* (Klein 1985) and *An Archaeological Reconnaissance of Proposed Development Sites at the Letterkenny Army Depot, Chambersburg, Pennsylvania* (Roberts 1981).

At the time of initial European settlement of the Cumberland Valley (and present-day Franklin County) in the early eighteenth century, the predominant Native American groups in the area where the Susquehannock, Shawanese, and Delaware, although the Susquehannocks dominated the European fur trade in the area (Beauregard 1998:13). However, Iroquois groups began to exert their influence over eastern Pennsylvania (Custer 1996:315), and eventually laid claim to most of the Susquehanna Valley. The Iroquois invited many Susquehannocks to join them in New Your (Kent 1984:54), while encouraging other Native American groups like the Delaware to live in the Susquehanna Valley (Kent 1984:100). The Iroquois Six Nations ceded the land west of the Susquehanna River to the descendants of William Penn by treaty in 1736 (Sanders et al 1996:19). Purchase of the Cumberland Valley by the Penn family alleviated many land disputes between the Native Americans and the Commonwealth of Pennsylvania, opening the land for settlement (Klein 1985:2-13,14). However, illegal European settlement to the west beyond Kittatinny Mountain maintained tension between Delaware and Shawnee groups and settlers (Klein 1985:2:14).

The first European inhabitants of the Cumberland Valley area were traders. Groups of Scots-Irish and German colonists quickly followed, although the provincial government encouraged the German settlers to stay in York County and leave the Cumberland Valley to the Scots-Irish, to avoid the ethnic conflicts seen earlier to the east in Lancaster County (Sanders et al 1996:20). By 1731, the European population of the valley consisted of 400 families. The earliest European inhabitants of the valley were subsistence farmers who, with the help of indentured servants and slaves, grew wheat, corn, oats, and fruit (Sanders et al 1996). By 1750, there were 3,000 inhabitants in the Cumberland Valley (Roberts 1981:9). Initial settlements in the area were known as the "Conocosheague Settlements," and consisted primarily of single farms (Roberts 1981:9). Falling Springs (later Chambersberg) was established as early as 1730. The McCamont (later McCalmont) family, one of the earliest settlers, was living in the vicinity of LEAD in 1737 (Roberts 1981:9).

During the French and Indian War, many European residents left Franklin County, but returned after the end of hostilities (Klein 1985:14). Local farms and mills were reestablished at this time. During the American Revolution, no actual fighting took place in Franklin County, but many soldiers from the area fought in battles to the east. After the Revolutionary War, the population of the Cumberland Valley continued to expand. Increasing population brought gradual improvement to roads used to transport

crops to ports on the Susquehanna and Potomac Rivers. Increased road building also allowed the gradual expansion of manufacturing in the area. Border disputes between Maryland and Pennsylvania were not settled until the Mason Dixon survey in 1760. Franklin County was established in 1784, having at earlier times been a part of Lancaster County, York County, and Cumberland County (Klein 1985:15). Letterkenny Township was established in 1761, and was divided into Letterkenny and Greene Townships in 1788 (Roberts 1981:9).

After the American Revolution, numerous towns and villages were established in Franklin County. The town of Chambersburg, founded earlier in 1764, saw its first substantial population growth at this time (Klein 1985:2-15). The establishment of a railroad in the Cumberland Valley in 1837 opened the markets of Baltimore to the area (Klein 1985:2-15). Although Franklin County retained its agrarian base, manufacturing became steadily more important. By the advent of the Civil War, railroads linked the Cumberland Valley to Harrisburg, as well as to Martinsburg and Winchester, Virginia (Sanders et al 1996:25). A gradual population increase continued in Franklin County during the Civil War. Although the county experienced few ill effects from the conflict, Chambersburg was occupied by the Confederate Army in 1863, and was burned by the Confederates the following year (Klein 1985:115).

With the outbreak of World War II, the U.S. government annexed approximately one third of Letterkenny Township for the establishment of LEAD. At first, the surrounding community experienced a dramatic population increase from the construction and staffing of LEAD, although the population began to decline after the war (Klein 1985:16). Although there has been a gradual shift in Letterkenny Township from agriculture to medium and light manufacturing, the area still retains its agrarian focus.

Established in 1941 as Letterkenny Ordnance Depot, the installation's original mission was to serve as an ammunition storage depot for World War II. Letterkenny was one of 26 ammunition depots used by the military during World War II. It was one of 16 depots constructed in the 1940's to increase the capacity of the existing ammunition storage system. Letterkenny was one of four ammunition storage depots used in the Middle Atlantic States. The others were Curtis Bay, Maryland; Portage, at Ravenna Ohio, and Nansemond, near Virginia Beach, Virginia. Letterkenny was one of eight class "B" depots established when the United States entered the war. Eight class "A" depots were constructed prior to the United States' entry into the war in 1941.

LEAD's location was considered ideal because of its proximity to the eastern seaboard, and its inland setting between mountain ranges provided for protection against enemy attack. Construction of LEAD began in 1942, with the removal or demolition of approximately 700 civilian buildings on the 12,544-acre property. Buildings removed included residences, schools, churches, and businesses. Only six pre-1942 buildings were left standing after the initial round of construction.

The architectural design of ordnance depots was characteristic of standard, utilitarian World War II construction. Ordnance depots were separated into functionally distinct areas such as administration, inert storage, and explosive storage. Explosive storage buildings at ordnance depots were subject to strict construction regulations, which the military had developed during the years between the world wars. The “igloo” magazine was developed after a 1926 accidental explosion at the Lake Denmark Naval Ammunition Depot in New Jersey. The new magazine was designed to direct the force of an explosion upward instead of out. A total of 802 above ground ammunition storage bunkers were initially constructed at LEAD, as were 12 above-ground storage magazines, 17 warehouses, administration buildings and barracks (Klein 1985:16).

The plan for the ammunition storage area is functional. The igloos are centrally located in the ammunition storage area. A perimeter road surrounds the concrete igloos, and the support buildings, such as warehouses and processing buildings, are located on this perimeter road. This design provides for an additional safety buffer in the event of an incident in the ammunition storage area.

In addition to ammunition and explosives storage, Ordnance Department depots also received, stored, and issued a wide variety of other materials. Traditionally, the Ordnance Department was also responsible for weapons, tanks and similar items. In August of 1942, Ordnance Department responsibilities were expanded to include motor vehicle inventory, maintenance, distribution, and repair. General storage facilities were constructed at Ordnance Depots to house these new functions.

At one point during World War II, a portion of LEAD served as a prisoner-of-war camp for the Italian Service Unit. Construction at LEAD has continued since the end of World War II, although over 1,000 acres of land at LEAD have been excised or transferred. Over the years, Letterkenny's original mission of ammunition storage was expanded to include maintenance and supply missions. In 1962, Letterkenny Ordnance Depot was renamed Letterkenny Army Depot.

The depot is currently divided into three distinct primary use areas. The largest area, comprising 12,000 acres, is occupied by the Letterkenny Munitions Center (LEMC) and used for missile and ammunition maintenance and storage. The LEMC is Tier 1 for the mobilization of interservice tactical missiles. The second largest primary use area is the missile and ground support industrial complex. This area offers 360 acres of high tech maintenance facilities and improved storage areas. The third area is primarily administrative, with light industrial and storage facilities. While many portions of the LEAD facility have been heavily developed, much of the property continues to be farmed, or is wooded.

Today, LEAD has evolved into a multi-mission depot that provides maintenance services for Army, interservice, and foreign military customers. LEAD is the premier organic maintenance facility for Tactical Missile and Air Defense System refurbishment and maintenance support. The depot's mission activity is subordinate to the U.S. Army Aviation and Missile Command (AMCOM), headquartered at Redstone Arsenal, Alabama. The

garrison domain is within the oversight of the U.S. Army Installation Management Agency's North East Regional Office, headquartered at Ft. Monroe, Virginia.

PHASE I SURVEY

Background Research

There are no historic properties recorded in the Pennsylvania Archaeological Site Survey (PASS) files maintained by the Pennsylvania Historical and Museum Commission for the project area. According to the Pennsylvania *Comprehensive State Plan for the Conservation of Archaeological Resources* in the Ridge and Valley Province (Hatch et al 1985), some utilization of upland areas like the five construction areas could be expected for all prehistoric cultural periods. From Paleo-Indian to Early Archaic times, sites are focused on water and lithic resources, but some resource procurement took place in upland areas. From the Middle Archaic through Early Woodland Period, small, specialized function camps may be expected along mountain slopes. Finally, from the Middle Woodland to Late Woodland period, special purpose hunting and gathering sites are known from upland locals, but the majority of habitation took place along flood plains and in areas with high quality agricultural soils.

In an effort to locate historic sites through documentary evidence, a primary source of information initially consulted during this investigation was the archaeological overview and management plan for LEAD prepared by the Pennsylvania State University and the Envirosphere Company (Klein 1985). In preparing the archaeological overview, Klein looked at various historic maps and atlases incorporating the LEAD property. These atlases included Davidson's 1858 map of Franklin County (Davidson 1858), the Beers 1868 atlas of Franklin County (Beers 1868), the Pennsylvania Department of Highways 1941 general highway map (Pennsylvania Department of Highways 1941), and various U.S. Geological Survey topographic maps. This information was synthesized by Klein into a map of LEAD showing the projected location of potential historic archaeological sites. Based on the historic maps and atlases, several potential historic archaeological sites are located in the vicinity of the TRMF construction area, near an existing rail line, but outside of the area proposed for construction.

The location of the TRMF project area was plotted onto the historic maps. None of the historic farmsteads were located in the area proposed for construction.

Field Methods

The goal of the Phase I cultural resource investigation was to identify the presence or absence of historic properties in the project's area of potential effect. As previously mentioned, the area of potential effect was defined as the location of all ground disturbing activities that had the potential to effect archaeological resources and the viewshed of the proposed construction. Historic properties in the viewshed of the proposed construction were also identified. A visual inspection of the project area and

surrounding landscape was conducted as a part of the Phase I investigation. No existing buildings are located within the viewshed of this project. Fieldwork for the Phase I investigation was conducted in November 2006.

SITE INVESTIGATION

The goal of the Phase I cultural resource investigation was to identify the presence or absence of historic properties in the area of potential effect for the TRMF facility. A visual inspection of the project area and surrounding landscape was conducted. During the inspection of the project area, the general assumptions about landuse mentioned above were confirmed. The project area was also investigated for the presence of archaeological resources. Fieldwork for conducted from in November 2006, and utilized a controlled surface inspection following procedures outlined in *Cultural Resource Management in Pennsylvania: Guidelines for Archaeological Investigations* (Bureau for Historic Preservation 1991). The 30 acre project site was plowed and disced, with the exception of approximately one forested acre. The survey was conducted after a period of heavy rain had taken place. Surface visibility was 95 percent across the entire project area, and this area was systematically walked and inspected. The results of the Phase I testing of the project area is described below.

The entire project area is dominated by an undulating shale bedrock which was impacted and broken by the plow in numerous locations. The soils above the shale consisted of a yellow orange silty sand above which was a dark brown plowed A-horizon soil. During the field inspection, only a single likely prehistoric artifact was identified. The artifact is a banded rhyolite biface fragment measuring 4.5cm in length and 4.5cm in width (Appendix B, Plate 4). The biface fragment exhibits a small amount of cortex on both sides, and has a transverse medial hinge fracture. One lateral edge of the biface has a series of small flake scars showing use wear, suggesting the fragment was modified and used as a cutting or scraping tool. A close inspection of the area surrounding area did not reveal any other prehistoric artifacts, although previous controlled surface collection of a portion of the project area (US Army Corps of Engineers, Baltimore District 2001) recovered a porphoritic biface fragment.

A small number of historic period artifacts was noted in the field, but they were all of 20th century origin. These consisted of several fragments of broken window glass, a glass bottle fragment, one nail, and three metal pieces from agricultural machinery. No artifacts clearly predating the construction of the Letterkenny Army Depot were located. The light scatter of historic artifacts is consistent with known patterns of debris disposal in plowed fields and was not collected.

SUMMARY AND RECOMMENDATIONS

The U.S. Army Corps of Engineers, Baltimore District, conducted a Phase I cultural resource investigation of the proposed location for the construction of a Theater Readiness Monitoring Facility. Archeological investigations consisted of a review of existing site information at the Letterkenny Army Depot, investigation of historic mapping, and a controlled surface collection of the areas of the property to be disturbed by construction. The only artifacts observed were a single rhyolite biface fragment, and a small number of 20th century historic artifacts. No National Register eligible archeological resources are located in the project's Area of Potential Effect, and no further cultural resource investigations are recommended.

REFERENCES CITED

- Beauregard, Alan D.
1998 *Phase I Archaeological Survey of the Chambersburg Gas Line Project in Guilford, Township, Franklin County, Pennsylvania*. Ms. on file, Pennsylvania Historical and Museum Commission, Harrisburg.
- Beers, Daniel G.
1868 *Atlas of Franklin County, Pennsylvania*. Pomeroy and Beers: Philadelphia.
- Brinton, William W.
1950 Map Showing Former Letterkenny Homes. Privately Printed.
- Bureau for Historic Preservation
1991 *Cultural Resource Management in Pennsylvania: Guidelines for Archaeological Investigations*. Pennsylvania Historical and Museum Commission, Harrisburg, Pennsylvania.
- Custer, Jay F.
1991 *Phase I Archeological Survey of the Proposed Center Street Relocation Project Area, Cumberland County, Pennsylvania*. Ms. on file, Pennsylvania Historical and Museum Commission, Harrisburg.

1996 *Prehistoric Cultures of Eastern Pennsylvania*. Anthropological Series No. 7, Pennsylvania Historical and Museum Commission, Harrisburg.
- Davidson, D. H.
1858 *Map of Franklin County, Pennsylvania*. Riley and Hoffman: Greencastle.
- Hatch, James W., Christopher Hamilton, Linda Ries, and Christopher Stevenson
1985 The Ridge and Valley Province. In *A Comprehensive State Plan for the Conservation of Archaeological Resources*, edited by P. Raber. Pennsylvania Historic and Museum Commission, Harrisburg, Pennsylvania.
- Hay, Conran A., Christopher E. Hamilton, and Christina Schmidlapp
1988 *A Cultural Resource Overview and Management Plan for the United States Army Carlisle Barracks, Cumberland County, Pennsylvania*. Report submitted to the National Park Service, Office of Cultural Programs, Mid-Atlantic Region.
- Kent, Barry C.
1984 *Susquehanna's Indians*. Anthropological Series No. 6 Pennsylvania historical and Museum Commission, Harrisburg, Pennsylvania.

Kinsey, W. Fred

1994 *Phase I Archeological Survey of the Ashcombe Products, Inc., Property, Monroe Township, Cumberland County, Pennsylvania.* Report prepared for R.J. Fisher Associates. Ms. on file, Pennsylvania Historical and Museum Commission, Harrisburg.

Klein, Joel L.

1985 *An Archeological Overview and Management Plan for the Letterkenny Army Depot.* Report submitted to the National Park Service, Philadelphia, Pennsylvania, for the U.S. Army Material Development and Readiness Command

Long, Richard S.

1975 *Soil Survey of Franklin County, Pennsylvania.* United States Department of Agriculture, Soil Conservation Service.

Michels, Joseph W.

1968 *Settlement Pattern and Demography at Sheep Rock Shelter: Their Role in Culture Contact.* Southwestern Journal of Anthropology, Volume 24, Number 1.

Miller, Patricia E.

1997 *Cultural Resources Survey, Letterkenny Army Depot, Franklin County, Pennsylvania.* Report submitted to the U.S. Army Corps of Engineers, Baltimore District.

PASS: Pennsylvania Archaeological Site Survey Forms

n.d. On file at the Bureau for Historic Preservation, Pennsylvania Historical and Museum Commission, Harrisburg, Pennsylvania.

Pennsylvania Department of Highways

1941 *General Highway Map, Franklin County, Pennsylvania.* Pennsylvania Bureau of Publication: Harrisburg.

Roberts, Daniel G.

1981 *An Archeological Reconnaissance of Proposed Development Sites at the Letterkenny Army Depot, Chambersburg, Pennsylvania.* Report submitted to the U.S. Army Corps of Engineers, Baltimore District.

Sanders, Suzanne L., Katherine E. Grandine, Ellen Saint Onge, and Patrick Giglio

1996 *Archeological and Architectural Investigations at Carlisle Barracks, Cumberland County, Pennsylvania.* Report submitted to the U.S. Army Corps of Engineers, Baltimore District.

Stewart, R. Michael

1984 *The Metarhyolite Connection.* In *Prehistoric Lithic Exchange Systems in the Middle Atlantic Region*, edited by Jay F. Custer, pp.14-45. University of Delaware Center for Archaeological Research Monograph 3. Newark.

U.S. Army Corps of Engineers, Baltimore District.

1993 *Historical and Archeological Investigations, Proposed Construction of a Westbound Lane at Cartridge Road.* Report submitted to Letterkenny Army Depot, Chambersburg, Pennsylvania.

2000 *Phase I Cultural Resource Investigation; Ammunition Container Loading, Storage, and Repair Facility; Letterkenny Army Depot.* Report submitted to Letterkenny Army Depot, Chambersburg, Pennsylvania.

2001 *Phase I Cultural Resource Investigation, Field Ammunition Supply Area Development, Letterkenny Army Depot.* Report submitted to Letterkenny Army Depot, Chambersburg, Pennsylvania.

2004 *Phase I Cultural Resource Investigation, Less Than Truckload Facility, Deployment Facility, Missile Demilitarization Facility and Controlled Humidity Warehouses, Letterkenny Army Depot.* Report submitted to Letterkenny Army Depot, Chambersburg, Pennsylvania.

Wall, Robert D.

1991 *A Phase I Archaeological Investigation of Orchard Place, Southampton Township, Franklin County, Pennsylvania.* Ms. on file, Pennsylvania Historical and Museum Commission, Harrisburg.

APPENDIX A: FIGURES

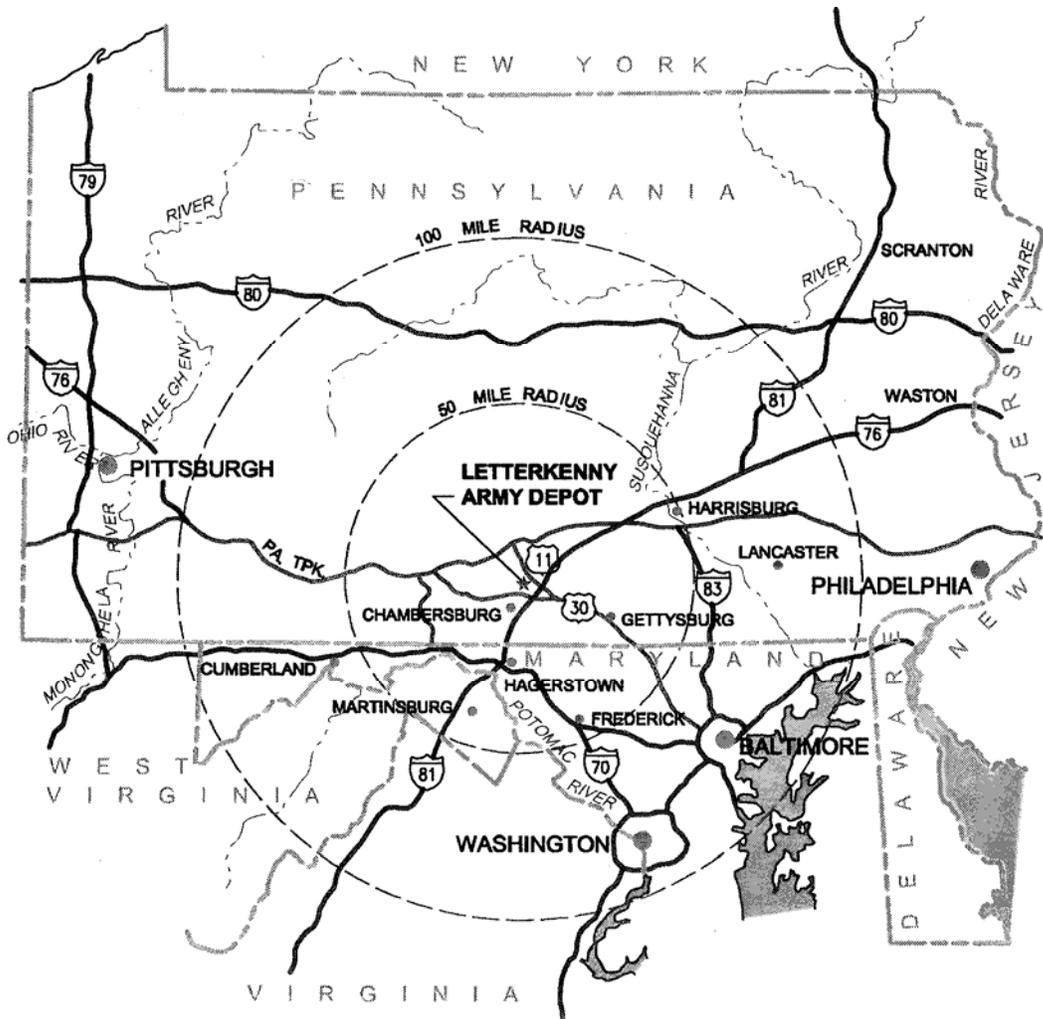


Figure 1: Location of Letterkenny Army Depot



Sheet Number:

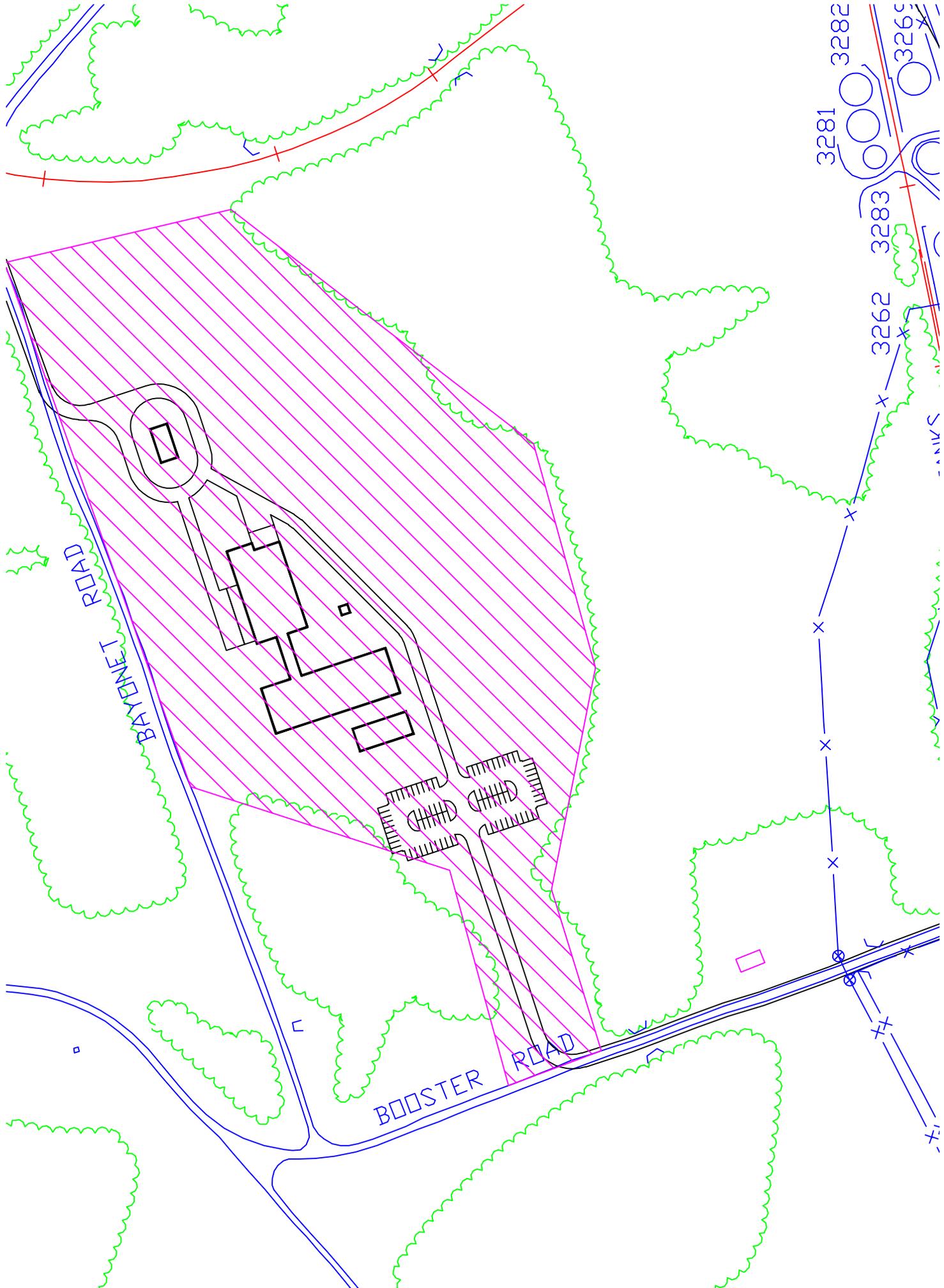
LETTERKENNY ARMY DEPOT PENNSYLVANIA
 GUIDED MISSILE FACILITY
 NEW SITE SKETCH PLAN
 EXPLOSIVE ARCH

U.S. ARMY ENGINEER DISTRICT, BALTIMORE
 CORPS OF ENGINEERS
 BALTIMORE, MARYLAND

PLATE	DRAWING NUMBER	FILE NAME
	CHARRETTE	
SCALE: AS SHOWN	DATE: JUL 2006	PLT SCALE: 1=50

SYMBOL	REV.	DATE	DESCRIPTION	BY





APPENDIX B: PLATES



Plate 1: Photograph of Survey Area, Looking Southwest



Plate 2: Photograph of Survey Area, Looking Southeast



Plate 3: Photograph of Survey Area, Looking East



Plate 4: Banded Rhyolite Biface

APPENDIX G

ECONOMIC IMPACT FORECAST SYSTEM (EIFS) MODEL

1.0 Socioeconomic Impact Assessment

Socioeconomic impacts are linked through cause-and-effect relationships. Military payrolls and local procurement contribute to the economic base for the region of influence (ROI). In this regard, renovation, demolition, and construction of family housing at LEAD would have a multiplier effect on the local and regional economy. With the proposed action, direct jobs would be created, generating new income and increasing personal spending. This spending generally creates secondary jobs, increases business volume, and increases revenues for schools and other social services.

2.0 The Economic Impact Forecast System

The U.S. Army, with the assistance of many academic and professional economists and regional scientists, developed EIFS to address the economic impacts of NEPA-requiring actions and to measure their significance. As a result of its designed applicability, and in the interest of uniformity, EIFS should be used in NEPA assessments for ROI. The entire system is designed for the scrutiny of a populace affected by the actions being studied. The algorithms in EIFS are simple and easy to understand, but still have firm, defensible bases in regional economic theory.

EIFS is developed under a joint project of the U.S Army Corps of Engineers (USACE), the U.S. Army Environmental Policy Institute (AEPI), and the Computer and Information Science Department of Clark Atlanta University, Georgia. EIFS is an on-line system, and the EIFS Web application is hosted by the USACE, Mobile District. The system is available to anyone with an approved user-id and password. University staff and the staff of USACE, Mobile District are available to assist with the use of EIFS.

The databases in EIFS are national in scope and cover the approximately 3,700 counties, parishes, and independent cities that are recognized as reporting units by Federal agencies. EIFS allows the user to define an economic ROI by identifying the counties, parishes, or cities to be analyzed. Once the ROI is defined, the system aggregates the data, calculates multipliers and other variables used in the various models in EIFS, and prompts the user for forecast input data.

3.0 The EIFS Model

The basis of the EIFS analytical capabilities is the calculation of multipliers that are used to estimate the impacts resulting from Army-related changes in local expenditures or employment. In calculating the multipliers, EIFS uses the economic base model approach, which relies on the ratio of total economic activity to basic economic activity. Basic, in this context, is defined as the production or employment engaged to supply goods and services outside the ROI or by Federal activities (such as military installations and their employees). According to economic base theory, the ratio of total income to basic income is measurable (as the multiplier) and sufficiently stable so that future changes in economic activity can be forecast. This technique is especially appropriate for estimating aggregate impacts and makes the economic base model ideal for the EA and EIS process.

The multiplier is interpreted as the total impact on the economy of the region resulting from a unit change in its base sector; for example, a dollar increase in local expenditures due to an expansion of its military installation. EIFS estimates its multipliers using a location quotient approach based on the concentration of industries within the region relative to the industrial concentrations for the nation.

The user inputs into the model the data elements which describe the Army action: the change in expenditures, or dollar volume of the construction project(s); change in civilian or military employment; average annual income of affected civilian or military employees; the percent of civilians expected to relocate due to the Army’s action; and the percent of military living on-post. Once these are entered into the EIFS model, a projection of changes in the local economy is provided. These are projected changes in sales volume, income, employment, and population. These four indicator variables are used to measure and evaluate socioeconomic impacts. Sales volume is the direct and indirect change in local business activity and sales (total retail and wholesale trade sales, total selected service receipts, and value-added by manufacturing). Employment is the total change in local employment due to the proposed action, including not only the direct and secondary changes in local employment, but also those personnel who are initially affected by the military action. Income is the total change in local wages and salaries due to the proposed action, which includes the sum of the direct and indirect wages and salaries, plus the income of the civilian and military personnel affected by the proposed action. Population is the increase or decrease in the local population as a result of the proposed action.

4.0 The Significance of Socioeconomic Impacts

Once model projections are obtained, the Rational Threshold Value (RTV) profile allows the user to evaluate the significance of the impacts. This analytical tool reviews the historical trends for the defined region and develops measures of local historical fluctuations in sales volume, income, employment, and population. These evaluations identify the positive and negative changes within which a project can affect the local economy without creating a significant impact. The greatest historical changes define the boundaries that provide a basis for comparing an action’s impact on the historical fluctuation in a particular area. Specifically, EIFS sets the boundaries by multiplying the maximum historical deviation of the following variables:

		Increase	Decrease
Sales Volume	X	100%	75%
Income	X	100%	67%
Employment	X	100%	67%
Population	X	100%	50%

These boundaries determine the amount of change that will affect an area. The percentage allowances are arbitrary, but sensible. The maximum positive historical fluctuation is allowed with expansion because economic growth is beneficial. While cases of damaging economic growth have been cited, and although the zero-growth concept is being accepted by many local planning groups, military base reductions and closures generally are more injurious to local economics than are expansion.

The major strengths of the RTV are its specificity to the region under analysis and its basis on actual historical data for the region. The EIFS impact model, in combination with the RTV, has proven successful in addressing perceived socioeconomic impacts. The EIFS model and the RTV technique for measuring the intensity of impacts have been reviewed by economic experts and have been deemed theoretically sound.

The following are the EIFS inputs and output data and the RTV values for the ROI. These data form the basis for the socioeconomic impact analysis presented in Section 4.10.

EIFS REPORT: LETTERKENNY ARMY DEPOT

Study Area: Cumberland, Franklin, and Huntingdon Counties, Pennsylvania

Forecast Input Category	Forecast Input Data	Forecast Output Category	Result	RTV*
Change In Local Expenditures	\$7,705,263 ⁸	Sales Volume – Direct	\$14,030,070	
Change In Civilian Employment	174	Sales Volume – Induced	\$30,164,650	
Average Income of Affected Civilian	\$62,696	Sales Volume – Total	\$44,194,720	0.24%
Percent Expected to Relocate	100	Income – Direct	\$11,805,000	
Change In Military Employment	0	Income – (Induced)	\$5,138,532	
Average Income of Affected Military	\$93,465	Income – Total (place of work)	\$16,943,530	0.18%
Percent of Military Living On-post	100%	Employment – Direct	231	
Employment Multiplier	3.15	Employment – Induced	123	
Income Multiplier	3.15	Employment – Total	355	0.15%
		Local Population	433	
		Local Off-base Population	433	0.11%

*Note: The following are the RTV boundaries for the LEAD ROI: Sales Volume (-4.85% to 11.39%), Income (-4.92% to 10.36%), Employment (-1.98% to 3.31%) and Population (-0.3% to 1.54%).

⁸ The change in local expenditures is equal to construction spending due to BRAC actions. A peak year of 2008 was chosen for PN 63366, the Covered Storage Facility for Tactile Missiles, the Hazardous Waste Storage Facility, and the Health Clinic Addition, as specified in the DOPAA. The latter 3 projects do not yet have a construction start or completion date, so they were simply added onto the peak year of 2008.