

ENVIRONMENTAL ASSESSMENT OF INSTALLATION DEVELOPMENT AT MCGUIRE AIR FORCE BASE, NEW JERSEY



HEADQUARTERS AIR MOBILITY COMMAND



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McGuire AFB uses numerous 305 AMW-approved plans to project installation development requirements. These plans propose demolition, construction, and infrastructure improvement activities intended to ensure that the installation can sustain its current and future national security operations and mission-readiness status. These projects include installation development projects contained in the McGuire AFB General Plan and the community of all existing Wing-approved development plans. McGuire AFB seeks to improve the continuing installation development process by evaluating in a single EA all actions proposed in the McGuire AFB Wing-approved community of plans for installation development called the Installation Development EA (IDEA). The Proposed Action includes numerous projects, such as demolition of aging facilities, new facility construction, facility upgrades, facility repair and renovation utilities upgrades, community living upgrades, infrastructure upgrades, and recreational upgrades that would be completed or implemented during the next 5 years. The intent of this IDEA is to address the Proposed Action of implementing installation development actions as found in the community of all existing approved plans concerning continuing development on McGuire AFB. The scope of the IDEA includes an evaluation of alternatives for the various projects and an analysis of the cumulative effects on the natural and man-made environments. Through this IDEA, McGuire AFB provides a constraints-based environmental impact analysis of installation development actions projected over the next 5 years. A constraints approach enables McGuire AFB to evaluate environmental concerns that exist throughout the installation and those unique to specific areas of the installation. The analysis draws from the knowledge gained from extensive recent evaluations for similar types of projects to determine the direct, indirect, and cumulative effects of projects that would be completed as part of the installation's development. This EA has been prepared to evaluate the Proposed Action and alternatives, including the No Action Alternative. If potentially significant impacts are determined to be associated with the Proposed Action during the course of preparing this IDEA, it might be necessary to prepare an Environmental Impact Statement (EIS). Resource areas addressed in the EA include noise, land use, air quality, safety, geological resources, water resources, biological resources, cultural resources, socioeconomic resources and environmental justice infrastructure, and hazardous materials and waste management. The EA was made available to the public for comments during development and upon completion.

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**FINDING OF NO SIGNIFICANT IMPACT
AND
FINDING OF NO PRACTICABLE ALTERNATIVE
ENVIRONMENTAL ASSESSMENT
OF INSTALLATION DEVELOPMENT AT
McGUIRE AIR FORCE BASE, NEW JERSEY**

INTRODUCTION

In an effort to improve installation planning, streamline compliance with the National Environmental Policy Act (NEPA), and accomplish installation development, the U.S. Air Force Headquarters Air Mobility Command and the 305th Air Mobility Wing (305 AMW) have initiated an Environmental Assessment (EA) of foreseeable and reasonable planned and programmed projects that could be implemented within the next 5 years at McGuire Air Force Base (AFB). Since the establishment of McGuire AFB, installation development has been a continuing activity. Every year, structures are demolished, facilities are constructed, and infrastructure is upgraded. This decision document is based on an Installation Development Environmental Assessment (IDEA) attached to and incorporated herein by reference. The intent of the IDEA is to analyze the Proposed Action of implementing installation development actions on McGuire AFB, while avoiding adverse impacts on environmentally sensitive areas.

The Proposed Action includes projects that could be executed during the next 5 years including facility construction, repair, or renovation; upgrades to utilities and infrastructure; and the demolition of unneeded facilities. The scope of the IDEA includes an evaluation of alternatives for the projects and an analysis of their direct, indirect, and cumulative effects on the natural and man-made environments.

PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is to implement the wing-approved installation development projects found within all community plans for McGuire AFB, including the Base General Plan. All plans for McGuire AFB were examined to produce a consolidated list of projects to accomplish the planned and programmed development of the installation over the next 5 years.

The need for the Proposed Action is to support air mobility missions associated with McGuire AFB. This need involves meeting ongoing mission requirements while supporting the morale and welfare of the warfighter and preparing the installation to accept additional missions in the future.

DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action is to implement numerous installation development projects as found in the community plans for McGuire AFB. The projects comprising the Proposed Action analyzed in the IDEA fall under three categories: demolition; construction including renovations, alterations, and repairs; and infrastructure. The IDEA used information obtained from other environmental impact analysis process documents for similar actions to determine the direct, indirect, and cumulative impacts of the projects proposed for installation development at McGuire AFB.

Demolition Projects. McGuire AFB proposes 30 demolition projects that could occur over the next 5 years to achieve efficiency and support growth associated with its mission requirements. These facilities proposed for demolition have been deemed too costly to repair or renovate and no longer meet the mission needs of McGuire AFB. Full implementation of the proposed demolition projects would eliminate approximately 458,000 square feet (ft²) of impervious surfaces, minimizing the area of undisturbed land required for proposed construction projects.

Construction Projects. McGuire AFB proposes 32 facility construction, renovation, and alteration projects that could occur over the next 5 years to support mission requirements and comply with force protection requirements. The footprint of these facilities and associated pavements would occupy approximately 486,000 ft². In order to continue enhancing the compatibility of designated land uses at McGuire AFB, proposed facilities would be constructed in appropriate land use areas of the installation.

Infrastructure Projects. McGuire AFB proposes 37 infrastructure projects that could occur over the next 5 years to support future mission requirements and to comply with force protection requirements. These projects include upgrades to or development of airfield pavements, utilities, parking facilities, and fuel systems. Proposed infrastructure projects could increase impervious surfaces by approximately 74,000 ft².

SUMMARY OF ANTICIPATED ENVIRONMENTAL EFFECTS ASSOCIATED WITH THE PROPOSED ACTION

Direct short-term minor adverse effects resulting from construction and demolition activities would affect the noise environment, air quality, safety, geological resources, water resources, biological resources, and hazardous materials and wastes. Adverse effects associated with construction and demolition activities would be localized to the immediate area of work and would subside following the end of construction and demolition activities in each affected area. Direct and indirect short-term minor beneficial effects on socioeconomic resources would also occur on the local community from procurement of goods and services during construction; however, expenditures associated with construction are short-term and would have no long-lasting community benefits.

Direct and indirect long-term minor adverse effects on geological resources, water resources, and biological resources could occur. Proposed facilities construction and some infrastructure projects would result in an overall increase in impervious surfaces (approximately 2.3 acres) and loss of vegetation. Vegetation clearing would be minimized to the extent practicable and coordinated on a project-by-project basis with the New Jersey Pinelands Commission as determined necessary.

Direct and indirect long-term minor beneficial effects on land use, air quality, safety, infrastructure, and hazardous materials and wastes would be expected from the demolition of unneeded facilities and the construction of modern, efficient infrastructure.

Short-term minor adverse effects and long-term beneficial effects would be expected due to the removal of asbestos and lead-based paint in older buildings. All removal and abatement would be accomplished in accordance with Federal, state, and local regulations. Construction activities proximate to any contaminated sites would be accomplished in accordance with Federal, state, and local regulations.

No adverse effects on cultural resources would be expected. No architectural or archeological resources that are known to be eligible for the National Register of Historic Places would be affected by a proposed project, and there are no known sites of religious, traditional, or cultural significance to Native American tribes. To ensure that no adverse effects would occur, McGuire AFB will evaluate structures that are proposed for alterations or demolition if they have not been previously evaluated for significance; McGuire AFB will consult with the State Historic Preservation Office regarding historical or Cold War significance and obtain concurrence prior to initiating work. During construction activities, McGuire AFB will adhere to the installation's Integrated Cultural Resources Management Plan in the event of an unanticipated discovery of archeological material or human remains.

No projects evaluated in this EA would occur within wetlands; however 30 of the proposed projects would occur within 300 feet of wetlands. There are 13 building or pavement demolition projects¹ that could result in short-term minor adverse effects from sedimentation and erosion; however, the removal of impervious surfaces within wetland transition areas could also have long-term beneficial effects by increasing storm water retention and slowing storm water flow. There are 11 building or pavement construction projects² that could result in short-term minor adverse effects from sedimentation and erosion, and long-term minor adverse effects by increasing impervious surfaces in wetland transition areas. There are three pavement resurfacing or pavement repair projects³ and three other miscellaneous projects⁴ within 300 feet of wetlands, but these six projects would not increase impervious surfaces and would involve little to no ground disturbance. Many of the construction and infrastructure projects that are proposed within wetland transition areas are mission-essential and cannot be relocated to other areas of McGuire AFB because of the existing configuration and layout of the runways, airfield, and supporting facilities.

¹ These projects are D2 (PTLF0030081), D13 (PTLF031074), D16 (PTLF023003), D17 (PTLF051000), D19 (PTLF081005), D20 (PTLF051050), D22 (PTLF051043), D23 (PTLF081008), D24 (PTLF051048), D28 (PTLF081006), D29 (PTLF021064), I1 (PTLF031012), and I3 (PTLF051062).

² These projects are C2 (PTLF0030081), C6 (PTLF023003), C9 (PTLF955002), C10 (PTLF045001), C12 (PTLF015000), C15 (PTLF971528), C24 (PTLF069001), C32 (PTLF061042), I7 (PTLF941149), I9 (PTLF941148), and I12 (PTLF061056).

³ These projects are I2 (PTLF0712012), I23 (PTLF041252), and I24 (PTLF0612001).

⁴ These projects are C18 (PTLF079001), I17 (PTLF061400), and I37 (PTLF051052).

All projects that are identified as being within 300 feet of wetlands would be evaluated prior to implementation to determine if permitting is required and, if so, which specific mitigation measures would be appropriate to avoid, minimize, or mitigate appropriately.

No direct effects on the 100-year floodplain or threatened and endangered species would be expected. No projects evaluated in this EA would be within the 100-year floodplain. No federally threatened or endangered species are known to occur at McGuire AFB. Any project that could indirectly affect a state-listed species would be coordinated with the New Jersey Department of Environmental Protection prior to implementation. No Pinelands-protected species are known to occur at McGuire AFB. Any project determined to have the potential to directly affect protected species or their habitats would involve separate consultation with the appropriate Federal and state agencies. Additional environmental analysis would be required if the potential to adversely impact floodplains, threatened or endangered species, or other protected natural resources is identified during project design or execution.

INTERAGENCY AND INTERGOVERNMENTAL COORDINATION PLANNING AND PUBLIC REVIEW

The Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) process was conducted for 30 days beginning May 15, 2007. The EA was made available for 30 days for public and agency review beginning October 24, 2007.

FINDING OF NO SIGNIFICANT IMPACT

I conclude that the environmental effects of the proposed installation development at McGuire AFB are not significant, that preparation of an Environmental Impact Statement is unnecessary, and that a Finding of No Significant Impact is appropriate. The preparation of the EA is in accordance with NEPA, Council on Environmental Quality regulations, and 32 Code of Federal Regulations Part 989, as amended.

FINDING OF NO PRACTICABLE ALTERNATIVE

Considering the information contained herein (including the attached EA), in accordance with and pursuant to the authority delegated by the Secretary of the Air Force Order 791.1, I find that there is no practicable alternative to completing some proposed projects within wetland transition areas. This finding of no practicable alternative is applicable only to those demolition, construction, and infrastructure projects specifically identified in this decision document. The Proposed Action would provide for all practicable measures to minimize harm to wetlands and also minimize construction footprints within wetland buffers.



JOHN H. BONAPART, JR, SES
Deputy Director, Installations &
Mission Support

28 FEB 08
Date

Attachment: Environmental Assessment

ABBREVIATIONS AND ACRONYMS

μg/m ³	micrograms per cubic meter	DOD	Department of Defense
108 ARW	108th Air Refueling Wing	EA	Environmental Assessment
305 AMW	305th Air Mobility Wing	EIAP	Environmental Impact Analysis Process
305 CES/CEV	305th Civil Engineering Squadron/Environmental Flight	EIS	Environmental Impact Statement
514 AMW	514th Air Mobility Wing	EO	Executive Order
621 CRW	621st Contingency Response Wing	EOD	Explosive Ordnance Disposal
816 CRG	816th Contingency Response Group	ERP	Environmental Restoration Program
817 CRG	817th Contingency Response Group	ESA	Endangered Species Act
ACM	asbestos-containing material	ESCP	Erosion and Sediment Control Plan
AFB	Air Force Base	FAA	Federal Aviation Administration
AFI	Air Force Instruction	FEMA	Federal Emergency Management Agency
AFPD	Air Force Policy Directive	FONPA	Finding of No Practicable Alternative
AFRC	Air Force Reserve Command	FONSI	Finding of No Significant Impact
AICUZ	Air Installation Compatible Use Zone	FS-2	No. 2 light fuel oil
AMC	Air Mobility Command	ft ²	square feet
APE	Area of Potential Effect	FUB	Facilities Utilization Board
APS	Aerial Port Squadron	FY	fiscal year
AQCR	Air Quality Control Region	GIS	Geographical Information System
AST	aboveground storage tank	GOV	government-owned vehicle
AT/FP	Anti-Terrorism/Force Protection	GRDC	Global Reach Deployment Complex
BCSCD	Burlington County Soil Conservation District	HAP	Hazardous Air Pollutant
BMP	best management practice	HAZMART	hazardous materials pharmacy
BOMARC	Boeing Michigan Aeronautical Research Center	HAZWOPER	Hazardous Waste Operations and Emergency Response
BRAC	Base Realignment and Closure	HQ	Headquarters
CAA	Clean Air Act	ICRMP	Integrated Cultural Resources Management Plan
CAAA	Clean Air Act Amendments	IDEA	Installation Development Environmental Assessment
CEQ	Council on Environmental Quality	IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
CFR	Code of Federal Regulations	INRMP	Integrated Natural Resources Management Plan
CO	carbon monoxide	kV	kilovolt
CWA	Clean Water Act		
dB	decibel		
dBA	A-weighted decibels		
DERP	Defense Environmental Restoration Program		
DNL	Day-night average A-weighted sound level		

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LBP	lead-based paint	PMEL	Precision Measurement Equipment Laboratory
MG	million gallons	POV	privately owned vehicle
mg/m ³	milligrams per cubic meter	ppm	parts per million
MGD	million gallons per day	PRM	Potomac-Raritan-Magothy
MMRP	Military Munitions Response Program	PSD	Prevention of Significant Deterioration
MPIAQCR	Metropolitan Philadelphia Interstate Air Quality Control Region	QD	quantity-distance
MSDS	Material Safety Data Sheets	RCRA	Resource Conservation and Recovery Act
MSL	mean sea level	ROI	Region of Influence
N.J.A.C.	New Jersey Administrative Code	SAGE	Semi-Automatic Ground Environment
N.J.S.A.	New Jersey Statutes Annotated	SFS	Security Forces Squadron
NAAQS	National Ambient Air Quality Standards	SHPO	State Historic Preservation Office
NAES	Naval Air Engineering Station	SIP	State Implementation Plan
NEPA	National Environmental Policy Act	SO ₂	sulfur dioxide
NHPA	National Historic Preservation Act	SVOC	semivolatile organic compound
NJDEP	New Jersey Department of Environmental Protection	SWPPP	Storm Water Pollution Prevention Plan
NJPC	New Jersey Pinelands Commission	tpy	tons per year
NJPDES	New Jersey Pollutant Discharge Elimination System	TWCF	Transportation Working Capital Fund
NO ₂	nitrogen dioxide	U.S.C.	United States Code
NO _x	nitrogen oxides	USACE	U.S. Army Corps of Engineers
NPDES	National Pollutant Discharge Elimination System	USAF	U.S. Air Force
NRCS	Natural Resources Conservation Service	USEPA	U.S. Environmental Protection Agency
NRHP	National Register of Historic Places	USFWS	U.S. Fish and Wildlife Service
O ₃	ozone	UST	underground storage tank
OSHA	Occupational Safety and Health Administration	UXO	unexploded ordnance
PAH	polycyclic aromatic hydrocarbon	VOC	volatile organic compound
Pb	lead	yd ²	square yards
PCB	polychlorinated biphenyl		
pCi/L	picocuries per liter		
PCMP	Pinelands Comprehensive Management Plan		
PM ₁₀	particulate matter equal to or less than 10 microns in diameter		
PM _{2.5}	particulate matter equal to or less than 2.5 microns in diameter		

**FINDING OF NO SIGNIFICANT IMPACT
AND
FINDING OF NO PRACTICABLE ALTERNATIVE
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JOHN H. BONAPART, JR, SES
Deputy Director, Installations &
Mission Support

28 FEB 08
Date

Attachment: Environmental Assessment

COVER SHEET

ENVIRONMENTAL ASSESSMENT OF INSTALLATION DEVELOPMENT AT MCGUIRE AIR FORCE BASE, NEW JERSEY

Responsible Agencies: U.S. Air Force (USAF), Headquarters Air Mobility Command (AMC) at Scott Air Force Base (AFB), Illinois, and 305th Air Mobility Wing (305 AMW) at McGuire AFB, New Jersey.

Affected Location: McGuire AFB, Burlington County, New Jersey.

Proposed Action: Implementation of approved installation development plans.

Report Designation: Environmental Assessment (EA).

Written comments and inquiries regarding this document should be directed to: 305 CES/CEV, 2403 Vandenberg Avenue, McGuire AFB, NJ 08641.

Abstract: McGuire AFB uses numerous 305 AMW-approved plans to project installation development requirements. These plans propose demolition, construction, and infrastructure improvement activities intended to ensure that the installation can sustain its current and future national security operations and mission-readiness status. These projects include installation development projects contained in the McGuire AFB General Plan and the community of all existing Wing-approved development plans. McGuire AFB seeks to improve the continuing installation development process by evaluating in a single EA all actions proposed in the McGuire AFB Wing-approved community of plans for installation development, called the Installation Development EA (IDEA). The Proposed Action includes numerous projects, such as demolition of aging facilities, new facility construction, facility upgrades, facility repair and renovation, utilities upgrades, community living upgrades, infrastructure upgrades, and recreational upgrades that would be completed or implemented during the next 5 years. The intent of this IDEA is to address the Proposed Action of implementing installation development actions as found in the community of all existing approved plans concerning continuing development on McGuire AFB. The scope of the IDEA includes an evaluation of alternatives for the various projects and an analysis of the cumulative effects on the natural and man-made environments.

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INSTALLATION DEVELOPMENT AT
MCGUIRE AIR FORCE BASE, NEW JERSEY**

**HEADQUARTERS AIR MOBILITY COMMAND
COMMUNITY PLANNING BRANCH
507 SYMINGTON DRIVE
SCOTT AIR FORCE BASE, ILLINOIS 62225-5022**

JANUARY 2008

**ENVIRONMENTAL ASSESSMENT OF INSTALLATION DEVELOPMENT AT
MCGUIRE AIR FORCE BASE, NEW JERSEY**

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1. Purpose, Need, and Scope

The 305th Air Mobility Wing (305 AMW) at McGuire Air Force Base (AFB), New Jersey, and Headquarters (HQ) Air Mobility Command (AMC) believe a comprehensive U.S. Air Force (USAF) Environmental Impact Analysis Process (EIAP) document would improve the continuing activity of installation development and streamline the National Environmental Policy Act (NEPA) compliance process. As a result, 305 AMW and HQ AMC have initiated an evaluation in this Environmental Assessment (EA) of all programmed and reasonably foreseeable projects identified for the next 5 years. Since the establishment of McGuire AFB, as with all other USAF installations, development of the installation has continuously occurred. Every year in the history of the installation, structures have been demolished, new facilities constructed, and infrastructure upgraded. This document will constitute an Installation Development EA (IDEA). The intent of the IDEA is to address the Proposed Action of implementing installation development actions as found in the community of all existing 305 AMW-approved plans on McGuire AFB. These projects are a compilation of installation development activities as described in the McGuire AFB General Plan (MAFB 2005a) and all other known and Wing-approved base plans. The IDEA will help facilitate efforts to coordinate land use planning and infrastructure projects, expedite project execution by using early planning, and encourage agency coordination. In addition to evaluating the projects as described, this EA will serve as a baseline for future environmental analysis of mission and training requirements.

This section of the document includes five subsections: background information on the location and mission of McGuire AFB, a statement of the purpose of and the need for the Proposed Action, an overview of the scope of the analysis, a summary of key environmental compliance requirements, and an introduction to how the EA is organized.

1.1 Background

McGuire AFB is located in Burlington County in south-central New Jersey, east of Wrightstown Borough (see **Figure 1-1**). This military installation is a 3,598-acre USAF base under the command and control of AMC, approximately 18 miles southeast of downtown Trenton, New Jersey. It is bounded by the U.S. Army's Fort Dix Military Reservation on the west, south, and east. The Naval Air Engineering Station (NAES) Lakehurst is east of Fort Dix. McGuire AFB is headquarters to the 305 AMW and is also home to several other tenant units. Major tenant units at the base include the 514th Air Mobility Wing (514 AMW) of the Air Force Reserve Command (AFRC), 108th Air Refueling Wing (108 ARW) of the New Jersey Air National Guard, 21st Expeditionary Mobility Task Force, 621st Contingency Response Wing (621 CRW), the USAF Expeditionary Center (located at Fort Dix), Non-Commissioned Officers Academy, and the Civil Air Patrol. The presence of these tenants and the proximity of Fort Dix and NAES Lakehurst create a unique multiservice community at McGuire AFB. The mission of the 305 AMW is to provide worldwide air refueling and strategic airlift in support of the USAF's Global Reach, Global Power mission. The 305 AMW also provides administrative, medical, and logistical support to 305 AMW units, tenant organizations, and the McGuire AFB community.

1.2 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to implement installation development projects on McGuire AFB as found in the community of all existing Wing-approved plans for development on the installation. The community of installation development plans is linked to individual funding programs, such as Base Realignment and Closure (BRAC), Military Construction, Operations and Maintenance, Military Family Housing, Anti-Terrorism/Force Protection (AT/FP), Nonappropriated Funds, and others. The

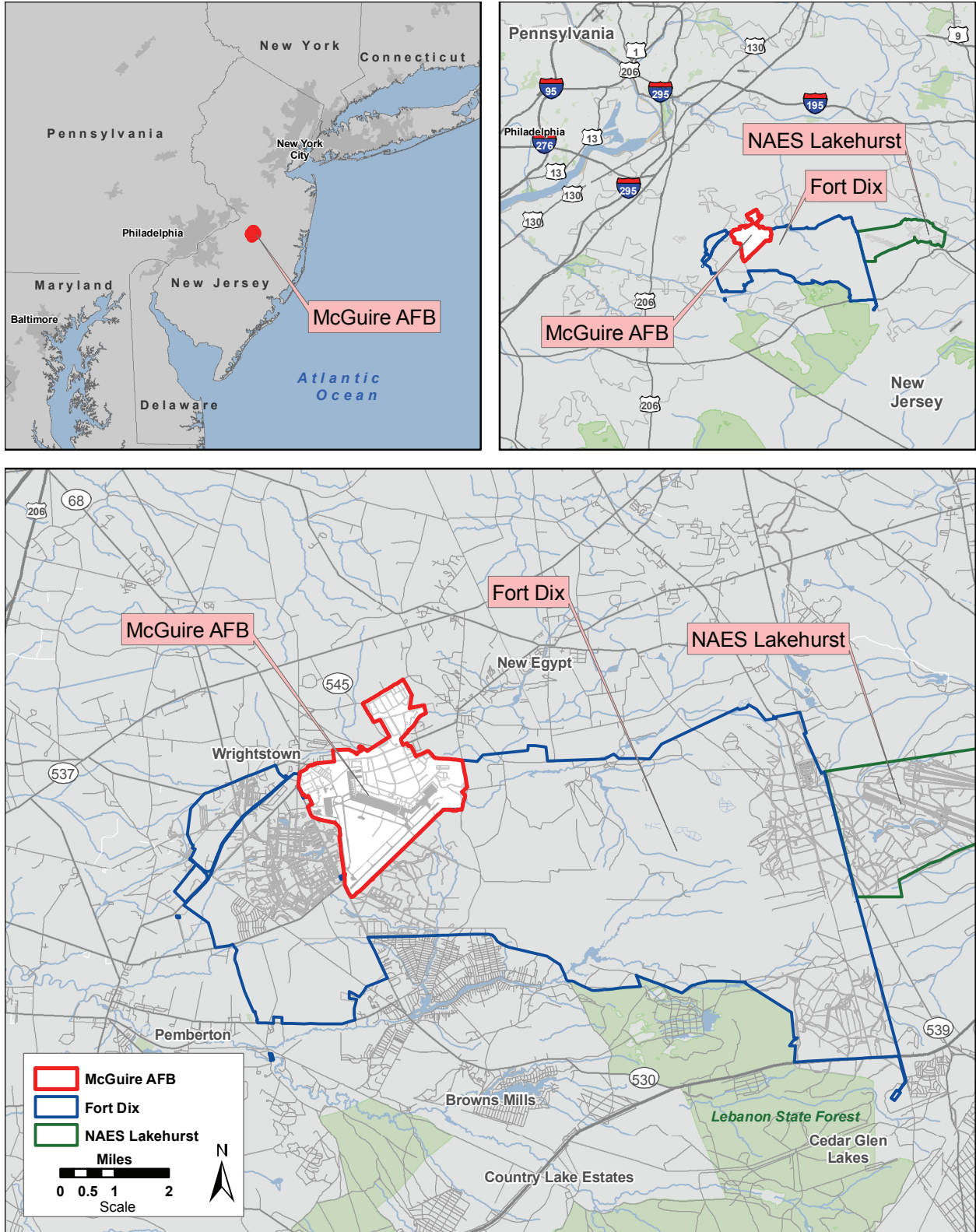


Figure 1-1. Location of McGuire AFB, New Jersey

McGuire AFB community of plans was examined to provide a consolidated list of projects that are planned and programmed over the next 5 years for the continued physical development of the installation to support air mobility missions and other readiness training and operational assignments. These plans provide for future development of the installation to accommodate future mission and facility requirements. These plans include projects for the installation's future facility development, transportation improvements, airfield and utility infrastructure enhancements, development constraints and opportunities, and land use relationships.

The need for the Proposed Action is to meet current and future mission requirements and national security objectives associated with McGuire AFB. This involves meeting ongoing mission requirements that necessitate repairing and upgrading installation utilities, pavements, and facilities; improving the efficiency and effectiveness of forces with the capability to expand; replacing older, substandard facilities with new buildings that are on a par with workplaces outside the gate; and providing reliable utilities, quality housing, and an efficient transportation system to support McGuire AFB. In addition, morale and welfare projects that are a critical part of supporting the warfighter are included. Continued development of infrastructure at McGuire AFB must take into account future facility construction, demolition, renovation, transportation needs, airfield alterations and enhancements, systems improvements, utilities improvements, land use planning, and development constraints and opportunities. Contributions by McGuire AFB to national security, as well as prospects for the assignment of additional missions in the future, dictate that the installation implement planning for the next 5 years. To ensure complete readiness at the installation for any tasks assigned, infrastructure projects must take into account—and be capable of supporting—all functions inherent to a USAF installation. These include aircraft operations and maintenance activities, security, administration, communications, billeting, supply and storage, training, transportation, and community quality of life.

1.3 Scope of the Analysis

McGuire AFB seeks to improve the continuing installation development process by evaluating in a single EA all actions proposed in the McGuire AFB Wing-approved community of plans for installation development. A compilation of all projects from the McGuire AFB Wing-approved community of plans addressed in this IDEA is presented in **Appendix A**. Some of the projects identified in the McGuire AFB community of installation development plans are appropriate for the application of Categorical Exclusions and therefore are not analyzed in this IDEA. The scope of the IDEA includes an evaluation of alternatives for the various projects and an analysis of the cumulative effects on the natural and man-made environments. The Proposed Action includes numerous projects, such as demolition of aging facilities, new facility construction, facility upgrades, facility repair and renovation, utilities upgrades, community living upgrades, infrastructure upgrades, and recreational upgrades that would be completed or implemented during the next 5 years. The assessment compiles information on constraints that might inhibit development or dictate courses of actions affecting development, improve the facility planning process, and capture the Wing Commander's vision of what facility and infrastructure improvements are necessary to support the installation's ongoing mission.

This IDEA evaluates the impacts of the Proposed Action, which encompasses the continuing activities of demolition, construction, and infrastructure improvements inherent to McGuire AFB adapting to ever-evolving mission requirements. This IDEA documents and evaluates the effects of all currently identified activities involved in modernizing and upgrading McGuire AFB to meet future requirements. The IDEA presents and analyzes potentially adverse direct, indirect, and cumulative environmental impacts resulting from implementation of McGuire AFB's installation development (the Proposed Action) with emphasis on avoiding impacts on environmentally sensitive areas.

The scope of this IDEA includes an evaluation of the Proposed Action and alternatives, including the No Action Alternative. None of the projects contained in this IDEA, as part of the Proposed Action, would be sited in sensitive areas, such as wetlands, floodplains, threatened or endangered species habitat, or known archeological sites.

The Proposed Action, as described in **Section 2**, contains three categories of installation development: demolition, construction, and infrastructure projects. These three categories were identified for use in this document because they allow the grouping of development initiatives by generally common elements of their activity and the nature of their potential environmental impacts. Within each category, the IDEA analyzes in detail the environmental impacts resulting from the activities for a subset of representative projects to determine the range of potential impacts to be expected from projects within each group. These categories and the representative projects are described in **Sections 2.1.2, 2.1.3, and 2.1.4** and provide projects ranging in size, acreage disturbed, amounts of air emissions, increases in impervious surfaces, vegetation disturbed, and other relevant factors associated with environmental and socioeconomic resources. This IDEA also analyzes the siting of construction activities based on environmental constraints. All other projects listed in **Appendix A** are analyzed using the same methodology as applied to the representative projects and their impacts are summarized in tabular form in **Section 4.4.4** of the IDEA. The categorized lists of proposed projects that comprise the Proposed Action can be found in **Appendix A**.

The collective analysis of all appropriate projects in a single EA will streamline the NEPA review process; eliminate project fractionation and segmentation; facilitate coordination of land use planning; reduce installation, reviewing agency, and major command workloads; provide cost savings; help better evaluate potential cumulative environmental impacts; assist in maintaining a baseline for future analysis; and meet the USAF's EIAP goals.

1.4 Summary of Key Environmental Compliance Requirements

1.4.1 National Environmental Policy Act

The National Environmental Policy Act (commonly referred to as "NEPA") (42 United States Code [U.S.C.] Section 4321–4347) is a Federal statute requiring the identification and analysis of potential environmental impacts associated with proposed Federal actions before those actions are taken. The intent of NEPA is to help decisionmakers make well-informed decisions based on an understanding of the potential environmental consequences and take actions to protect, restore, or enhance the environment. NEPA established the Council on Environmental Quality (CEQ) that was charged with the development of implementing regulations and ensuring Federal agency compliance with NEPA. The CEQ regulations mandate that all Federal agencies use a prescribed structured approach to environmental impact analysis. This approach also requires Federal agencies to use an interdisciplinary and systematic approach in their decisionmaking process. This process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action.

The process for implementing NEPA is codified in Title 40 Code of Federal Regulations (CFR), Parts 1500–1508, *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*. The CEQ was established under NEPA to implement and oversee Federal policy in this process. The CEQ regulations specify that an EA be prepared to briefly provide evidence and analysis for determining whether to prepare a Finding of No Significant Impact (FONSI) or whether the preparation of an Environmental Impact Statement (EIS) is necessary. The EA can aid in an agency's compliance with NEPA when an EIS is unnecessary and facilitate preparation of an EIS when one is required.

Air Force Policy Directive (AFPD) 32-70, *Environmental Quality*, states that the USAF will comply with applicable Federal, state, and local environmental laws and regulations, including NEPA. The USAF's implementing regulation for NEPA is its EIAP, 32 CFR Part 989, as amended.

1.4.2 Integration of Other Environmental Statutes and Regulations

To comply with NEPA, the planning and decisionmaking process for actions proposed by Federal agencies involves a study of other relevant environmental statutes and regulations. The NEPA process, however, does not replace procedural or substantive requirements of other environmental statutes and regulations. It addresses them collectively in the form of an EA or EIS, which enables the decisionmaker to have a comprehensive view of major environmental issues and requirements associated with the Proposed Action. According to CEQ regulations, the requirements of NEPA must be integrated "with other planning and environmental review procedures required by law or by agency so that all such procedures run concurrently rather than consecutively."

This IDEA examines potential effects of the Proposed Action and alternatives on 11 areas: noise, land use, air quality, safety, geological resources, water resources, biological resources, cultural resources, socioeconomic resources and environmental justice, infrastructure, and hazardous materials and waste management. These were identified as being potentially affected by the Proposed Action and include applicable critical elements of the human environment that are mandated for review by Executive Order (EO), regulation, or policy. **Appendix B** contains examples of relevant laws, regulations, and other requirements that are often considered as part of the analysis. Where useful to provide the reader with better understanding, key provisions of the statutes and EOs are discussed in more detail in the text of the IDEA.

1.4.3 Interagency Coordination and Public Involvement

NEPA ensures that environmental information is made available to the public during the decisionmaking process and prior to actions being taken. The premise of NEPA is that the quality of Federal decisions will be enhanced if proponents provide information on their actions to state and local governments and the public and involve them in the planning process. The Intergovernmental Coordination Act and EO 12372, *Intergovernmental Review of Federal Programs*, require Federal agencies to cooperate with and consider state and local views in implementing a Federal proposal. Air Force Instruction (AFI) 32-7060, *Interagency and Intergovernmental Coordination for Environmental Planning (IICEP)*, requires the USAF to implement the IICEP process, which is used for the purpose of facilitating agency coordination and implements scoping requirements under NEPA.

HQ AMC sent a description of the Proposed Action and alternatives to relevant Federal, state, and local agencies on May 15, 2007. Agencies were given an opportunity to provide any comments or information concerning the Proposed Action for 30 days during this initial scoping period. One agency response letter was received from the New Jersey Department of Environmental Protection. **Appendix C** includes the IICEP correspondence letter, distribution list, and the IICEP response that was received.

A Notice of Availability for the Draft EA and FONSI was published on October 24, 2007, in the *Burlington County Times*. Publication of the Notice of Availability initiated a 30-day public review period, which concluded on November 23, 2007. Copies of the Draft EA and FONSI were also distributed to Federal, state, and local agencies and Native American tribes. The New Jersey Pinelands Commission and the U.S. Fish and Wildlife Service provided letters on the Draft EA, which have been incorporated into the Final EA and considered in the decisionmaking process. **Appendix C** includes the Notice of Availability, the distribution list, and the responses that were received during the public review period.

1.5 Organization of this IDEA

Section 1 contains background information on McGuire AFB and the location of the Proposed Action, the purpose of and the need for the Proposed Action, the scope of the IDEA analysis, a summary of applicable regulatory requirements, and an introduction to the organization of the EA. **Section 2** provides a detailed description of the Proposed Action, alternatives to the Proposed Action that were considered, the No Action Alternative, and a description of the decision to be made and identification of the Preferred Alternative. **Section 3** contains a general description of the environmental and socioeconomic resources and baseline conditions that potentially could be affected by the Proposed Action, alternatives to the Proposed Action, and the No Action Alternative. **Section 4** presents an analysis of the environmental consequences for a range of activities (i.e., demolition, construction, infrastructure projects to provide upgrades/replacements of facilities) covering future installation development. **Section 5** includes an analysis of the potential cumulative effects on McGuire AFB. **Section 6** lists the preparers of the document. **Section 7** lists the sources of information used in the preparation of the document.

Appendix A presents a listing of proposed McGuire AFB installation development projects compiled from the community of all existing Wing-approved plans for the installation. **Appendix B** includes descriptions of applicable laws, regulations, policies, and planning criteria. **Appendix C** includes a copy of the IICEP letter mailed to the agencies for this action, the IICEP distribution list, and responses to the IICEP letter. **Appendix D** contains an example spreadsheet to show air quality emissions calculations for this Proposed Action.

2. Description of the Proposed Action and Alternatives

This section presents information on the Proposed Action related to the implementation of installation development, as described in the McGuire AFB Wing-approved General Plan and other relevant installation development plans. **Section 2.1** describes the Proposed Action at McGuire AFB. **Section 2.2** identifies alternatives to the Proposed Action, including the No Action Alternative. **Section 2.3** identifies the decision to be made and the Preferred Alternative.

2.1 Proposed Action

The Proposed Action is to implement continuing installation development actions as found in the community of existing Wing-approved development plans for McGuire AFB. The Proposed Action consists of numerous projects related to installation development. It is intended that the projects contained in this IDEA will be reviewed during a 5-year rotational basis and this document might be updated to accommodate changes. If during the course of the next 5 years any of the projects listed in **Appendix A** change enough to be outside the coverage of the analysis provided in this IDEA, the specified project would be excluded from the NEPA analysis represented by this IDEA without affecting other projects originally included in the IDEA.

This IDEA has been prepared using a constraints-based analysis (**Section 2.1.1**). This approach enables a comprehensive evaluation of environmental concerns throughout the installation and also those concerns unique to specific areas of McGuire AFB. This analysis uses the information obtained from extensive recent EIAP evaluations for similar types of projects to determine the direct, indirect, and cumulative effects of projects that would be completed as part of the installation's development plan.

The projects analyzed in this IDEA are categorized as demolition, construction, or infrastructure projects. For the purposes of describing the specific types of projects included as the Proposed Action, representative projects from each of the categories are listed in **Sections 2.1.2, 2.1.3, and 2.1.4**. These representative projects provide examples of the various types of projects within each category; however, the total suite of projects that make up the Proposed Action are briefly described in **Appendix A**. The total potential impacts associated with implementation of each of the projects in **Appendix A** are evaluated in this EA.

Each project would be sited in a manner compatible with McGuire AFB's surrounding land uses (see **Figure 2-1**), as defined in the General Plan (MAFB 2005a), and would avoid sensitive or constrained areas (see **Figure 2-2**). The McGuire AFB General Plan identifies 11 land use categories (excluding water as a land use category): airfield and airfield pavements, aircraft operations and maintenance, administrative, community commercial, community service, medical, housing accompanied, housing unaccompanied, industrial, outdoor recreation, and open space. **Figure 2-1** shows the land uses that have been defined at McGuire AFB.

The exterior and interior design of the new facilities would follow the design guidelines outlined in the *Air Mobility Command Civil Engineering Squadron Design Guide* and the *McGuire AFB Architectural, Sign, Landscape Standards*. This guidance would ensure a consistent and coherent architectural character throughout McGuire AFB. Landscaping would be used to provide an attractive and professional-looking installation by using plants, shrubs, and trees to blend with the surrounding environment. Force protection measures would be incorporated in accordance with the *USAF Installation Force Protection Guide*.

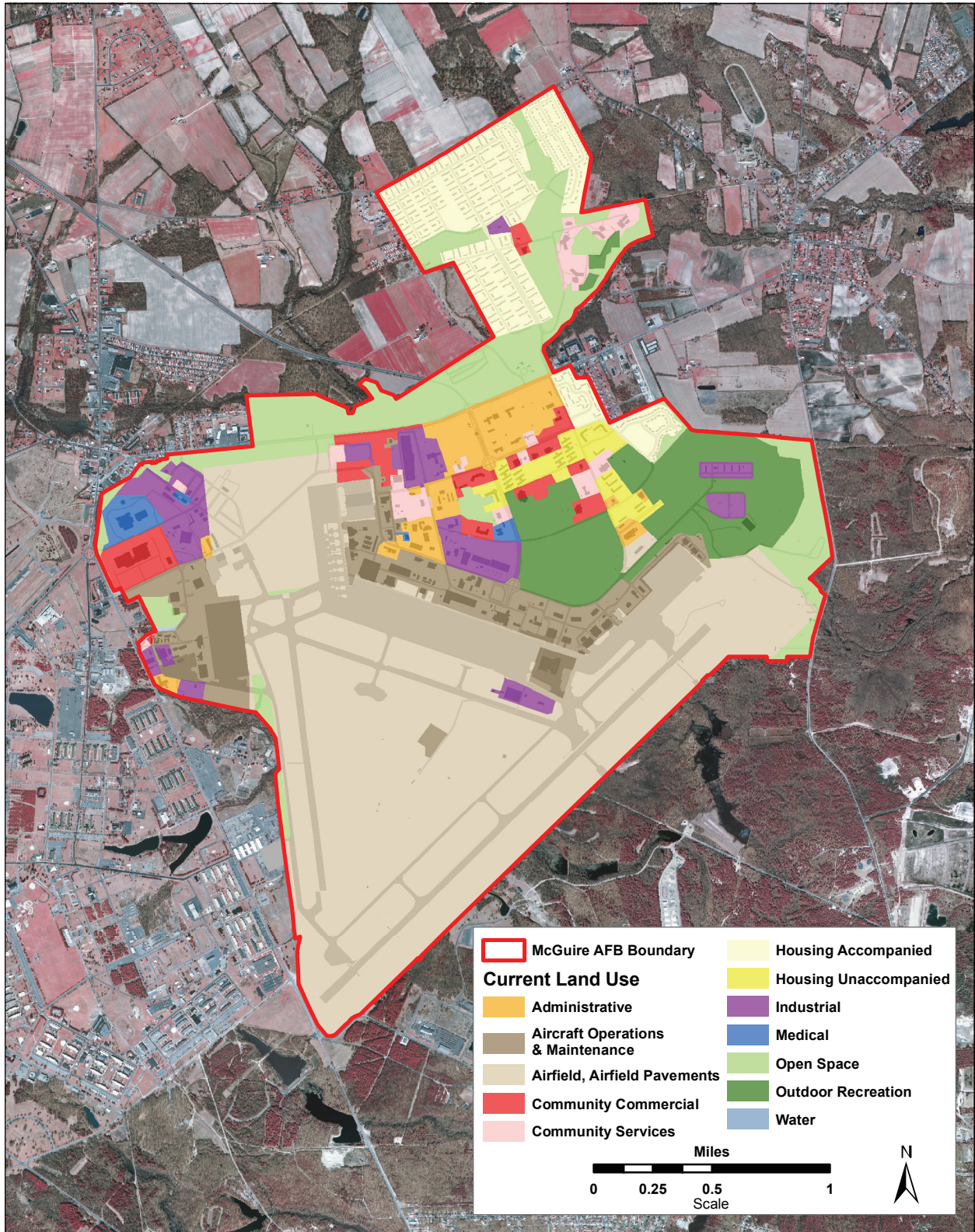


Figure 2-1. McGuire AFB Existing Land Use Categories

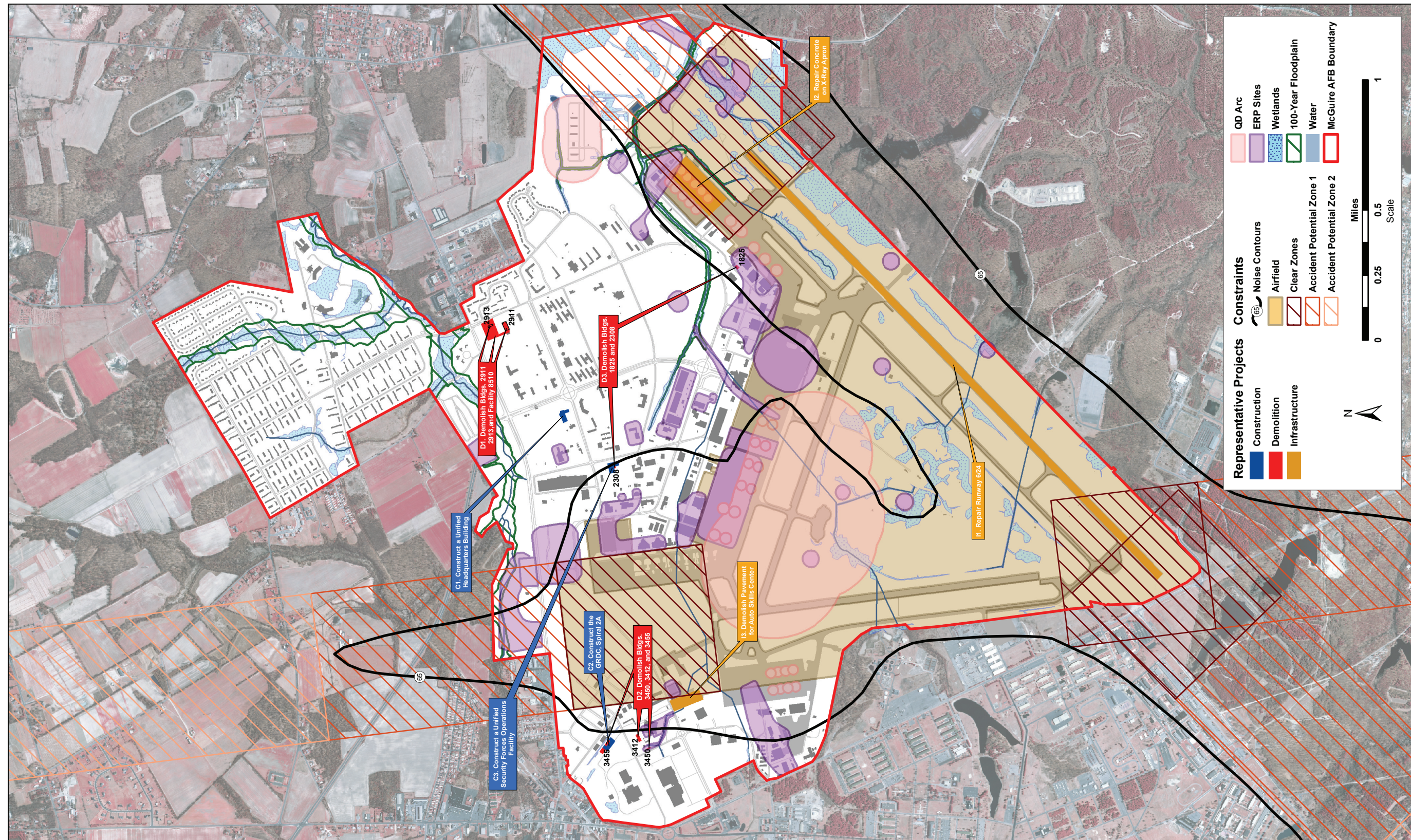


Figure 2-2. Representative Projects Relative to Known Constraints at McGuire AFB

All construction would comply with applicable building, fire, and safety codes. The proposed construction projects would be implemented using sustainable design concepts. Sustainable design concepts emphasize state-of-the-art strategies for site development, efficient water and energy use, and improved indoor environmental quality.

All projects identified as part of the Proposed Action in this IDEA would avoid sensitive areas. Proposed locations of each representative project in relation to environmental constraints are shown in **Figure 2-2**. The precise layout and design of these projects are in the early planning stages and, therefore, exact locations and layouts are not finalized. Should locations and final layouts of the projects differ substantially from those anticipated (e.g., in location, layout, or potential environmental consequences), additional environmental analysis would be completed. If it is determined that future projects outside the scope of this IDEA would impact sensitive resources, then separate environmental analysis on those projects would be required.

2.1.1 Major Installation Constraints

There are a number of land use, regulatory, and mission-related constraints within the boundaries of McGuire AFB that will influence and could limit future development at the installation. The major constraints on McGuire AFB are depicted in **Figure 2-2** and are discussed in the bulleted paragraphs below. The electronic mapping data from McGuire AFB's Geographical Information System (GIS) database (also called the GeoBase system) was used to quantify the major installation constraints to development, unless another source of information is identified. Some constraint areas overlap and therefore the acreages listed in the bulleted items below do not equal the total acreage of McGuire AFB. The acreage calculations do not include the portions of the constraint areas that extend off the installation.

- **Noise Zones (2,027 acres).** Aircraft operations are a dominant component of the noise environment at McGuire AFB. USAF, Federal Aviation Administration (FAA), and the U.S. Department of Housing and Urban Development criteria specify that noise levels in noise-sensitive land use areas are normally considered unacceptable where they exceed a day-night average A-weighted sound level (DNL) of 65 A-weighted decibels (dBA). McGuire AFB restricts development to compatible uses when noise levels exceed a DNL of 65 dBA.
- **Airfield Infrastructure, Clear Zones, and Imaginary Surfaces (1,812 acres).** The airfield includes pavement, runways, overrun, apron and ramp, and arm/disarm pads. Clear zones and imaginary surfaces are areas where nonairfield development is constrained or discouraged for airfield safety. These areas would allow only airfield improvements and projects directly associated with airfield operations. All projects within this area must be approved by the Community Planner, members of the Project Siting Review Panel, Facilities Utilization Board (FUB), and airfield management prior to commencing any construction-related activities.
- **Munitions and Other Safety Criteria (374 acres).** There are several areas that are constrained for safety reasons at McGuire AFB. The quantity-distance (QD) arcs are the minimum prescribed distance between munitions site handling and storage areas and inhabited areas. The hazardous cargo parking pad, located in the vicinity of taxiways M and L, has two 1,250-foot QD clear zones that limit development in this area. The munitions area has a QD arc of 500 feet. A less restrictive QD arc of 300 feet is associated with the Explosive Ordnance Disposal (EOD) training area (MAFB 2005a). Areas around radiating antennas at McGuire AFB have associated electromagnetic field safety zones.
- **Environmental Restoration Program (ERP) Sites (324 acres).** McGuire AFB has 36 onsite ERP sites and six offsite ERP sites (MAFB 2005a). New facilities might be constructed within certain ERP sites depending upon the level of contamination, clean-up efforts, and land use controls.

Approval of new construction within ERP sites must be obtained from the FUB and coordinated with the 305th Civil Engineering Squadron/Environmental Flight (305 CES/CEV).

- **Wetlands (288 acres).** It is USAF policy to avoid constructing new facilities within areas containing wetlands, where practicable. McGuire AFB has approximately 288 acres of wetlands (MAFB 2004a, MAFB 2006a). To construct within areas containing wetlands, appropriate permits from county, state, and Federal regulatory agencies must be obtained. In addition, in accordance with EO 11990, a Finding of No Practicable Alternative (FONPA) must be prepared and approved by HQ AMC. Some of the projects analyzed in this IDEA could occur within 300 feet of wetlands; therefore, a FONPA is appropriate for such projects.
- **100-Year Floodplain (120 acres).** It is USAF policy to avoid constructing new facilities within the 100-year floodplain in order to protect the functions of floodplains, minimize the potential damage to facilities, and ensure the safety of working personnel. Should construction within the 100-year floodplain be considered, a FONPA must be obtained and the project must be approved by HQ AMC. None of the projects analyzed in this IDEA would occur in the floodplain.
- **Threatened and Endangered Species and Associated Habitats.** There is one federally protected species, the bog turtle, that could occur on McGuire AFB (Staples 2007a). Construction activities that could affect threatened or endangered species must be coordinated with the U.S. Fish and Wildlife Service (USFWS), the New Jersey Division of Fish and Wildlife, and 305 CES/CEV. In addition, if a federally protected species were to be affected, a Biological Assessment would be prepared and submitted to the USFWS; the USFWS would then prepare a Biological Opinion on the effects of the project proposal on federally protected species, as required under Section 7 of the Endangered Species Act (ESA) of 1973. Concurrence on the project must be obtained prior to commencing construction activities that could affect a listed species.
- **Cultural Resources, Historic Buildings, and Archeological Sites.** There are a number of National Register of Historic Places (NRHP)-eligible historic archeological sites and Cold War significant buildings on McGuire AFB. Activities potentially affecting cultural resources must be coordinated with the State Historic Preservation Office (SHPO), FUB, and 305 CES/CEV.
- **AT/FP Setback Requirements.** Minimum AT/FP design standards for new construction have been specified by the Department of Defense (DOD) and increase the land area required for individual facilities. Design standards for new construction are contained in Unified Facilities Criteria 4-010-01, *Department of Defense Minimum Antiterrorism Standards for Buildings*, October 2003, and augmented by USAF instructions. The USAF Force Protection Design Guide, published by the Air Force Center for Engineering and the Environment, supplements the DOD standards and must also be consulted during the planning and design processes. McGuire AFB has numerous existing road, parking, and perimeter setback issues that do not meet current AT/FP standards.

As a general practice, McGuire AFB seeks to avoid, wherever possible, any disturbance to sensitive areas, such as wetlands and floodplains. However, as future mission activities dictate, and due to the expanse of existing constrained areas on McGuire AFB, avoiding or restricting future development within this acreage might not be practical and could limit the installation's ability to successfully accomplish its missions. When these resources cannot be avoided, separate and additional NEPA documentation would occur and coordination with the appropriate regulatory agencies would be completed prior to initiating the action. All construction or other activities that would occur within areas of concern, such as ERP sites, would comply with the requirements of various local, state, and Federal policies and regulations that govern such resources.

2.1.2 Demolition Projects

McGuire AFB proposes 30 facility demolition projects for the next 5 years to support its future mission requirements (see **Table A-1** in **Appendix A**). Demolition activities could disturb as much as 508,000 square feet of land, making space available for future development. These facilities have been deemed too costly to repair or renovate to meet the future mission requirements of McGuire AFB. Projects within this category include primarily the demolition of structures, but could also include demolition of parking and other pavements if they would be demolished together. The demolition of old or outdated facilities would minimize the area of undisturbed land required for new facilities. **Table 2-1** identifies projects that would be representative of the types of demolition projects proposed for implementation. The locations for these proposed projects in relation to constraints are shown in **Figure 2-2**. These demolition projects have been selected for further analysis because they would have the highest potential to impact the natural and man-made environments, and therefore are representative of the upper limits for potential impacts that reasonably could be expected from the other projects in the demolition projects category. For example, the demolition of the Shoppette (Building 2911), the Exchange Service Station (Building 2913), and associated parking (Facility 8510), would have the largest potential for surface disturbance in this category because they include a large demolition area. Other projects include the demolition of multiple buildings to support the construction of the Global Reach Deployment Complex (GRDC) and the Unified Security Forces Operations Facility. These three projects are priority projects at McGuire AFB.

Table 2-1. Representative Demolition Projects

Project Identification Number and Title	Fiscal Year	Area Demolished (ft²)
D1. Demolish Building 2911, Shoppette (13,414 ft ²); Building 2913, Exchange Service Station (3,300 ft ²); and Facility 8510, parking (12,222 square yards [yd ²]).	2007 to 2008	126,712
D2. Demolish Buildings 3450 (2,436 ft ²), 3412 (10,388 ft ²), and 3455 (20,995 ft ²) (GRDC, Spiral 2A project).	2014+	33,819
D3. Demolish Buildings 1825 (4,960 ft ²) and 2308 (12,881 ft ²) (Unified Security Forces Operations Facility project).	2009 to 2013	17,841

2.1.3 Construction Projects

McGuire AFB proposes 32 construction projects over the next 5 years to support its future mission requirements and to comply with AT/FP criteria (see **Table A-2** in **Appendix A**). Construction activities could disturb as much as 636,000 ft² of land. Projects within this category include primarily new facility construction and additions to existing facilities, but could also include renovations, repairs, alterations, parking, and other pavements when these elements are a large relevant component of a facility construction project. The construction of new facilities would be zoned in accordance with appropriate land use areas in order to continue or enhance compatibility with currently designated land use areas. **Table 2-2** identifies projects that would be representative of the types of construction projects proposed for development. The proposed locations for these projects in relation to constraints are shown in **Figure 2-2**. These construction projects have been selected for analysis in the IDEA because they are believed to be representative of the upper range of such projects and would have the highest potential to impact the natural and man-made environments, and therefore are representative of the upper limits for

Table 2-2. Representative Construction Projects

Project Identification Number and Title	Fiscal Year	Area Constructed (ft²)
C1. Construct a Unified Headquarters Building for 305 AMW and 514 AMW.	2014+	59,202
C2. Construct the GRDC, Spiral 2A.	2014+	39,945
C3. Construct a Unified Security Forces Operations Facility (37,674 ft ²) and parking (170,000 ft ²).	2009 to 2013	207,674

potential impacts that reasonably could be expected from the other projects in the construction projects category. For example, the construction of a Unified Security Forces Operations Facility would have the potential to create the greatest surface disturbance of any of the construction projects. Other large construction projects include a Unified Headquarters Building and the GRDC, Spiral 2A.

2.1.4 Infrastructure Projects

McGuire AFB proposes 37 infrastructure projects over the next 5 years to support future mission requirements and to comply with AT/FP requirements (see **Table A-3** in **Appendix A**). Infrastructure projects could disturb as much as 5.1 million ft² of land, though approximately 3.1 million ft² would involve only pavement resurfacing or repair and would not be expected to result in ground disturbance. Projects within this category include the removal or installation of or upgrades to paved roadways, sidewalks, parking lots, utilities, storm water systems, fences, and recreational facilities. **Table 2-3** identifies projects that are believed to be representative of the types of infrastructure upgrade projects proposed. The proposed locations for these projects in relation to constraints are shown in **Figure 2-2**. These representative facility infrastructure projects have been selected for further analysis in the IDEA because they are believed to be representative of the upper range of potential impacts on the natural and man-made environment from such projects and thus frame the upper limits for potential impacts that reasonably could be expected from other projects in the infrastructure category. For example, the improvements to Runway 06/24 would have the potential to create the greatest surface disturbance of any of the infrastructure projects, which includes milling and repaving the centerline and low spots; demolishing and repaving touchdown zones; demolishing, repaving, and extending runway shoulders; and replacing and upgrading lighting and pavement markings. Additional infrastructure projects include the repairs to the X-ray apron and the demolition of pavement that is currently used as aircraft parking for small privately owned aircraft in order to construct the Auto Skills Center.

Table 2-3. Representative Infrastructure Projects

Project Identification Number and Title	Fiscal Year	Project Size (ft²)
I1. Repair Runway 06/24.	2010 to 2011	2,000,000
I2. Repair concrete on X-ray apron.	2008 to 2009	558,000
I3. Demolish pavement for Auto Skills Center.	2007 to 2008	324,000

2.1.5 Summary of Proposed Activities

As a result of full implementation of the Proposed Action (including all projects identified in **Appendix A**), there would be approximately 508,000 ft² of demolished buildings at McGuire AFB,

resulting in a decrease of impervious surfaces of approximately 458,000 ft². Over the course of the next 5 years, there would be approximately 636,000 ft² of new facilities constructed, resulting in an anticipated increase of 486,000 ft² of impervious surface. Additionally, there would be infrastructure upgrades and improvements. These infrastructure projects could disturb as much as 5.1 million ft² of area and increase impervious surfaces by approximately 74,000 ft². **Table 2-4** summarizes the anticipated changes.

Table 2-4. Change in Impervious Surfaces

Project Type	Total Project Area	Change in Impervious Surfaces
Demolition	508,350 ft ²	- 457,957 ft ²
Construction	636,460 ft ²	+ 485,867 ft ²
Infrastructure	5,068,247 ft ²	+ 73,663 ft ²
Total	6,213,057 ft² (143 acres)	+ 101,573 ft² (2.3 acres)

Note: Change in impervious surfaces is not necessarily equivalent to the project area square footage because some facilities proposed for demolition are multiple stories, and many new facilities would be multiple stories. Furthermore, many infrastructure projects would include removal of pavements, or would disturb area but not add impervious surfaces. As noted in Section 2.1.4, approximately 3.1 million ft² of the infrastructure project area is pavement resurfacing or repair, which is not likely to result in ground disturbance.

2.2 Alternatives

During development of the McGuire AFB installation development plans and during the project siting phase, alternative locations for construction and infrastructure projects were evaluated and the best possible solution for project siting was selected based on numerous criteria (e.g., functional requirements, collocation of like services, and availability of sites). Based on this evaluation, the proposed locations for each of the construction and infrastructure projects were determined to be the best available. With respect to alternatives for the demolition projects, each of these were also evaluated for potential reuse options and none were considered suitable for reuse.

All of the IDEA projects are evaluated individually and cumulatively in this IDEA to determine if the consequences of implementation would cause substantive impacts on the human and natural environments of McGuire AFB and surrounding areas. Subsets of projects, considered as alternatives, were not carried forward for further independent analysis based on the determination that subsets would not cause any additional impacts beyond that of the Proposed Action.

The individual projects would be prioritized and implemented as funding becomes available. The Proposed Action encompasses all the currently identified priority projects and the analysis describes the specific and cumulative consequences of implementing the IDEA plan. Since project phasing is expected to occur, based on the availability of funding, no phasing alternatives were carried forward for independent analysis.

2.2.1 Alternative 1 – Site Facilities on DOD-Owned Land Surrounding McGuire AFB

The 2005 Defense Base Closure and Realignment Commission recommended that Fort Dix and NAES Lakehurst be realigned so that the installation management functions are transferred to McGuire AFB, establishing Joint Base McGuire-Dix-Lakehurst. “Joint Basing” is a collective management concept among personnel from all services involved in Joint Base McGuire-Dix-Lakehurst to ensure effective planning. HQ AMC is preparing an *Environmental Assessment Addressing BRAC Requirements at Joint Base McGuire-Dix-Lakehurst*. The alternative of using either Fort Dix or NAES Lakehurst as a potential siting location is not yet ripe for decisionmaking. However, Fort Dix and NAES Lakehurst could be considered suitable for new development in the future. In order for installation development to occur at Fort Dix or NAES Lakehurst, separate NEPA analysis would be required.

2.2.2 Alternative 2 – Acquire Privately Owned Land Surrounding McGuire AFB

Under this alternative, McGuire AFB would purchase suitable land that is privately owned outside of the installation’s present boundaries to construct some of the facilities needed for future mission requirements. The DOD discourages installations from acquiring more land through purchases. The DOD is attempting to dispose of as many acres as possible of underutilized land at many installations in the United States. There are extreme limits to the availability of additional land to the west, south, and east of McGuire AFB due to the presence of Fort Dix and NAES Lakehurst. To the north, no suitable military-use compatible land is available due to proximate private development/encroachment. For these reasons, this alternative is not considered viable and is eliminated from further detailed analysis in the IDEA.

2.2.3 Alternative 3 – Lease Additional Facilities in the Surrounding Community

Under this alternative, McGuire AFB would lease office and warehouse space in the surrounding private sector community to house personnel and provide space for mission operations. This alternative would result in an insufficient span of control for the command and control function. The leased facilities would have great limitations in their ability to meet the DOD force protection requirements, resulting in high additional costs or noncompliance with force protection requirements. This alternative is not considered viable and is eliminated from further detailed analysis in the IDEA.

2.2.4 No Action Alternative

CEQ regulations require consideration of the No Action Alternative for all proposed actions. The No Action Alternative serves as a baseline against which the impacts of the Proposed Action and other potential alternatives can be compared and consequently it is carried forward for further evaluation in this IDEA.

Under the No Action Alternative, the 305 AMW would not implement the projects proposed in the installation’s community of plans. In general, implementation of the No Action Alternative would require that the 305 AMW continue to operate under substandard, inefficient, and, in some cases, unsafe conditions. Under the No Action Alternative, these deficiencies would impair the 305 AMW’s future ability to successfully sustain current and future national security objectives and other mission requirements.

Through implementation of the No Action Alternative, future installation development projects would continue to be evaluated for potential effects on an individual project basis. The preparation of separate NEPA documents would be required for each project to evaluate potential environmental consequences. This alternative will be carried forward for analysis as a baseline against which the impacts of the Proposed Action and potential alternatives can be evaluated.

2.3 Decision to be Made and Identification of the Preferred Alternative

In this IDEA, McGuire AFB will evaluate whether the Proposed Action would result in any significant impacts. If such impacts are predicted, McGuire AFB would provide mitigation to reduce impacts to below the level of significance, undertake the preparation of an EIS addressing the Proposed Action, or abandon the Proposed Action. The EA will also be used to guide McGuire AFB in implementing the Proposed Action in a manner consistent with USAF standards for environmental stewardship. The Preferred Alternative for the Proposed Action is set forth in **Section 2.1**.

3. Affected Environment

This section describes the environmental and socioeconomic resources and conditions most likely to be affected by the Proposed Action and provides information to serve as a baseline from which to identify and evaluate environmental and socioeconomic consequences likely to result from implementation of the Proposed Action. Baseline conditions represent current conditions. In compliance with NEPA, CEQ guidelines, and 32 CFR Part 989, as amended, the description of the affected environment focuses on those resources and conditions potentially subject to impacts.

3.1 Noise

3.1.1 Definition of the Resource

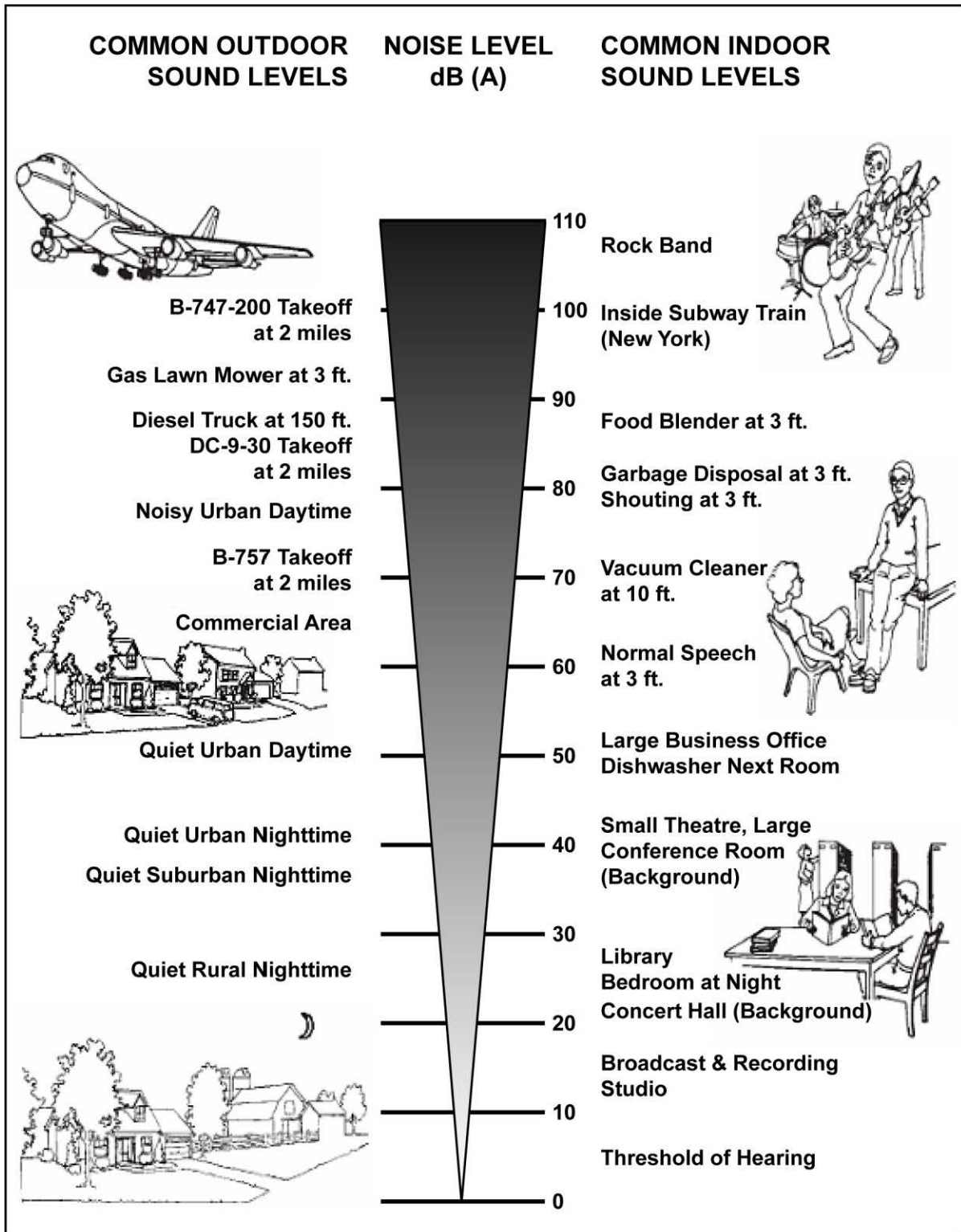
Noise and sound share the same physical aspects, but noise is considered a disturbance while sound is defined as an auditory effect. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Human response to increased noise levels varies according to the source type, characteristics of the noise source, distance between source and receptor, receptor sensitivity, and time of day.

Sound is measured with instruments that record instantaneous sound levels in decibels (dB). A-weighted sound level measurements (dBA) are used to characterize sound levels that can be sensed by the human ear. “A-weighted” denotes the adjustment of the frequency content of a noise event to represent the way in which the average human ear responds to the noise event. All sound levels analyzed in this EA are A-weighted.

Noise levels, which result from multiple single-events, are used to characterize community noise effects from aircraft operations and are measured in DNL. The DNL metric provides the energy-averaged sound level measured over a 24-hour period, with a 10-dB penalty assigned to noise events occurring between 10:00 p.m. and 7:00 a.m. This noise metric incorporates a “penalty” for nighttime noise events to account for increased annoyance. DNL values are obtained by averaging sound exposure level values for a given 24-hour period. DNL is the preferred noise metric of the U.S. Department of Housing and Urban Development, the FAA, the U.S. Environmental Protection Agency (USEPA), and DOD for modeling airport environs.

Most people are exposed to sound levels of a DNL of 50 to 55 dBA or higher on a daily basis. Noise levels in residential areas vary depending on the housing density and location. As shown in **Figure 3-1**, a normal suburban area is about 55 dBA, which increases to 60 dBA for an urban residential area and 80 dBA in the downtown section of a city.

According to the USAF, the FAA, and the U.S. Department of Housing and Urban Development criteria, residential units and other noise-sensitive land uses are “clearly unacceptable” in areas where the DNL noise exposure exceeds 75 dBA, “normally unacceptable” in regions where the DNL is between 65 and 75 dBA, and “normally acceptable” in areas where the DNL is 65 dBA or under. The Federal Interagency Committee on Noise developed land-use compatibility guidelines for noise in terms of DNL (FICON 1992). For outdoor activities, the USEPA recommends 55 dBA as the sound level below which there is no reason to suspect that the general population would be at risk from any of the effects of noise (USEPA 1974).



Source: Landrum & Brown 2002

Figure 3-1. Typical Noise Levels

Construction Sound Levels. Building construction, modification, and demolition work can cause an increase in sound that is well above the ambient level. A variety of sounds are emitted from graders, pavers, trucks, welders, and other work activities and processes. **Table 3-1** lists sound levels associated with common types of construction equipment. These sound levels were predicted 50 feet from the source of the noise. Construction equipment usually exceeds the ambient sound levels by 20 to 25 dBA in an urban environment and up to 30 to 35 dBA in a quiet suburban area.

Table 3-1. Predicted Noise Levels for Construction Equipment

Construction Category and Equipment	Predicted Noise Level at 50 feet (dBA)
Grading	
Bulldozer	87
Grader	85
Water Truck	88
Paving	
Paver	89
Roller	74
Demolition	
Loader	85
Haul Truck	88
Backhoe	83
Building Construction	
Generator Saw	81
Industrial Saw	83
Welder	74
Truck	80
Forklift	67
Crane	83

Source: COL 2001

3.1.2 Existing Conditions

The ambient noise environment around McGuire AFB is affected mainly by automobile traffic and military operations, including aircraft operations. Military operations include aircraft operations from McGuire AFB and NAES Lakehurst and weapons training at Fort Dix.

McGuire AFB is east of Philadelphia and west of Toms River and beach property along the New Jersey coast. There are several major roadways between Philadelphia and the New Jersey coast. Interstate 295 and the New Jersey Turnpike are major north/south corridors along the East Coast, less than 10 miles west of the base. Interstate 195 is approximately 10 miles north of the base. Local transportation routes include County Route 537 to the north, U.S. Route 206 to the west, and County Route 530 to the south.

McGuire AFB is home to the 305 AMW, 514 AMW, and 108 ARW. Aircraft flown by these units include the C-17, KC-10, and KC-135 aircraft. Operations for these aircraft occur on Runway 06/24 and Runway 18/36. In 1999, an Air Installation Compatible Use Zone (AICUZ) study was completed for McGuire AFB (MAFB 1999). The 1999 AICUZ study showed the DNL of 65 dBA noise contour extending outside of the boundaries of McGuire AFB; these noise contours are shown in **Figure 2-2**. The AICUZ study is currently being updated.

Considering the vehicle traffic, military aircraft operations, and military training operations at and adjacent to McGuire AFB, the ambient sound environment around McGuire AFB is likely to resemble an urban atmosphere.

3.2 Land Use

3.2.1 Definition of the Resource

The term “land use” refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local zoning laws. There is, however, no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of various land use descriptions, “labels,” and definitions vary among jurisdictions.

Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. There is a wide variety of land use categories resulting from human activity. Descriptive terms often used include residential, commercial, industrial, agricultural, institutional, and recreational.

Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. Compatibility among land uses fosters the societal interest of obtaining the highest and best uses of real property. Tools supporting land use planning include written master plans/management plans and zoning regulations. According to the Standard Land Use Coding Manual, land use compatibility varies depending on the intended use of the area and the noise level (SLUCM 1965). In appropriate cases, the locations and extent of proposed actions need to be evaluated for their potential effects on the project site and adjacent land uses. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. According to AFI 32-7062, *Air Force Comprehensive Planning*, the site planning process must address potential noise impacts and consider the location of buildings. Other relevant factors include matters such as existing land use at the project site, the types of land uses on adjacent properties and their proximity to a proposed action, the duration of a proposed activity, and its “permanence.”

In 1983, the Pinelands National Reserve was designated a Biosphere Reserve. Military installations within the Pinelands Area are required to submit master plans for approval by the New Jersey Pinelands Commission (NJPC). Any proposed development within the Pinelands Area that would require Federal, state, or local permits might also require an NJPC Application for Development. In accordance with the Pinelands Comprehensive Management Plan (PCMP), all development on military and Federal installations must be in substantial conformance with the minimum standards and guidelines contained in the plan, except where incompatible with national defense or other national security requirements.

3.2.2 Existing Conditions

McGuire AFB is in Burlington County, New Jersey, approximately 50 miles southwest of New York City and 45 miles east of Philadelphia (see **Figure 1-1**). Land uses in the vicinity of McGuire AFB are a

mixture of residential, agricultural, open space, and conservation and preservation areas. Land use north of McGuire AFB is mainly residential with some commercial and industrial use. Fort Dix surrounds McGuire AFB to the south, east, and west.

McGuire AFB is classified as “unplanned” on a local level because municipal zoning regulations do not apply to Federal property. However, McGuire AFB and the surrounding area are in the Pinelands National Reserve (also known as the New Jersey Pine Barrens), which is protected by Section 502 of the National Parks and Recreation Act of 1978 and the New Jersey Pinelands Protection Act of 1979. The National Parks and Recreation Act established the Pinelands National Reserve, which consists of approximately 1.1 million acres in southern New Jersey. The New Jersey Pinelands Protection Act established the Pinelands Area, approximately 934,000 acres within the Pinelands National Reserve. The NJPC has direct regulatory authority over most development activity occurring within the two components of the Pinelands Area: the Preservation Area and the Protection Area. The NJPC developed the PCMP to provide protection of the Pinelands National Reserve. All counties, townships, or municipalities within the Pinelands National Reserve must comply with the PCMP.

The McGuire AFB General Plan identifies 11 land use categories (excluding water as a land use category): airfield and airfield pavements, aircraft operations and maintenance, administrative, community commercial, community service, medical, housing accompanied, housing unaccompanied, industrial, outdoor recreation, and open space (MAFB 2005a). These land use categories are shown in **Figure 2-1**. Siting similar functions together and avoiding potential operational and environmental constraints support the concept of sustainable installation development. Some categories of land use are inherently functional, while others are inherently incompatible. **Figure 3-2** illustrates the USAF’s standards for determining land use affinities.

The airfield presents serious land use constraints. Development is restricted within clear zones and runway, taxiway, and apron clearances so aircraft operations can occur with minimal safety risks. Furthermore, development within accident potential zones is discouraged, though most of the accident potential zones extend beyond installation boundaries. Only structures that are inherently functional to aircraft operations and maintenance should be constructed within this area (MAFB 2005a). **Figure 2-2** identifies the areas on McGuire AFB that are constrained by the airfield, clear zones, and accident potential zones.

3.3 Air Quality

3.3.1 Definition of the Resource

In accordance with Federal Clean Air Act (CAA) requirements, the air quality in a given region or area is measured by the concentration of various pollutants in the atmosphere. The measurements of these “criteria pollutants” in ambient air are expressed in units of parts per million (ppm), milligrams per cubic meter (mg/m^3), or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). The air quality in a region is a result of not only the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological “air basin,” and the prevailing meteorological conditions.

The CAA directed USEPA to develop, implement, and enforce strong environmental regulations that would ensure clean and healthy ambient air quality. To protect public health and welfare, USEPA developed numerical concentration-based standards, or National Ambient Air Quality Standards (NAAQS), for pollutants that have been determined to impact human health and the environment. USEPA established both primary and secondary NAAQS under the provisions of the CAA. NAAQS are currently established for six criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide

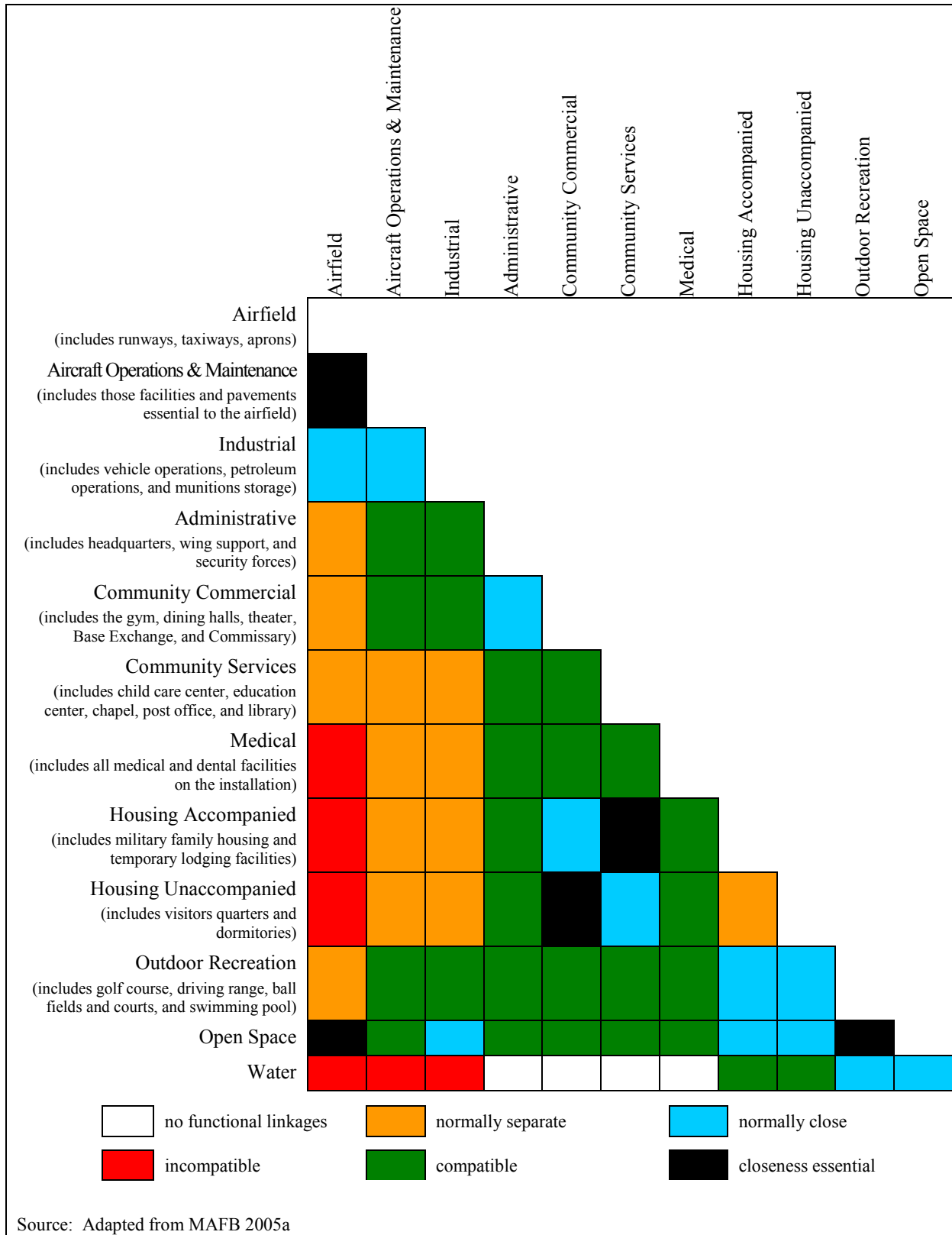


Figure 3-2. Land Use Affinities Matrix

(NO₂), sulfur dioxide (SO₂), respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM₁₀] and particulate matter equal to or less than 2.5 microns in diameter [PM_{2.5}]), and lead (Pb). The primary NAAQS represent maximum levels of background air pollution that are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public resources along with maintaining visibility standards. **Table 3-2** presents the primary and secondary USEPA NAAQS (USEPA 2007a).

Table 3-2. National Ambient Air Quality Standards

Pollutant	Standard Value		Standard Type
CO			
8-hour Average ^a	9 ppm	(10 mg/m ³)	Primary
1-hour Average ^a	35 ppm	(40 mg/m ³)	Primary
NO₂			
Annual Arithmetic Mean	0.053 ppm	(100 µg/m ³)	Primary and Secondary
O₃			
8-hour Average ^b	0.08 ppm	(157 µg/m ³)	Primary and Secondary
1-hour Average ^c	0.12 ppm	(240 µg/m ³)	Primary and Secondary
Pb			
Quarterly Average		1.5 µg/m ³	Primary and Secondary
PM₁₀ ^d			
24-hour Average ^e		150 µg/m ³	Primary and Secondary
PM_{2.5}			
Annual Arithmetic Mean ^f		15 µg/m ³	Primary and Secondary
24-hour Average ^g		35 µg/m ³	Primary and Secondary
SO₂			
Annual Arithmetic Mean	0.03 ppm	(80 µg/m ³)	Primary
24-hour Average ^a	0.14 ppm	(365 µg/m ³)	Primary
3-hour Average ^a	0.5 ppm	(1,300 µg/m ³)	Secondary

Source: USEPA 2007a

Notes: Parenthetical values are approximate equivalent concentrations.

^a Not to be exceeded more than once per year.

^b To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

^c (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1. (b) As of June 15, 2005, USEPA revoked the 1-hour ozone standard in all areas except the 14 8-hour ozone nonattainment Early Action Compact Areas.

^d Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, USEPA revoked the annual PM₁₀ standard (effective December 17, 2006).

^e Not to be exceeded more than once per year on average over 3 years.

^f To attain this standard, the 3-year average of the annual arithmetic mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.

^g To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m³ (effective December 2006).

The CAA and USEPA delegated responsibility for ensuring compliance with NAAQS to the states and local agencies. As such, each state must develop air pollutant control programs and promulgate regulations and rules that focus on meeting NAAQS and maintaining healthy ambient air quality levels. These programs are detailed in State Implementation Plans (SIPs), which are required to be developed by each state or local regulatory agency and approved by USEPA. A SIP is a compilation of regulations, strategies, schedules, and enforcement actions designed to move the state into compliance with all NAAQS. Any changes to the compliance schedule or plan (e.g., new regulations, emissions budgets, controls) must be incorporated into the SIP and approved by USEPA. USEPA has delegated the authority for ensuring compliance with the NAAQS to the New Jersey Department of Environmental Protection (NJDEP). Therefore, the Proposed Action is subject to rules and regulations developed by this regulatory body.

USEPA classifies the air quality in an air quality control region (AQCR), or in subareas of an AQCR, according to whether the concentrations of criteria pollutants in ambient air exceed the primary or secondary NAAQS. All areas within each AQCR are therefore designated as either “attainment,” “nonattainment,” “maintenance,” or “unclassified” for each of the six criteria pollutants. Attainment means that the air quality within an AQCR is better than the NAAQS, nonattainment indicates that criteria pollutant levels exceed NAAQS, maintenance indicates that an area was previously designated nonattainment but is now attainment, and unclassified means that there is not enough information to appropriately classify an AQCR, so the area is considered attainment.

The General Conformity Rule requires that any Federal action meet the requirements of a SIP or Federal Implementation Plan. More specifically, CAA conformity is ensured when a Federal action does not cause a new violation of the NAAQS; contribute to an increase in the frequency or severity of violations of NAAQS; or delay the timely attainment of any NAAQS, interim progress milestones, or other milestones toward achieving compliance with the NAAQS.

The General Conformity Rule applies only to actions in nonattainment or maintenance areas and considers both direct and indirect emissions. The rule applies only to Federal actions that are considered “regionally significant” or where the total emissions from the action meet or exceed the *de minimis* thresholds presented in 40 CFR 93.153. An action is regionally significant when the total nonattainment pollutant emissions exceed 10 percent of the AQCR’s total emissions inventory for that nonattainment pollutant. If a Federal action does not meet or exceed the *de minimis* thresholds and is not considered regionally significant, then a full Conformity Determination is not required.

Title V of the CAA Amendments (CAAA) of 1990 requires states and local agencies to permit major stationary sources. A major stationary source is a facility (i.e., plant, base, or activity) that can emit more than 100 tons per year (tpy) of any one criteria air pollutant, 10 tpy of a hazardous air pollutant, or 25 tpy of any combination of hazardous air pollutants. However, lower pollutant-specific “major source” permitting thresholds apply in nonattainment areas. For example, the Title V permitting threshold for an “extreme” O₃ nonattainment area is 10 tpy of potential volatile organic compound (VOC) or nitrogen oxide (NO_x) emissions. The purpose of the permitting rule is to establish regulatory control over large, industrial-type activities and monitor their impact on air quality.

Federal Prevention of Significant Deterioration (PSD) regulations also define air pollutant emissions from proposed major stationary sources or modifications to be “significant” if (1) a proposed project is within 10 kilometers of any Class I area, and (2) regulated pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1 µg/m³ or more (40 CFR 52.21(b)(23)(iii)). A Class I area includes national parks larger than 6,000 acres, national wilderness areas and national memorial parks larger than 5,000 acres, and international parks. PSD regulations also

define ambient air increments, limiting the allowable increases to any area's baseline air contaminant concentrations, based on the area's class designation [40 CFR 52.21(c)].

3.3.2 Existing Conditions

McGuire AFB is in Burlington County, New Jersey, within the Metropolitan Philadelphia Interstate Air Quality Control Region (MPIAQCR), which is composed of five counties in New Jersey, five counties in Pennsylvania, and one county in Delaware. The MPIAQCR is within a moderate nonattainment area for 8-hour O₃, and a nonattainment area for PM_{2.5}, and is in attainment for all other criteria pollutants; therefore, the General Conformity Rule applies to the Proposed Action (USEPA 2007b). Although O₃ is considered a criteria air pollutant and is measurable in the atmosphere, it is not often considered a regulated air pollutant when calculating emissions because O₃ is typically not emitted directly from most emissions sources. Ozone is formed in the atmosphere by photochemical reactions involving sunlight and previously emitted pollutants or "O₃ precursors." These O₃ precursors consist primarily of NO_x and VOCs that are directly emitted from a wide range of emissions sources. For this reason, regulatory agencies attempt to limit atmospheric O₃ concentrations by controlling VOC pollutants (also identified as reactive organic gases) and NO₂.

NJDEP has established air pollution control regulations. These regulations are contained in New Jersey Administrative Code (N.J.A.C.) Title 7, Chapter 27. The NJDEP has also promulgated rules regulating the emissions of toxic substances, which are defined as those chemicals listed in N.J.A.C. Title 7, Chapter 27, Subchapter 17, and any other air pollutant that is considered a health hazard, as defined by Occupational Safety and Health Administration (OSHA).

The NJDEP requires installations that emit certain air pollutants in quantities greater than threshold levels to submit an annual emissions statement that provides information regarding the pollutants emitted. Installations that emit greater than 10 tpy of VOCs; 25 tpy of NO_x; or 100 tpy of CO, PM₁₀, or SO₂ are required to submit an annual emissions statement to the NJDEP. Per the 2005 Air Emissions Inventory for McGuire AFB, the 305 AMW's potential emissions are greater than these threshold values. Therefore, McGuire AFB is considered a major source (MAFB 2006b). The NJDEP has issued McGuire AFB a Title V permit, which was developed for compliance with the air pollution control permit provisions of Title V of the Federal CAA, Federal rules promulgated at 40 CFR Part 70, and state regulations promulgated at N.J.A.C. 7:27-22. N.J.A.C. 7:27-22 requires the state to issue Operating Permits to major facilities and minor facilities that are in certain designated source categories (NJDEP 2005).

The New Jersey SIP includes a Rate of Progress Plan that specifies the contribution of regulated pollutants that McGuire AFB and other point and area sources represent each year within the state's total pollutant emissions inventory. As part of the Rate of Progress Plan, NJDEP established a SIP budget for NO_x and VOC emissions at McGuire AFB. McGuire AFB currently has a 1-hour ozone general conformity budget. As noted previously, the USEPA revoked the 1-hour ozone standard for the nation on June 15, 2005, as the newly established 8-hour ozone standard superseded it. McGuire AFB has agreed to operate within its 1-hour ozone budget until such time as a new budget is established under the 8-hour ozone standard, with one condition. McGuire AFB requested that the state allow it to reapportion additional VOC reductions from its VOC budget to its NO_x budget to accommodate anticipated mission changes. Specifically, McGuire AFB proposed to increase its existing NO_x budget by 450 tpy by decreasing its VOC budget by 468 tpy. **Table 3-3** presents the nonattainment pollutant SIP budget for McGuire AFB (NJDEP 2006, USEPA 2006b).

Table 3-3. Emissions Budgets for McGuire AFB

Year	Prior Budget		Updated Budget to Accommodate Additional Aircraft	
	VOC (tpy)	NO _x (tpy)	VOC (tpy)	NO _x (tpy)
1990	1,112	1,038	1,112	1,038
1996	1,186	1,107	1,186	1,107
1999	1,223	1,142	1,223	1,142
2002	1,405	875	1,405	875
2005 *	1,198	1,084	730	1,534

Source: NJDEP 2006

Note: * Budgets updated such that the increase in NO_x is offset by a decrease in VOC. Updated 2005 budgets apply to 2005 and all future years until new budgets are established for the 8-hour ozone attainment demonstration. The McGuire AFB budget was approved, effective July 10, 2006 (see *Federal Register* Vol 71, No 131, July 10, 2006, pp 38770–38772.)

Combustion sources at McGuire AFB include boilers, space heaters (heating units and roof-mounted space heaters), generators, and engine tests conducted in the engine test cell. Because of the comparatively small capacity and limited hours of operation, emissions from residential water heaters, small room heaters, and cooking equipment are considered insignificant.

The 305 AMW maintains 14 regulated USTs and approximately 140 ASTs containing JP-8, diesel, and mogas. Two of the USTs that contain mogas are permitted under the installation's Title V permit. McGuire AFB also operates and maintains a number of refueling tanker trucks and portable fuel tanks that are used to transport fuel to aircraft and equipment. In addition, the 305 AMW maintains and operates one paint booth, which is included in the Title V permit, that is used only occasionally for small amounts of painting to maintain base equipment and vehicles (NJDEP 2005).

Air pollutants are released to the air from various operational sources at McGuire AFB, such as solvents, cleaners, antifreeze, adhesives, and other products that contain criteria pollutants and Hazardous Air Pollutants (HAPs). These operational sources include degreasers, woodworking, welding, chemical use and painting operations, aircraft deicing, and aircraft fuel cell maintenance.

There is no routine requirement to monitor pollutant emissions from aircraft operations, government-owned vehicles (GOVs), privately owned vehicles (POVs), aircraft engine testing, aerospace ground equipment, and other sources not included in the state's stationary source permitting program at McGuire AFB.

Previous air emissions inventories determined that the installation was a major source under the CAA. Accordingly, the 305 AMW is subject to the Title V permit program. However, McGuire AFB is not subject to Aerospace Surface Coating National Emission Standards for Hazardous Air Pollutants requirements.

Every year the 305 AMW is required to prepare and submit an annual air emissions inventory to HQ AMC and the NJDEP. The purpose of this annual emissions inventory is to estimate and document air pollutant emissions from stationary sources. Air quality emissions inventories for the 305 AMW for reporting year 2005 compared against the current permitting thresholds are presented in **Table 3-4**.

Table 3-4. Annual Air Quality Emissions Inventories for Stationary Sources at McGuire AFB for Year 2005

Calendar Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_x (tpy)	PM₁₀ (tpy)
Potential To Emit	137.7	14.8	85.1	60.0	12.7
Actual Emissions for 2005	28.7	5.76	16.24	5.33	3.49
New Jersey Title V Permitting Threshold	25	25	100	100	100

Sources: NJDEP 2005, MAFB 2006b, and N.J.A.C. 7:27-22.1

3.4 Safety

3.4.1 Definition of the Resource

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. Human health and safety addresses both workers' health and public safety during demolition activities and facilities construction, and during subsequent operations of those facilities.

Construction site safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by numerous DOD and USAF regulations designed to comply with standards issued by OSHA and USEPA. These standards specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits for workplace stressors.

Safety and accident hazards can often be identified and reduced or eliminated. Necessary elements for an accident-prone situation or environment include the presence of the hazard itself together with the exposed (and possibly susceptible) population. The degree of exposure depends primarily on the proximity of the hazard to the population. Activities that can be hazardous include transportation, maintenance and repair activities, and the creation of extremely noisy environments. The proper operation, maintenance, and repair of vehicles and equipment carry important safety implications. Any facility or human-use area with potential explosive or other rapid oxidation process creates unsafe environments for nearby populations. Extremely noisy environments can also mask verbal or mechanical warning signals such as sirens, bells, or horns.

3.4.2 Existing Conditions

Construction Safety. All contractors performing construction activities are responsible for following ground safety regulations and worker compensation programs and are required to conduct construction activities in a manner that does not pose any risk to workers or personnel. Industrial hygiene programs address exposure to hazardous materials, use of personal protective equipment, and availability of Material Safety Data Sheets (MSDS). Industrial hygiene is the responsibility of contractors, as applicable. Contractor responsibilities are to review potentially hazardous workplace operation; to monitor exposure to workplace chemical (e.g., asbestos, lead, hazardous material), physical (e.g., noise propagation), and biological (e.g., infectious waste) agents; to recommend and evaluate controls (e.g., ventilation, respirators) to ensure personnel are properly protected or unexposed; and to ensure a

medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures.

Explosives and Munitions Safety. Explosive safety clearance zones must be established around facilities used for the storage, handling, or maintenance of munitions. Air Force Manual 91-201 establishes the size of the clearance zone based upon QD criteria or the category and weight of the explosives contained within the facility. At McGuire AFB, there are QD arcs associated with the munitions storage area near the end of Runway 24 (500-foot QD arc), the hazardous cargo parking pads near Taxiways M and L (1,250-foot QD arcs), and the EOD training area (300-foot QD arc) (MAFB 2005a). **Figure 2-2** shows the locations of the QD arcs at McGuire AFB.

Unexploded ordnance (UXO) is any munitions, weapons delivery system, or ordnance item that contains explosives, propellants, and chemical agents. UXO consists of munitions that (1) are armed or otherwise prepared for action; (2) are launched, placed, fired, or released in a way that they cause hazards; or (3) remain unexploded either through malfunction or design. UXO presents an immediate safety danger (from explosion) and a long-term health threat (from toxic contamination). Areas where munitions are stored, handled, or trained with could potentially have UXO, such as those areas previously identified with existing QD arcs. Old munitions storage areas or ranges could also have UXO remaining on site.

3.5 Geological Resources

3.5.1 Definition of the Resource

Geological resources consist of the Earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of topography, geology, soils, and, where applicable, geologic hazards and paleontology.

Topography is defined as the relative positions and elevations of the natural or human-made features of an area that describe the configuration of its surface. An area's topography is influenced by many factors, including human activity, seismic activity of the underlying geological material, climatic conditions, and erosion. Information about an area's topography typically encompasses surface elevations, slope, and physiographic features (i.e., mountains, ravines, or depressions).

Geology typically consists of surface and subsurface materials and their inherent properties. Principal factors influencing the ability of geological resources to support structural development are seismic properties (i.e., potential for subsurface shifting, faulting, or crustal disturbance), topography, and soil stability.

Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically are described in terms of their complex type, slope, and physical characteristics. Differences among soil types in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential affect their abilities to support certain applications or uses. In appropriate cases, soil properties must be examined for their compatibility with particular construction activities or types of land use.

Prime farmland is protected under the Farmland Protection Policy Act of 1981 (7 U.S.C. 4201–4209). Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. The soil qualities, growing season, and moisture supply are those needed for a well-managed soil to produce a sustained high yield of crops in an economic manner. The land could be cropland, pasture, rangeland, or other land, but not urban built-up land or water. The intent of the Farmland Protection Policy Act is to minimize the extent that Federal programs contribute to the unnecessary conversion of farmland to

nonagricultural uses. The Farmland Protection Policy Act also ensures that Federal programs are administered in a manner that, to the extent practicable, is compatible with private, state, and local government programs and policies to protect farmland. The Natural Resources Conservation Service (NRCS) is responsible for overseeing compliance with the Farmland Protection Policy Act and has developed the rules and regulations for implementation of the act (7 CFR Part 658).

3.5.2 Existing Conditions

Topography and Physiography. The topography of McGuire AFB ranges from generally level to gently rolling. Local relief is the result of erosion by stream channel development. Installation surface elevations range from 80 feet above mean sea level (MSL) along the South Run stream channel east of Building 1503 to 144 feet above MSL in the cemetery along the southwestern installation boundary (MAFB 2004b).

McGuire AFB lies along the eastern boundary of the inner coastal plain of the Atlantic Coastal Plain Physiographic Province. This physiographic division is characterized by low dissected hills and broad sandy plains in a narrow belt approximately 10 to 20 miles wide, extending northeast along the Delaware Valley across New Jersey to Raritan Bay (MAFB 2004b). Major features of the inner coastal plain include nearly level plains, gently rolling uplands, extensive surficial dissection, mature streams, and swampy areas. Undisturbed upland valley streams possess “V-type” channels in cross section. Lowland stream channels exhibit a shallower, meandering appearance (MAFB 2001).

Geology. The local geology of McGuire AFB is dominated by interbedded continental and nearshore marine sands and clays of the Cohansey (Pliocene and Miocene), Kirkwood (Miocene), and Vincentown (Paleocene) formations. The Kirkwood and Vincentown formations reach a combined maximum thickness of approximately 50 feet in the vicinity of the installation. The Cohansey Sand, which forms a thin veneer over much of the installation, consists of light gray to yellow-brown, well-sorted, cross-bedded, fine-to-coarse-grained, partly arkosic quartz sand. The Kirkwood Formation is characterized by moderately well-sorted, fine-grained micaceous quartz sand with local beds of clay and silt. The Vincentown Formation is a clayey, glauconitic quartz sand that exhibits varying degrees of interbedding (MAFB 2001).

Soils. Surface soils at McGuire AFB are typically sandy and permeable and have a shallow water table (i.e., 6 feet or less below ground surface). Many of the surface areas of McGuire AFB have been heavily disturbed by construction of buildings, roadways, airfield pavements, and other facilities. Soils in these areas are classified as “urban land.” Most of this land is developed or awaiting development. The soil has slight limitations for industrial or commercial use, moderate limitations for woodland or wildlife use, and severe limitations for farming and dug ponds (MAFB 2001).

Forty-eight different soil mapping units from 26 soil series have been mapped at McGuire AFB. **Table 3-5** identifies soils that occur within the installation and development project areas. **Table 3-5** indicates whether a soil is hydric, or if the mapping unit has hydric components. Hydric soil components within a mapping unit indicate that there is one or more hydric soil series present. Hydric soils are soils that are saturated, flooded, or ponded for long enough during the growing season to develop anaerobic (i.e., oxygen-deficient) conditions in their upper parts; typically, hydric soils occur in association with, and are indicative of, the presence of wetlands. Wetlands are discussed in **Section 3.7**. **Table 3-5** also indicates if a mapping soil unit has a farmland classification.

Table 3-5. Soil Mapping Units and Soil Characteristics within Proposed Project Areas

Map Unit Name ^a	General Soil Characteristics	Hydric ^b	Farmland Classification ^c
Adelphia fine sandy loam, 0 to 2 percent slopes	<ul style="list-style-type: none"> - Moderately deep - Moderately well-drained - Moderate to slow permeability - Low to high surface runoff - No ponding - Seasonal water table of 18 to 42 inches - Low shrink-swell potential 	Hyd Inc	Prime
Adelphia-Urban land complex, 0 to 5 percent slopes	<ul style="list-style-type: none"> - Intensely modified soil 	No	No
Atsion fine sand, 0 to 2 percent slopes	<ul style="list-style-type: none"> - Deep - Poorly drained - No ponding - No flooding - Seasonal water table of 6 inches - Low shrink-swell potential 	Yes	Unique
Collington loam, 0 to 2 percent slopes	<ul style="list-style-type: none"> - Deep - Well-drained - No ponding - No flooding - Seasonal water table of 72 inches - Low shrink-swell potential 	No	Prime
Collington loam, 2 to 5 percent slopes	<ul style="list-style-type: none"> - Deep - Well-drained - No ponding - No flooding - Seasonal water table of 72 inches - Low shrink-swell potential 	No	Prime
Downer loamy sand, 0 to 5 percent slopes	<ul style="list-style-type: none"> - Very deep - Well-drained - Moderate to moderately rapid permeability - Negligible to high surface runoff - No ponding - Seasonal water table at a depth of greater than 72 inches - Low shrink-swell potential 	Hyd Inc	Statewide
Evesboro fine sand, 0 to 5 percent slopes	<ul style="list-style-type: none"> - Very deep - Excessively drained - No ponding - No flooding - Seasonal water table at a depth of 72 inches - Low shrink-swell potential 	No	No

Table 3-5. Soil Mapping Units and Soil Characteristics Within Proposed Project Areas (continued)

Map Unit Name ^a	General Soil Characteristics	Hydric ^b	Farmland Classification ^c
Evesboro-Urban land complex, 0 to 5 percent slopes	<ul style="list-style-type: none"> - Very deep - Excessively drained - No ponding - No flooding - Water table is greater than 72 inches - Low shrink-swell potential 	No	No
Fluvaquents, loamy, 0 to 3 percent slopes, frequently flooded	<ul style="list-style-type: none"> - Deep - Poorly and somewhat poorly drained - Frequent ponding - Frequent flooding - Seasonal water table of 15 inches - Low shrink-swell potential 	Yes	Unique
Freehold, loamy sand, 0 to 5 percent slopes	<ul style="list-style-type: none"> - Deep - Well-drained - No flooding - No ponding - Water table is greater than 72 inches - Low shrink-swell potential 	Hyd Inc	Prime
Galloway sand, 0 to 5 percent slopes	<ul style="list-style-type: none"> - Deep - Moderately well-drained - No flooding - No ponding - Seasonal water table of 21 inches - Low shrink-swell potential 	Hyd Inc	Statewide
Jade Run, fine sandy loam, 0 to 2 percent slopes	<ul style="list-style-type: none"> - Poorly drained - No flooding - No ponding - Seasonal water table of 6 inches - Low shrink-swell potential 	Yes	Statewide
Keyport-Urban land complex, 0 to 10 percent slopes	<ul style="list-style-type: none"> - Deep - Moderately well-drained - No flooding - No ponding - Seasonal water table of 24 inches - Moderate shrink-swell potential 	No	No
Pemberton sand, 0 to 5 percent slopes	<ul style="list-style-type: none"> - Deep - Moderately well-drained - No flooding - No ponding - Seasonal water table of 30 inches - Low shrink-swell potential 	No	Statewide
Pits, sand and gravel	- Excessively to well-drained sandy fill that has been smoothed	No	No

Table 3-5. Soil Mapping Units and Soil Characteristics Within Proposed Project Areas (continued)

Map Unit Name ^a	General Soil Characteristics	Hydric ^b	Farmland Classification ^c
Sassafras sandy loam, 2 to 5 percent slopes	<ul style="list-style-type: none"> - Deep - Well-drained soils - No flooding - No ponding - Water table is greater than 72 inches - Low shrink-swell potential 	Hyd Inc	Prime
Udorthents-Urban land complex, 0 to 8 percent slopes	<ul style="list-style-type: none"> - Fill and/or disturbed original soil - No flooding - No ponding - Water table is greater than 72 inches - Low shrink-swell potential 	No	No
Udorthents, organic substratum, 0 to 8 percent slopes	<ul style="list-style-type: none"> - Loamy lateral spread deposits over organic material - No ponding - No flooding - Low shrink-swell potential - Water table is greater than 72 inches 	No	No
Udorthents, wet substratum, 0 to 8 percent slopes	<ul style="list-style-type: none"> - Loamy lateral spread deposits over organic material - Moderately well-drained - No ponding - No flooding - Low shrink-swell potential - Water table is greater than 72 inches 	Hyd Inc	No
Urban Land	- Intensely modified soil not displaying any of the parent soil material characteristics	No	No
Urban Land-Collington complex, 0 to 5 percent slopes	- Intensely modified soil	No	No
Woodstown fine sandy loam, 0 to 2 percent slopes	<ul style="list-style-type: none"> - Deep - Moderately well-drained - No flooding - No ponding - Low shrink-swell potential - Seasonal water table at 30 inches 	Hyd Inc	Prime

Table 3-5. Soil Mapping Units and Soil Characteristics Within Proposed Project Areas (continued)

Map Unit Name ^a	General Soil Characteristics	Hydric ^b	Farmland Classification ^c
Woodstown fine sandy loam, 2 to 5 percent slopes	<ul style="list-style-type: none"> – Deep – Moderately well-drained – No flooding – No ponding – Low shrink-swell potential – Seasonal water table at 30 inches 	No	Prime

Source: NRCS 2007

Notes:

^a A map unit represents an area dominated by one or more major kinds of soil or miscellaneous areas. Typically, minor soils have properties similar to the dominant soil.

^b No = Not listed as a hydric soil for Burlington County, NJ; Yes = Listed as a hydric soil for Burlington County, NJ; Hyd Inc = Mapping units with potential to include areas of hydric soils such as in wetlands, depressions, flats, drainageways, and floodplains.

^c Prime farmland has the best combination of physical and chemical properties for producing crops. Some soils identified as “prime farmland soils” require measures to overcome limitations, such as flooding, wetness, or droughtiness. Not all areas where prime farmland soils occur are considered to be prime farmland. Unique farmland is land other than prime farmland that is used for production of specific high-value food and fiber crops. Soils of statewide importance do not meet the criteria for prime or unique farmland but economically produce high yields of crops when treated or managed with appropriate farming practices. No = No Farmland Classification

3.6 Water Resources

3.6.1 Definition of the Resource

Water resources include groundwater, surface water, and floodplains. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes.

Groundwater consists of subsurface hydrologic resources. It is an essential resource often used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater typically can be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate.

Surface water resources consist of lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale.

Storm water is an important component of surface water systems because of its potential to introduce sediments and other contaminants that could degrade lakes, rivers, and streams. Storm water flows, which can be exacerbated by high proportions of impervious surfaces associated with buildings, roads, and parking lots, are important to the management of surface water. Storm water systems convey storm water runoff away from developed sites to appropriate receiving surface waters. Various systems and devices might be used to slow the movement of water. For instance, a large, sudden flow could scour a streambed and harm biological resources. Storm water systems provide the benefit of reducing sediments and other contaminants that would otherwise flow directly into surface waters. Failure to size storm water systems appropriately to hold or delay conveyance of the largest predicted precipitation event often leads to downstream flooding and the environmental and economic damages associated with flooding.

Higher densities of development, such as those found in urban areas, require greater degrees of storm water management because of the higher proportions of impervious surfaces that occur in urban areas.

The Clean Water Act (CWA) (33 U.S.C. 1251 et. seq., as amended) establishes Federal limits, through the National Pollutant Discharge Elimination System (NPDES), on the amounts of specific pollutants that are discharged to surface waters to restore and maintain the chemical, physical, and biological integrity of the water. NJDEP, Division of Water Quality implements the New Jersey Pollutant Discharge Elimination System (NJPDES) permit program. The Storm Water Permitting Program for construction activities is administered by the NJDEP, Bureau of Nonpoint Pollution Control, in coordination with the New Jersey Department of Agriculture and the State Soil Conservation Committee through the 15 local Soil Conservation Districts pursuant to the State Soil Erosion and Sediment Control Act (Chapter 251, Public Law 1975). Under the Storm Water Permitting Program, all projects that disturb more than 5,000 ft² of land should follow an erosion and sediment control plan (ESCP) approved by the local Soil Conservation District. Additionally, for projects that disturb more than 1 acre of land, authorization is required under the statewide NJPDES Construction and Mining Activity General Storm Water Permit (NJ0088323) or an individual permit. Authorization under the permit might require that an ESCP be submitted and certified by the Burlington County Soil Conservation District (BCSCD). Because McGuire AFB is in the Pinelands, the ESCP might also be approved by the NJPC (pursuant to N.J.A.C. 7:50-4.2) and might have to meet the requirements of the PCMP, Part VIII – Water Quality (N.J.A.C. 7:50-6.84[a][6]).

Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters. Such lands might be subject to periodic or infrequent inundation due to rain or melting snow. Risk of flooding typically hinges on local topography, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA), which defines the 100-year floodplain. The 100-year floodplain is the area that has a 1 percent chance of inundation by a flood event in a given year. Certain facilities inherently pose too great a risk from flooding to be located in either the 100- or 500-year floodplain, such as hospitals, schools, or storage buildings for irreplaceable records. Federal, state, and local regulations often limit floodplain development to passive uses, such as recreational and preservation activities, to reduce the risks to human health and safety.

EO 11988, *Floodplain Management*, requires Federal agencies to determine whether a proposed action would occur within a floodplain. This determination typically involves consultation of appropriate FEMA Flood Insurance Rate Maps, which contain enough general information to determine the relationship of the project area to nearby floodplains. EO 11988 directs Federal agencies to avoid floodplains unless the agency determines that there is no practicable alternative. Where the only practicable alternative is to site in a floodplain, a specific step-by-step process must be followed to comply with EO 11988. The process is outlined in the FEMA document *Further Advice on EO 11988 Floodplain Management*. As a planning tool, the NEPA process incorporates floodplain management through analysis and through coordination with applicable regulatory agencies that will review this EA.

3.6.2 Existing Conditions

Groundwater. McGuire AFB is within the northern Pinelands Section of the New Jersey Coastal Plain Aquifer System. Several major hydrogeologic units have been identified in the area, particularly three shallow units (the Cohansey Sand, the Kirkwood Formation, and the Vincentown Formation) and one deep, regional unit (the Potomac-Raritan-Magothy [PRM] System) (MAFB 2001).

The shallow hydrological units are highly permeable and relatively thin (50 feet or less) where they crop out. Groundwater occurs at shallow depths in these units (less than 5 feet in some areas) under water

table (unconfined) conditions, although confined or semiconfined conditions occur locally. Consequently, approximately 90 percent of stream flow in this region comes from groundwater discharge (MAFB 2004b). The shallow depth of the groundwater and the permeability of the sediments make the aquifer susceptible to contamination (MAFB 2001). Further downgradient, near Atlantic City, these formations thicken and are used extensively as a source of potable water. Recharge of the Cohansey and Kirkwood formations is primarily by precipitation falling on exposed portions of the units, and most of McGuire AFB lies in the Cohansey-Kirkwood recharge zone. The Vincentown Formation contains water in localized water-bearing beds that yield small to moderate quantities of water to wells in the McGuire AFB area (MAFB 2002).

McGuire AFB obtains potable water from four deep wells in the PRM aquifer system (see **Section 3.10.2** for a detailed description of the water supply system at McGuire AFB) (USAF and DA 2006). In the McGuire AFB area, this system occurs at an approximate elevation of 450 feet below MSL and is about 550 feet thick. The system thickens substantially downgradient (seaward) and includes many interconnected sand layers that are isolated for short distances by interbedded silt and clay (MAFB 2001, MAFB 2002).

The PRM has received a critical rating by the NJDEP. This rating corresponds to the overuse of the aquifer, resulting in its inability to recharge at a sufficient rate. This critical rating has prompted the NJDEP to issue water allocation permits, as authorized by the New Jersey Water Supply Management Act. In 1988, USEPA designated the New Jersey Coastal Plain Aquifer System as a sole source aquifer (*Federal Register*, Volume 53, Number 122, page 23791). As a result of this designation, USEPA reviews all Federal projects within the New Jersey Coastal Plain area and a portion of the aquifer streamflow source zone.

Surface Water. Surface water features on McGuire AFB have been heavily modified by concrete-lined channels and stream-straightening solutions to facilitate rapid discharge of storm water from the installation. The primary surface water features on the installation include South Run and North Run (Jones Mills Stream). Other surface water features include the headwaters of Jacks Run and Larkins Run (MAFB 2001).

North Run and South Run are within the Crosswicks Creek watershed. South Run enters McGuire AFB on the west side from Fort Dix and leaves McGuire AFB at the southeast side at the former wastewater treatment plant. Approximately 85 percent of the installation drains to South Run. North Run, also called Jones Mill Stream, flows west to northeast in the northern section of McGuire AFB. Two unnamed streams flow from the north into North Run on the installation. Approximately 3 percent of the installation drains to North Run. After exiting McGuire AFB, South Run flows north into North Run (MAFB 2005c). North Run then flows into Oakford Lake, then north into Crosswicks Creek. Crosswicks Creek joins the Delaware River at the City of Bordentown (MAFB 2006c).

Jacks Run and Larkins Run are part of the North Branch of Rancocas Creek. These drainages originate along the McGuire/Fort Dix southern border. Approximately 12 percent of the installation drains to these tributaries (MAFB 2005c). These tributaries flow southeast through Fort Dix and then into the North Branch of Rancocas Creek. Rancocas Creek joins the Delaware River at Delanco and Riverside (MAFB 2001).

Floodplains. Information regarding the presence of 100- or 500-year floodplains on McGuire AFB is not provided on FEMA's Flood Insurance Rate Maps. Based on topography, underlying soil characteristics, and the presence of water bodies and wetlands, McGuire AFB has identified approximately 120 acres as subject to flooding. These areas are along North Run in military family housing and north of

Wrightstown-Cookstown Road, and along South Run and its tributaries in the Runway 24 and munitions storage areas (see **Figure 2-2**).

3.7 Biological Resources

3.7.1 Definition of the Resource

Biological resources include wildlife (fauna), vegetation (flora), and the ecosystems in which these resources exist. Protected and sensitive biological resources include federally listed (endangered or threatened), proposed, and candidate species, and designated or proposed critical habitat; species of concern managed under Conservation Agreements or Management Plans; and state-listed species.

McGuire AFB is on the edge of the Pinelands National Reserve, an ecological area designated by state and Federal legislation. Additionally, this area is designated as a Biosphere Reserve by the United Nations. This area is characterized by a variety of habitats and supports unique vegetation and wildlife. The Pinelands National Preserve was created by the National Parks and Recreation Act of 1978 and encompasses parts of seven southern New Jersey counties. The NJPC monitors and controls the preserve under the PCMP.

Vegetation and Wildlife. Biological resources include native or naturalized plants and animals, and the habitats, such as wetlands, forests, and grasslands, in which they exist.

Protected and Sensitive Species. Sensitive and protected biological resources include federally listed (threatened or endangered), proposed, and candidate species, and designated or proposed critical habitat; species of concern managed under Conservation Agreements or Management Plans; and state-listed species.

The ESA (16 U.S.C. 1531 et seq.) specifically charges Federal agencies with the responsibility of using their authority to conserve threatened and endangered species. All Federal agencies must ensure an action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a threatened or endangered species or result in the destruction of critical habitat for these species, unless the agency has been granted an exception. The Secretary of the Interior, using the best available scientific data, determines which species are officially threatened or endangered.

The New Jersey Statutes Annotated (N.J.S.A.) defines endangered wildlife species as “any species or subspecies of wildlife whose prospects of survival or recruitment are in jeopardy or are likely within the foreseeable future to become so due to any of the following factors: (1) the destruction, drastic modification, or severe curtailment of its habitat; (2) its overutilization for scientific, commercial, or sporting purposes; (3) the effect on it of disease, pollution, or predation; (4) other natural or man-made factors affecting its prospects of survival or recruitment within the state; or (5) any combination of the foregoing factors. The term shall also be deemed to include any species or subspecies of wildlife appearing on any Federal endangered species list” (N.J.S.A. 23:2A-1 to 13). The N.J.S.A. defines endangered plant species as “any native plant species whose survival in the state or the nation is in jeopardy, including, but not limited to, plant species designated as listed, proposed, or under review by the Federal government as endangered or threatened throughout its range in the United States pursuant to the ESA (16 U.S.C. §1533), any additional species known or believed to be rare throughout its worldwide range, and any species having five or fewer extant populations within the state” (N.J.S.A. 13:1B-15.151 to 15.158).

Wetlands. Wetlands are an important natural system and habitat because of the diverse biologic and hydrologic functions they perform. These functions include water quality improvement, groundwater

recharge and discharge, pollution mitigation, nutrient cycling, wildlife habitat, and erosion protection. Wetlands are protected as a subset of the “waters of the United States” under Section 404 of the CWA. The term “waters of the United States” has a broad meaning under the CWA and incorporates deepwater aquatic habitats and special aquatic habitats (including wetlands). The U.S. Army Corps of Engineers (USACE) defines wetlands as “those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (33 CFR Part 328).

The USACE is responsible for making jurisdictional determinations and regulating wetlands under Section 404 of the CWA. Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill materials into the waters of the United States, including wetlands. In addition, Section 404 of the CWA also grants states with sufficient resources the right to assume these responsibilities. The USACE also makes jurisdictional determinations under Section 10 of the Rivers and Harbors Act of 1899. NRCS has developed procedures for identifying wetlands for compliance with the Food Security Act of 1985, and the National Wetlands Inventory has developed a classification system for identifying wetlands. Through the National Wetlands Inventory, the USFWS is the principal Federal agency that provides information to the public on the extent and status of wetlands.

Section 401 of the CWA gives the state board and regional boards the authority to regulate through water quality certification any proposed federally permitted activity that could result in a discharge to water bodies, including wetlands. The state may issue certification (pursuant to N.J.S.A. 58:10A-1 et seq.), with or without conditions, or deny certification for activities that might result in a discharge to water bodies.

New Jersey adopted legislation, the New Jersey Freshwater Wetlands Protection Act (N.J.S.A. 13:9B, rules at N.J.A.C. 7:7A), to regulate and monitor the state’s freshwater wetland resources, and assume administration of the Federal permit program. Furthermore, in areas under the jurisdiction of the NJPC (pursuant to N.J.S.A. 13:18A-1 et seq.), the NJPC may provide for more stringent regulation of activities in and around freshwater wetland areas. The New Jersey Freshwater Wetlands Protection Act protects freshwater wetlands and transition areas or “buffers” around freshwater wetlands. According to the PCMP (N.J.A.C. 7:50-6.6) development is prohibited within all wetlands or within 300 feet of any wetland (wetlands transition areas, as established in N.J.A.C. 7:50-6.14) in the Pinelands except as permitted in N.J.A.C. 7:50-6.7 to 7:50-6.13.

EO 11990, *Protection of Wetlands*, requires that Federal agencies provide leadership and take actions to minimize or avoid the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland, and the proposed construction incorporates all possible measures to limit harm to the wetland.

3.7.2 Existing Conditions

Vegetation. McGuire AFB is in the Eastern Broadleaf Forest (Oceanic) Province, which is characterized by a winter deciduous forest. Forest vegetation is divided into three major associations: mixed mesophytic, Appalachian oak, and pine-oak. The majority of land at McGuire AFB is improved or highly disturbed. Vegetation communities in such areas include grasslands in the airfield region, a golf course, and lawns or landscaped areas adjacent to buildings and other structures. Remnants of native upland forests and forested wetlands occur largely around the periphery of the installation. Forested areas on the

installation amount to approximately 160 acres, of which about 72 acres are characterized by forested wetlands (MAFB 2001).

Upland forested areas include three types of plant communities. Mixed oak-heath forest remnants are dominated by scarlet oak (*Quercus coccinea*), white oak (*Quercus alba*), several species of huckleberry (*Gaylussacia* spp.) or blueberry (*Vaccinium* sp.), and pinkster-flower azalea (*Rhododendron periclymenoides*) (MAFB 2001).

A mixed oak-hardwood-flowering dogwood-viburnum forest community exists near North Run. This area is dominated by species such as tulip poplar (*Liriodendron tulipifera*), scarlet oak, red oak (*Quercus rubra*), white oak, arrowwood viburnum (*Viburnum dentatum*), and flowering dogwood. Also adjacent to North Run are remnants of mixed oak-beech forest, which include scarlet and red oaks, American beech (*Fagus grandifolia*), American holly (*Ilex opaca*), mountain laurel (*Kalmia latifolia*), dangleberry (*Gaylussacia frondosa*), and common greenbriar (*Smilax rotundifolia*) (MAFB 2001).

Early successional meadow and grassland communities exist along the southeastern portion of McGuire AFB as a consequence of periodic mowing. Plant diversity is quite variable, though the dominant species usually include some of the following: brome grass (*Bromus* sp.), panic grass (*Panicum* sp.), broomsedge (*Andropogon virginicus*), little bluestem (*Schizachyrium scoparium*), and the invasive spotted knapweed (*Centaurea maculosa*) (MAFB 2001).

Wildlife. Although extensive wildlife surveys have not been performed for McGuire AFB, there are a limited number of small mammalian species that have been observed on the installation. Because the Pine Barrens ecology is unique, there are few generalist mammalian species that have the potential to occur at the installation. These species include woodchuck (*Marmota marmox*), beaver (*Castor canadensis*), eastern cottontail rabbit (*Sylvilagus floridanus*), red squirrel (*Tamiasciurus hudsonicus*), white-footed mouse (*Peromyscus leucopus*), and meadow vole (*Microtus pennsylvanicus*) (MAFB 2001).

Observations made on McGuire AFB indicate several reptilian and amphibian species occupy the installation. Observed reptiles include milk snake (*Lampropeltis* spp.), northern black racer (*Coluber constrictor*), northern fence lizard (*Sceloporus undulates hyacinthus*), and painted turtle (*Chrysemys picta*). Amphibian species identified include the American toad (*Bufo americanus*), Fowler's toad (*Bufo woodhousei fowleri*), and northern leopard frog (*Rana pipiens sphenoccephala*) (MAFB 2001).

McGuire AFB airfield grassland areas provide suitable habitat for birds such as upland sandpiper (*Bartramia longicauda*), grasshopper sparrow (*Ammodramus savannarum*), and savannah sparrow (*Passerculus sandwichensis*). The boundary between grassland and forested ecosystems provides excellent habitat for a variety of avian species. Bird species that migrate or winter in these areas can be numerous, whereas summer breeding birds can include several species of thrushes, warblers, and finches. The most likely breeding birds in such ecotonal zones (i.e., the boundary between two habitat or vegetation types) include gray catbird (*Dumetella carolinensis*), white-eyed vireo (*Vireo griseus*), yellow warbler (*Dendroica petechia*), northern cardinal (*Cardinalis cardinalis*), indigo bunting (*Passerina cyanea*), rufous-sided towhee (*Pipilo erythrophthalmus*), field sparrow (*Spizella pusilla*), song sparrow (*Melospiza melodia*), brown-headed cowbird (*Molothrus ater*), and American goldfinch (*Carduelis tristis*). In marshy and stream areas, birds such as great blue heron (*Ardea herodias*), ruby-throated hummingbird (*Archilochus colubris*), northern rough-winged swallow (*Stelgidopteryx serripennis*), willow flycatcher (*Empidonax traillii*), eastern kingbird (*Tyrannus tyrannus*), cedar waxwing (*Bombicilla cedrorum*), common yellowthroat (*Geothlypis trichas*), and red-winged blackbird (*Agelaius phoeniceus*) might breed locally (MAFB 2001).

Upland forest areas, though disturbed and fragmented, might support habitat for downy woodpecker (*Picoides pubescens*), eastern wood-pewee (*Contopus virens*), Carolina chickadee (*Parus carolinensis*), and red-eyed vireo (*Vireo olivaceus*). In areas having pine trees as a major canopy component, birds such as pine warbler (*Dendroica pinus*) and chipping sparrow (*Spizella passerina*) occur as summer breeders. Forested wetland might support habitat for wood duck (*Aix sponsa*), red-shouldered hawk (*Buteo lineatus*), barred owl (*Strix varia*), acadian flycatcher (*Empidonax virescens*), white-breasted nuthatch (*Sitta carolinensis*), yellow-throated vireo (*Vireo flavifrons*), and cerulean warbler (*Dendroica cerulea*) (MAFB 2001).

Species of raptors can include the American kestrel (*Falco sparverius*), the red-tailed hawk (*Buteo jamaicensis*), great horned owl (*Bubo virginianus*), and the turkey vulture (*Cathartes aura*). All of these raptors are known to breed and winter in New Jersey (MAFB 2001).

Protected or Sensitive Species. An installation's overall ecosystem management strategy must provide for protection and recovery of federally threatened and endangered species. As a policy, the USAF gives the same protection, when practical, to any state-listed threatened, endangered, or other rare species. The USFWS, NJDEP–Division of Fish and Wildlife, and the NJPC cooperate in managing threatened and endangered species in the geographic area of McGuire AFB pursuant to the requirements of Section 7(c) of the ESA (16 U.S.C. § 1536), the New Jersey Endangered and Nongame Species Conservation Act (N.J.S.A. 23:2A-1 to 13), Endangered Plant Species List Act (N.J.S.A. 13:1B-15.151 to 15.158), and Pinelands-listed species (N.J.A.C 7:50-6.27).

Surveys for endangered and threatened vertebrate fauna were conducted in 1994 by the New Jersey Division of Fish, Game, and Wildlife, and additional biological surveys were conducted in 2000 by NRCS for the presence of threatened and endangered species. Additional biological surveys were completed in 1997. **Table 3-6** presents the federally listed, state-listed, and rare species identified as potentially occurring on or in proximity to McGuire AFB. **Table 3-6** was compiled based on the installation's *Integrated Natural Resources Management Plan* (INRMP) (MAFB 2001), a May 2007 data request to the New Jersey Natural Heritage Program for species that that documented on or near McGuire AFB (Lord 2007), and recent correspondence from the USFWS (Staples 2007b). Of these species, three species of rare breeding birds and two plant species have been observed at McGuire AFB and, therefore, might occur within the project areas.

The surveys from 1994 and 2000 revealed breeding populations of upland sandpiper, savannah sparrow, and grasshopper sparrow. All sightings were within the maintained grassland community bounded by and adjacent to the runways and taxiways (MAFB 2001).

Three to six pairs of the upland sandpiper (state-listed endangered) were estimated to be breeding at McGuire AFB. This is important because the installation is one of only five known sites in the state that supports breeding populations. Vegetation height is an important variable in nest site selection. Low vegetation, typically from 0 to 4 inches in height, is required for feeding and brood rearing. Areas that are mowed frequently in spring and summer provide such short grass habitat, while disturbed soils having sparse vegetation also provide brood rearing habitat. Upland sandpipers migrate to New Jersey to nest in mid-April to early May. Clutch size is generally four eggs. Both sexes incubate the eggs for 21 to 28 days, and the young birds fledge 32 to 34 days after hatching (MAFB 2001).

The 2000 NRCS survey estimated that three pairs of savannah sparrows (state-listed threatened) were breeding at McGuire AFB in habitat similar to the upland sandpiper. A grassland generalist, the savannah sparrow is found in a variety of grassland habitats in the northeast, ranging from heathland to farmland. This species is associated with hayfields and pastures as well as coastal grasslands and blueberry barrens.

Table 3-6. Federally and State-Listed Threatened, Endangered, and Rare Species Occurring on or in Proximity to McGuire AFB

Common Name	Scientific Name	Federal Status	State Status
Birds			
Bald eagle ^{1, 2, 3, 4}	<i>Haliaeetus leucocephalus</i>	--	T/E _{br}
Barred owl ^{1, 2, 4}	<i>Strix varia</i>	--	T
Black-crowned night heron ^{1, 4}	<i>Nycticorax nycticorax</i>	--	T
Cooper's hawk ^{2, 4}	<i>Accipiter cooperii</i>	--	T
Grasshopper sparrow ^{a, 1, 2, 4}	<i>Ammodramus savannarum</i>	--	T
Great blue heron ²	<i>Ardea herodias</i>	--	I _{br}
Northern harrier ^{1, 4}	<i>Circo cyaneus</i>	--	E
Northern parula ²	<i>Parula americana</i>	--	S
Red-shouldered hawk ^{1, 4}	<i>Buteo lineatus</i>	--	T/E _{br}
Savannah sparrow ^{a, 1, 2, 4}	<i>Passerculus sandwichensis</i>	--	T
Upland sandpiper ^{a, 1, 2, 4}	<i>Batramia longicauda</i>	--	E
Reptiles			
Bog turtle ^{1, 2, 3, 4}	<i>Clemmys muhlenbergii</i>	T	E
Coastal plain milk snake ²	<i>Lampropeltis triangulum triangulum x L. t. elapsoides</i>	--	S
Eastern box turtle ²	<i>Terrapene carolina carolina</i>	--	S
Eastern kingsnake ²	<i>Lampropeltis getula getula</i>	--	R
Northern pine snake ^{2, 4}	<i>Pituophis melanoleucus melanoleucus</i>	--	T
Timber rattlesnake ^{2, 4}	<i>Crotalus horridus horridus</i>	--	E
Amphibians			
Pine barrens treefrog ^{2, 4}	<i>Hyla andersonii</i>	--	T
Insects			
Arogos skipper ^{1, 2, 3, 4}	<i>Atrytone arogos arogos</i>	S	E
Dotted skipper ²	<i>Hesperia attalus slossonae</i>	--	S
Pink streak ²	<i>Faronta rubripennis</i>		R
Silver-bordered fritillary ^{2, 4}	<i>Boloria selene myrina</i>	--	T
Two-spotted skipper ²	<i>Euphyes bimacula</i>	--	S

Table 3-6. Federally and State-Listed Threatened, Endangered, and Rare Species Occurring on or in Proximity to McGuire AFB (continued)

Common Name	Scientific Name	Federal Status	State Status
Vascular Plants			
American chaffseed ^{3, 5}	<i>Schwalbea americana</i>	E	E
Bog (Yellow) asphodel ^{b, 3, 5}	<i>Narthecium americanum</i>	C	E
Clustered bluets ^{a, 1, 2, 5}	<i>Oldelandia uniflora</i>	--	R
Greene's rush ^{a, 1, 2, 5}	<i>Juncus greenei</i>	--	I
Knieskern's beaked-rush ^{b, 3, 5}	<i>Rhynchospora knieskernii</i>	T	E
Swamp pink ^{b, 3, 5}	<i>Helonias bullata</i>	T	E

Sources: ¹MAFB 2001, ²Lord 2007, ³Staples 2007b, ⁴ENSP 2004, and ⁵NJNH 2005

Notes:

^a Documented as occurring at McGuire AFB

^b Designated as a Pinelands-listed species pursuant to N.J.A.C. 7:50-6.27

E Federally or state-listed endangered species

T Federally or state-listed threatened species

C Federal candidate species

S Federal or state species of concern

I State-imperiled species (i.e., 6 to 20 occurrences in New Jersey)

R State-rare species (i.e., 21 to 100 occurrences in New Jersey)

br breeding population only

Unlike many grassland birds, savannah sparrows use fields of all ages of succession. They tolerate successional growth, breeding in areas with scattered saplings, shrubs, and forbs. Because savannah sparrows often have two broods per year, mowing before mid-July can harm nesting birds and young. Although each pair has a small territory size of 1 to 2 acres, they require relatively large areas of open space, 20 to 40 acres, for breeding habitat. This species has also experienced a decline in populations in the northeast though it is more adaptable to disturbed and artificial habitats, such as airfield environments (MAFB 2001).

Surveys for endangered and threatened species of plants were conducted in 1994 by the New Jersey Natural Heritage Program. An inventory of all federally and state-listed species possible at McGuire AFB, by known available habitats, resulted in the discovery or rediscovery of two state-listed plants, Greene's rush (*Juncus greenei*) and clustered bluets (*Oldelandia uniflora*) (MAFB 2001).

Greene's rush was found at two sites, one field adjacent to an unnamed tributary to South Run, between the archery range and sewage treatment plant and the other site is in the center of the infield triangle near the wrecked plane used for fire fighting practice. The former site included hundreds of clumps of the sedge in grassy and herbaceous habitat, while the latter site provided only a single clump of the species. Greene's rush is a perennial, northern plant that ranges from south to central New Jersey. This rush grows in moist to mostly dry sandy or clay soils in clearings or edges of pine-oak or oak-pine woodlands, thickets, successional fields, railroads, or power line rights-of-way (MAFB 2001).

Clustered bluets was historically known from two locations. In 1984, this member of the madder family was noted in woods adjacent to the archery range. In the 1994 survey, scattered patches amounting to approximately 170 plants were observed in the same vicinity. Clustered bluets is an annual plant that

flowers from July to the first frost. Its range extends north to central New Jersey and Long Island. This wetland plant grows in wet spots on unpaved roads and trails through low woods and muddy bottoms of Coastal Plain intermittent ponds (MAFB 2001).

No federally listed or Federal-candidate species have been observed at McGuire AFB. However, the bog turtle (federally threatened) is known to occur within proximity of McGuire AFB. Bog turtles inhabit open, wet meadows and bogs with standing or slow-moving, shallow water over a mucky substrate; bog turtles also occur in emergent and shrub/scrub wetlands and spring-fed fens (Staples 2007a).

Wetlands. A wetland survey was conducted in 2004 in the military family housing area. Eighteen wetlands were identified within the military family housing area during the field survey. The survey delineated wetlands totaling approximately 82 acres. Additionally, 13 stream reaches were identified that total approximately 13,304 linear feet (MAFB 2004a). Results of the field effort classified the majority of the wetland habitats as forested wetlands adjacent to intermittent or perennial streams. The remaining wetland habitats were classified as emergent or scrub-shrub, and the majority of these wetlands were located along the margins of the forested wetland habitats (MAFB 2004a).

A wetland survey that was conducted in 2006 to the south and west of Wrightstown-Cookstown Road identified 206.30 acres of wetlands. The majority of wetlands in the project area consist of palustrine emergent habitats in the central triangle of the airfield, between the runways, and along the southeastern boundary fence. Palustrine-forested and palustrine-forested/riverine wetlands occur primarily in the northeastern section of the project area. Palustrine scrub-shrub habitats occur primarily in association with South Run and were designated as palustrine scrub-shrub/riverine wetlands. Palustrine scrub-shrub/forested habitats also occur in the northeastern section near the eastern boundary of the base (MAFB 2006a).

Figure 2-2 shows the locations of wetlands and other waters of the United States that have been identified in the vicinity of the project area.

3.8 Cultural Resources

3.8.1 Definition of the Resource

“Cultural resources” is an umbrella term for many heritage-related resources. The National Historic Preservation Act (NHPA) focuses on “historic properties,” specifically, prehistoric or historic districts, sites, buildings, or structures included in, or eligible for, the NRHP, including related artifacts, records, and material remains. Traditional, religious, and cultural properties holding significance for Native American tribes, and Native Alaskan and Native Hawaiian organizations can also be considered NRHP-eligible. Depending on the condition and historic use, such resources might provide insight into living conditions in previous civilizations or might retain cultural and religious significance to modern groups.

Several Federal laws and regulations govern protection of cultural resources, including the NHPA (1966), the Archeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archeological Resources Protection Act (1979), and the Native American Graves Protection and Repatriation Act (1990).

Typically, cultural resources are subdivided into archeological resources (prehistoric or historic sites where human activity has left physical evidence of that activity but no structures remain standing); architectural resources (buildings or other structures or groups of structures, or designed landscapes that are of historic or aesthetic significance); or resources of traditional, religious, or cultural significance to Native American tribes.

Archeological resources comprise areas where human activity has measurably altered the earth or deposits of physical remains are found (e.g., projectile points and bottles).

Architectural resources include standing buildings, bridges, dams, and other structures of historic or aesthetic significance. Generally, architectural resources must be more than 50 years old to be considered for the NRHP. More recent structures, such as Cold War-era resources, might warrant protection if they have the potential to gain significance in the future.

Resources of traditional, religious, or cultural significance to Native American tribes can include archeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

The EA process and the consultation process prescribed in Section 106 of the NHPA require an assessment of the potential impact of an undertaking on cultural resources and historic properties that are within the proposed project's Area of Potential Effect (APE), which is defined as the geographic area(s) "within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." Under Section 110 of the NHPA, Federal agencies are required to locate and inventory all resources under their purview that are recommended as eligible for inclusion in the NRHP on owned, leased, or managed property. In accordance with EO 12372, *Intergovernmental Review of Federal Programs*, determinations regarding the potential effects of an undertaking on historic properties are presented to the SHPO, federally recognized Native American tribes, and other interested parties.

3.8.2 Existing Conditions

Archeological Resources. A number of archeological surveys have been conducted at McGuire AFB, beginning with a statewide survey in the 1930s that identified two prehistoric sites on the base (they were not re-identified in subsequent surveys and have been presumed destroyed). Two Section 106 surveys related to the construction of wastewater treatment plants were conducted in 1986 and 1992. No resources were discovered. In 1993, the National Park Service assessed the potential for archeological sites at McGuire AFB and identified five areas of the installation as highly sensitive for archeological sites (MAFB 2003).

A comprehensive study of cultural resources at McGuire AFB was commissioned by HQ AMC in 1994 (AMC 1995). Except for a 20-acre parcel of leased land (the Boeing Michigan Aeronautical Research Center [BOMARC] site at Fort Dix), the survey considered all areas within the boundary of McGuire AFB and all of the facilities off the installation. No prehistoric sites were recorded, but 11 historic sites were identified (AMC 1995). Eight of the 11 sites were subjected to further testing in 1998, and 3 were determined eligible for listing in the NRHP (MAFB 2003). None of these sites are within the APE for the Proposed Action. An additional Phase I survey, prompted by a 65-acre land transfer from Fort Dix to McGuire AFB, was conducted in 1997. No NRHP-eligible sites were recorded within the 65-acre parcel (MAFB 2003).

Architectural Resources. The 1994 comprehensive study (AMC 1995) also included an inventory and NRHP evaluation of all World War II buildings, the BOMARC complex at Fort Dix, and the 1956 Semi-Automatic Ground Environment (SAGE) complex. The study found that all of the buildings and structures constructed prior to 1947 were not eligible for listing in the NRHP, except for 18 World War II temporary structures. The World War II temporary structures are considered eligible; however, per the 1986 Programmatic Memorandum of Agreement between the DOD, the Advisory Council on Historic

Preservation, and the National Conference of State Historic Preservation Officers, these structures can be demolished without further review under Section 106 of the NHPA.

The survey also recommended the SAGE complex and the BOMARC site on Fort Dix as eligible for listing in the NRHP. No other Cold War-era buildings were found to be NRHP-eligible (AMC 1995) under Criterion Consideration G for resources that are less than 50 years old, and the New Jersey SHPO concurred with this finding (MAFB 2003). A 1996 follow-up inventory of Cold War properties at McGuire AFB recommended that several Cold War-era buildings be resurveyed and reevaluated once they achieved 50 years of age (AMC 1996). A number of the buildings within the APE for the Proposed Action fall into this category.

Resources of Traditional, Religious, or Cultural Significance to Native American Tribes. Currently, McGuire AFB is not aware of any resources of interest to Native American tribes within its boundaries. Given the absence of identified pre-contact period sites, it is likely that pre-contact period use of the area was minimal. No federally recognized tribes currently reside in New Jersey; however, there are a number of federally recognized tribes living outside the state that could have interests in this part of New Jersey. Under the requirements of both NEPA and NHPA, consultation regarding the potential of the Proposed Action to impact resources of traditional, religious, or cultural significance should occur during the planning stages for the Proposed Action so that impacts can be avoided, minimized, or mitigated.

3.9 Socioeconomic Resources

3.9.1 Definition of the Resource

Socioeconomic Resources. Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly characteristics of population and economic activity. Regional birth and death rates and immigration and emigration affect population levels. Economic activity typically encompasses employment, personal income, and industrial or commercial growth. Changes in these fundamental socioeconomic indicators are typically accompanied by changes in other components, such as housing availability and the provision of public services. Socioeconomic data at county, state, and national levels permit characterization of baseline conditions in the context of regional, state, and national trends.

Data in three areas provide key insights into socioeconomic conditions that might be affected by a proposed action. Data on employment identify gross numbers of employees, employment by industry or trade, and unemployment trends. Data on personal income in a region can be used to compare the “before” and “after” effects of any jobs created or lost as a result of a proposed action. Data on industrial or commercial growth or growth in other sectors provide baseline and trend line information about the economic health of a region.

In appropriate cases, data on an installation’s expenditures in the regional economy help to identify the relative importance of an installation in terms of its purchasing power and jobs base.

Demographics identify the population levels and changes in population levels of a region. Demographics data might also be obtained to identify, as appropriate to evaluation of a proposed action, a region’s characteristics in terms of race, ethnicity, poverty status, educational attainment level, and other broad indicators.

Socioeconomic data shown in this section are presented at census tract, county, and state levels to characterize baseline socioeconomic conditions in the context of regional and state trends. Data have been collected from previously published documents issued by Federal, state, and local agencies; and

from state and national databases (e.g., U.S. Bureau of Economic Analysis' Regional Economic Information System).

Environmental Justice. There are no Federal regulations on socioeconomics, but there is one EO that pertains to environmental justice issues. This EO is addressed in this section because it relates to various socioeconomic groups and the health effects that could be imposed on them. On February 11, 1994, President Clinton issued EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. This EO requires that Federal agencies' actions substantially affecting human health or the environment do not exclude persons, deny persons benefits, or subject persons to discrimination because of their race, color, or national origin. The EO was created to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, tribal, and local programs and policies. Consideration of environmental justice concerns includes race, ethnicity, and the poverty status of populations in the vicinity of a proposed action. Such information aids in evaluating whether a proposed action would render vulnerable any of the groups targeted for protection in the EO.

3.9.2 Existing Conditions

McGuire AFB, which encompasses about 3,600 acres and has approximately 9,400 full-time DOD employees, is the largest military employer in New Jersey. The 2005 annual payroll at McGuire AFB was approximately \$321 million and the total value of direct and indirect jobs, expenses, and payroll was approximately \$892,610,000 in 2005 (MAFB 2005b). McGuire AFB has a major economic impact on the area economy and supports an estimated 12,000 retirees within a 40-mile radius of the installation (GlobalSecurity.org 2007). The 2006 New Jersey Gross State Product was approximately \$453 billion (LWD 2007).

For the purposes of this EA, census tracts adjacent to the Proposed Action were determined to be the socioeconomic Region of Influence (ROI). Tracts 718, 7019, 7020, 7021.01, 7021.04, 7021.09, 7021.11, 7021.04, 7022.05, and 7041 were initially examined, and Tracts 7021.08 and 7021.12 were subsequently removed from evaluation because the total population was less than 50 people. These census tracts are in Burlington County, except for Tract 718 which is in Ocean County. Employment data relevant to the ROI, Burlington County, Ocean County, and the state of New Jersey are provided in **Table 3-7**.

Residents living within the ROI hold all types of jobs; however, as would be expected, there is a larger percentage of persons employed in the Armed Forces in the ROI because of McGuire AFB (see **Table 3-7**). The largest employment type in the ROI, Burlington County, Ocean County, and New Jersey is educational, health, and social services (23.6, 21.3, 22.3, and 19.8 percent, respectively). Other employment types in the ROI resemble those of Burlington County, Ocean County, and New Jersey.

Environmental Justice. Census tracts are designed to be relatively homogenous units with respect to population characteristics, economic status, and living conditions at the time of establishment. They average about 4,000 inhabitants. For the purposes of the environmental justice analysis for this EA, the residents of the 10 census tracts identified above were evaluated. According to Census 2000 data, the population within the ROI was 37,334 persons (U.S. Census Bureau 2000a).

Table 3-7. Employment Types in the ROI, Burlington County, Ocean County, and the State of New Jersey

Employment Types	ROI *	Burlington County	Ocean County	State of New Jersey
Employed Persons in Armed Forces	20.6	1.7	0.2	0.2
Employed Persons in Civilian Labor Force (by industry)				
Agriculture, forestry, fishing and hunting, and mining	0.1	0.4	0.4	0.3
Construction	5.9	5.6	8.7	5.6
Manufacturing	7.8	11.0	7.8	12.0
Wholesale trade	4.1	4.4	3.5	4.4
Retail trade	13.0	12.0	14.4	11.3
Transportation and warehousing, and utilities	6.9	5.6	6.2	5.9
Information	1.7	3.4	3.4	4.4
Finance, insurance, real estate, and rental and leasing	4.8	8.4	6.6	8.9
Professional, scientific, management, administrative, and waste management services	6.0	10.6	8.5	11.5
Educational, health, and social services	23.6	21.3	22.3	19.8
Arts, entertainment, recreation, and accommodation and food services	7.7	5.6	7.7	6.9
Other services (except public administration)	4.9	4.1	4.6	4.4
Public administration	12.6	7.5	5.8	4.5

Source: U.S. Census Bureau 2000a

Note: * Census 2000 data are the most recent comprehensive employment data for the ROI.

The population of Burlington County in 2000 was 423,394 and increased to 450,743 in 2005, a 6.5 percent change (U.S. Census Bureau 2000b). Residents living in the ROI have a higher median household income (\$46,487) but a lower per capita income (\$16,484) compared to Burlington County and the statewide average (see **Table 3-8**) (U.S. Census Bureau 2000a). The percent of residents in the ROI living below the poverty level is higher (8.6 percent) than Burlington County (3.2 percent), Ocean County (4.8 percent), and the state of New Jersey (6.3 percent). The ROI has a higher percentage of Black or African American residents (18.7 percent) than Burlington County (15.1 percent) and New Jersey (13.6 percent). Other demographic data in the ROI, when compared to Burlington County, Ocean County, and New Jersey, are similar (see **Table 3-8**).

As of December 2006, Burlington County had a 3.3 percent unemployment rate compared to a 4.3 percent unemployment rate for Ocean County and the total labor force of Burlington and Ocean counties in December 2006 was 503,600 persons (LWD 2007).

Table 3-8. Race and Economic Characteristics of Census Tract Residents

Demographic and Social Indicators	ROI *	Burlington County	Ocean County	New Jersey
Total Population	37,334	423,394	510,106	8,414,350
Percent White	73.5	78.4	93.0	72.6
Percent Black or African American	18.7	15.1	3.0	13.6
Percent American Indian Alaska Native	0.4	0.2	0.1	0.2
Percent Asian	2.2	2.7	1.3	5.7
Percent Native Hawaiian and Other Pacific Islander	0.1	0.0	0.0	0.0
Percent some other race	2.6	1.5	1.2	5.4
Percent Reporting 2 or more races	3.2	2.1	1.3	2.5
Percent below poverty	8.6	3.2	4.8	6.3
Per Capita Income	\$16,484	\$26,339	\$23,054	\$27,006
Median Household Income	\$46,487	\$58,608	\$46,443	\$55,146

Source: U.S. Census Bureau 2000a

Note: * Census 2000 data are the most recent comprehensive employment data for the ROI.

A census tract is considered to have a disproportionately high percentage of persons below the poverty level or minority residents under either of two conditions: (1) the percentage of low-income or minority populations within the tract is greater than Burlington County's minority percentage (21.6 percent) or percentage below the poverty level (3.2 percent), or (2) the percentage of persons below the poverty level or minority populations within the tract is greater than 50 percent. Since 7 of the 10 census tracts have either low-income or minority populations, they are evaluated further.

3.10 Infrastructure

3.10.1 Definition of the Resource

Infrastructure consists of the physical structures and systems that enable a population in a specified area to function. Infrastructure is wholly human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as urban or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to the economic growth of an area. The infrastructure information contained in this section provides a brief overview of each infrastructure component and comments on its existing general condition.

Solid waste management primarily deals with the availability of landfills to support a population's residential, commercial, and industrial needs. Alternative means of waste disposal might involve waste-

to-energy programs or incineration. In some localities, landfills are designed specifically for, and are limited to, disposal of construction and demolition debris. Recycling programs for various waste categories (e.g., glass, metals, and papers) reduce reliance on landfills for disposal.

3.10.2 Existing Conditions

Airfield. McGuire AFB has two runways and more than 1 million square yards of aircraft parking aprons. The primary runway (Runway 06/24) is 10,000 feet long and 200 feet wide with 1,000-foot paved overruns on each end. The touchdown zones are constructed of Portland-cement concrete and the center sections of the runway are constructed of an asphalt-concrete mixture. The secondary runway (Runway 18/36) is 7,124 feet long and 150 feet wide. Most of these pavements including the runways, touchdown zones, and overruns are constructed of asphalt-concrete (MAFB 2005a).

McGuire AFB's aircraft parking aprons are designed to accommodate the installation's assigned aircraft as well as transient aircraft using McGuire AFB's airside facilities. The 305 AMW and 514 AMW both use the large ramp that extends from the northwestern to the northeastern end of the airfield (MAFB 2005a).

In a recent Infrastructure Assessment, the aircraft pavements were ranked as under construction, marginal, degraded, and critical. The study concluded that the majority of the pavements, including the entire KC-10 ramp, Taxiway L (Lima), Runway 18/36, and most of Runway 06/24, are in marginal condition. These pavements require regular maintenance, but are not currently negatively affecting aircraft operations (MAFB 2005a). The airfield lighting system is also critical to airfield operations, which was ranked as degraded in the recent Infrastructure Assessment (MAFB 2005a).

Transportation. A network of county roads, state routes, and the New Jersey Turnpike (Interstate 95) surrounds McGuire AFB and provides access to the installation from all directions. The New Jersey Turnpike is less than 10 miles west of the installation and is a major north/south highway corridor along the East Coast. State Route 68 serves as the primary access to the installation from the New Jersey Turnpike (Interstate 95). Wrightstown-Cookstown Road (County Road 616) provides access to Gates 1 and 2 and separates the northern and southern portions of the installation. Bordentown-Georgetown Road (County Road 545) serves as the connecting route between the installation and the Bordentown/Trenton metropolitan area to the northwest and also provides access to the installation from the south.

There are three entrances to McGuire AFB. Two of the entrances (Gates 1 and 2) are off of Wrightstown-Cookstown Road, and the other gate is on Fort Dix for commercial vehicles. The gates are described as follows:

- Gate 1 is the Main Gate and handles a majority of the off-installation traffic.
- Gate 2, east of Gate 1, is a secondary entrance. This gate connects Falcon Courts North family housing with the main installation. It is designated for DOD-registered vehicles only.
- Checkpoint 9 gate on Fort Dix is the designated commercial vehicle gate.

There are other gates that access Fort Dix that are not currently being used, including the following:

- Gate 8, the Broidy Road Gate, is near the Commissary and Base Exchange. It can be used to access the 108 ARW and all uses on the west side of the airfield.
- Gate 5, the New Jersey Air National Guard Gate, provides direct access to the Air National Guard compound.

The primary vehicular routes on the installation include McGuire Boulevard and East Arnold Avenue, which provide north-south movement, and Tuskegee Airmen Avenue, which provides east-west access. Broidy Road provides freight access from Checkpoint 9 onto McGuire AFB (MAFB 2005a).

Electrical. The electrical power that supplies McGuire AFB is purchased from Jersey Central Power & Light. The power is supplied to the installation via a single 34.5-kilovolt (kV), switching station. The primary distribution system is a 12.47/7.2-kV line that leaves the main substation. This substation supplies power throughout the installation via seven feeder circuits, each of which serves a different area of the installation (MAFB 2005a).

The majority of the electrical system consists of aboveground lines, and the poles associated with these lines are typically 40 to 50 years old. The overhead distribution is prone to power outages due to ice buildup on the electrical lines, automobile accidents, lightning strikes, falling trees, and aging equipment. Underground electrical utilities are in place in select areas of the installation to reduce outages (MAFB 2005a).

Emergency electrical power is supplied to critical facilities on the installation. There are 57 stationary emergency backup generators installed in or adjoining buildings that house airfield control and instrumentation, mission-critical facilities, emergency organizations, and utility services. Additionally, 16 portable emergency generators support mission facilities, utility services, and contingency situations (MAFB 2005a).

Central Heating and Cooling. A central heating plant provides heat and hot water to the majority of the facilities within the cantonment area of McGuire AFB. Six high temperature hot water boilers are available to provide heat throughout the installation during winter months. The primary fuel used by the boilers is natural gas, but they are also capable of using oil as a backup. Excess heating capacity is available (MAFB 2005a).

The Chiller Plant is a small facility that produces cold water to cool only 32 buildings around the installation (MAFB 2005a).

Natural Gas. Natural gas is supplied to McGuire AFB by Colonial Energy and the local distributor is Public Service Electric and Gas Company. The installation is serviced by two separately metered lines. An interruptible line services the Central Heating Plant and the main portion of the installation. A noninterruptible line feeds two mains, one to the west end of the installation and one to the Falcon Courts North housing area (MAFB 2005a).

Liquid Fuel. There are five primary types of fuels that are stored and distributed at McGuire AFB. These include JP-8 (jet fuel), No. 2 light fuel oil (FS-2), unleaded gasoline, bio-diesel, and diesel. Most of these fuels are trucked in; however, JP-8 is delivered through a commercial pipeline (MAFB 2005a). Four primary bulk fuel storage areas at the installation include the bulk fuel storage area, the BRAC hydrant system, the New Jersey Air National Guard facility, and the bulk heating oil storage facility at the Central Heat Plant (MAFB 2005a).

Water Supply. McGuire AFB receives its potable water through four wells, which draw water from the PRM aquifer. The PRM has received a critical rating by the NJDEP. This rating corresponds to the overuse of the aquifer, resulting in its inability to recharge at a sufficient rate. This critical rating has prompted the NJDEP to issue water allocation permits, as authorized by the New Jersey Water Supply Management Act. McGuire AFB applied for this permit as a matter of courtesy, although HQ AMC indicates that there is no waiver of sovereign immunity and the conditions imposed under the permit are not enforceable. McGuire AFB's water allocation permit entitles the installation to use 450.754 million

gallons (MG) of water per year (MAFB 2005a). The water usage from 2000 through 2003 averaged 411.315 MG annually.

The four wells that supply water have a rated capacity of 4.032 MG per day (MGD) (total capacity of 16.128 MGD). Average daily water usage on the installation ranges between 1.0 and 1.4 MGD. Water is treated at each well and is temporarily stored in 25,000-gallon aboveground storage tanks (ASTs). Distribution pumps transmit water from the ASTs to the water system and to a single elevated 750,000-gallon water storage tank. Currently, the system is maintained the McGuire AFB Water Department (MAFB 2005a).

Sanitary Sewer and Wastewater Systems. The McGuire AFB wastewater system discharges to the Fort Dix tertiary wastewater treatment plant, which began operation in 1994 under a joint agreement between McGuire AFB and Fort Dix. The plant treats both industrial and sanitary wastes from all lavatories, showers, and janitorial sinks. Domestic wastewater is discharged into the sanitary sewer system, which flows to the treatment facility through a system of gravity and forced mains. The Fort Dix treatment plant has a rated capacity of 4.6 MGD. The average daily flow of the treatment plant is 2.5 MGD of which 1.0 to 1.5 MGD comes from McGuire AFB. This indicates that the treatment facility has adequate capacity to handle the existing flow, as well as additional flow associated with future development (MAFB 2005a).

Storm Water Systems. The storm water system at McGuire AFB consists of surface water runoff from identifiable drainage areas that leaves the installation at six outfalls. Four of the outfalls are classified as ephemeral streams or drainage ditches and two of the outfalls flow into the primary drainage basins of North Run and South Run of Crosswicks Creek. All drainage from these surface water channels ultimately drain into the Delaware River (MAFB 2005a).

McGuire AFB currently operates under the conditions of an interim, individual NJPDES/Discharge to Surface Water Permit (Permit No. 0106747). The interim permit authorizes the discharge of storm water associated with industrial activity to surface waters, in accordance with NJPDES Rules (N.J.A.C. 7:14A). The McGuire AFB Storm Water Pollution Prevention Plan (SWPPP) was developed and implemented in accordance with Permit No. 0106747 (MAFB 2005c).

Communications. McGuire AFB owns and maintains all the outside copper and fiber optic cables on the installation that are designated for official use. Copper cable supports telephones, fire and crash systems, security alarm systems, radio systems, the Energy Monitoring and Control System, and low speed point-to-point data systems. Fiber optic cable supports the installationwide data network. The manhole/duct system is used to distribute the existing copper and fiber cables on the installation. All new military construction projects are required to provide the necessary copper and fiber cabling to resolve the shortfall for copper and fiber to new facilities. Additionally, new military construction projects require new manhole/ducts to be installed to accommodate both the fiber and copper cables. McGuire AFB is currently in the process of phasing out overhead cable that supports cable TV (MAFB 2005a).

Solid Waste Management. There are no active landfills on McGuire AFB. Most solid waste is disposed of through contract at the Burlington County Landfill. This landfill receives the solid waste material transported by Waste Management and miscellaneous shipments from independent contractors. Burlington County Landfill has a permitted capacity until 2016 at the current rate of receiving wastes, which has been steady to decreasing. Currently there is a plan for expanding so that the landfill will have permitted capacity until 2027 (Simkins 2007).

Solid wastes at the installation have been reduced by more than 50 percent since 1992 because of the resource recovery and recycling program and Pollution Prevention Program. The Burlington County Occupational Training Center is the contractor for recycling programs on the installation and in military

family housing. Usable items and equipment for turn in is handled by Defense Reutilization and Marketing Office (MAFB 2005a).

Bulk wastes are collected in dumpsters, labeled for bulk trash, clean wood, scrap metal, and concrete, in a central location. Asphalt debris is also occasionally stored in this area for short periods of time. Construction contractors are required to remove all debris; concrete and asphalt debris are recycled as required by New Jersey laws. Disposal of construction and demolition wastes is not counted against installation solid waste reduction goals. The disposal of such wastes associated with large-scale renovation/demolition projects is primarily a cost item at this time (MAFB 2005a).

Pollution Prevention. AFI 32-7080, *Pollution Prevention Program*, implements the regulatory mandates in the Emergency Planning and Community Right-to-Know Act; Pollution Prevention Act of 1990; EO 12873, *Federal Acquisition, Recycling, and Waste Prevention*; and EO 12902, *Energy Efficiency and Water Conservation at Federal Facilities*. AFI 32-7080 prescribes the establishment of Pollution Prevention Management Plans, which have management and minimization strategies for ozone depleting substances, USEPA 17 industrial toxics, hazardous wastes, municipal solid wastes, affirmative procurement of environmentally friendly products, energy conservation, and air and water pollutant reduction. The 305 AMW fulfills this requirement with the following plans:

- Pollution Prevention Management Plan (MAFB 2004c)
- Solid Waste Management Plan (MAFB 2004d)
- SWPPP (MAFB 2005c)
- Hazardous Waste Management Plan (AFIOH 2004)
- Discharge Prevention, Containment, and Countermeasure Plan (305 AMW 2003a)
- Discharge Cleanup and Removal Plan (305 AMW 2003b)
- Spill Prevention, Control and Countermeasures Plan (MAFB 2004e).

These plans ensure that McGuire AFB maintains a waste reduction program and meets the requirements of the CWA; the NPDES permit program; and Federal, state, and local requirements for spill prevention control and countermeasures.

3.11 Hazardous Materials and Wastes

3.11.1 Definition of the Resource

Hazardous materials are defined by 49 CFR 171.8 as “hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions” in 49 CFR Part 173. Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations within 49 CFR Parts 105–180.

Hazardous wastes are defined by the Resource Conservation and Recovery Act (RCRA) at 42 U.S.C. §6903(5), as amended by the Hazardous and Solid Waste Amendments, as “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of,

or otherwise managed.” Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes and their associated regulatory requirements are specified in 40 CFR Part 273. Four types of waste are currently covered under the universal waste regulations: hazardous waste batteries, hazardous waste pesticides that are either recalled or collected in waste pesticide collection programs, hazardous waste thermostats, and hazardous waste lamps.

Special hazards are those substances that might pose a risk to human health but are not regulated as contaminants under the hazardous waste statutes. Special hazards include asbestos-containing material (ACM) and lead-based paint (LBP). The presence of special hazards or controls over them might affect, or be affected by, a proposed action. Information on special hazards describing their locations, quantities, and condition assists in determining the significance of a proposed action.

DOD has developed the ERP, which is intended to facilitate thorough investigation and cleanup of contaminated sites on military installations. Through the ERP, DOD evaluates and cleans up sites where hazardous wastes have been spilled or released to the environment. Description of ERP activities provides a useful gauge of the condition of soils, water resources, and other resources that might be affected by contaminants. It also aids in identification of properties and their usefulness for given purposes (e.g., activities dependent on groundwater usage might be restricted until remediation of a groundwater contaminant plume has been completed).

For the USAF, AFD 32-70, *Environmental Quality*, and the AFI 32-7000 series incorporate the requirements of all Federal regulations, and other AFIs and DOD Directives for the management of hazardous materials, hazardous wastes, and special hazards. Evaluation will extend to generation, storage, transportation, and disposal of hazardous wastes when such activity occurs at or near the project site of the Proposed Action.

3.11.2 Existing Conditions

Hazardous Materials. AFI 32-7086, *Hazardous Materials Management*, establishes procedures and standards that govern management of hazardous materials throughout the USAF. It applies to all USAF personnel who authorize, procure, issue, use, or dispose of hazardous materials, and to those who manage, monitor, or track any of those activities. The 305 AMW has established a hazardous materials pharmacy, also known as the HAZMART, in accordance with AFI 32-7086. The pharmacy ensures that only the smallest quantities of hazardous materials necessary to accomplish the mission are purchased and used. The HAZMART tracks these materials through the Environmental Management System. As part of the Pollution Prevention Management Plan, McGuire AFB has established the Hazardous Material Management Process Team; a collaborative team composed of individuals from Environmental Flight, HAZMART, Logistics and Operations Group, Supply/Civil Engineering Material Control, Bioenvironmental Engineering, Safety, and Legal (MAFB 2004c).

Hazardous Wastes. The 305 AMW maintains a Hazardous Waste Management Plan (AFIOH 2004) as directed by AFI 32-7042, *Solid and Hazardous Waste Compliance*. This plan prescribes the roles and responsibilities of all members of McGuire AFB with respect to the waste stream inventory, waste analysis plan, hazardous waste management procedures, training, emergency response, and pollution prevention. The plan establishes the procedures to comply with applicable Federal, state, and local standards for solid waste and hazardous waste management.

McGuire AFB is a large-quantity hazardous waste generator (Handler Identification NJ2571824018). Building 2310 is the RCRA Part B Permitted Hazardous Waste Storage Facility.

Asbestos-Containing Material. Asbestos is regulated by USEPA under the CAA; Toxic Substances Control Act; and Comprehensive Environmental Response, Compensation, and Liability Act. USEPA has established that any material containing more than 1 percent asbestos by weight is considered an ACM. Friable ACM is any material containing more than 1 percent asbestos, and that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Nonfriable ACM is any ACM that does not meet the criteria for friable ACM.

Guidelines and procedures for recordkeeping, removal, encapsulation, enclosure, and repair activities associated with ACM-abatement projects are specified in the Asbestos Management Program Plan (305 AMW 2003c). In general, ACM is removed on an as-needed basis to minimize health risks from release of asbestos fibers during normal activities, maintenance, renovation, or demolition. A survey was performed on buildings at McGuire AFB to locate, identify, and evaluate ACM (305 AMW undated).

Lead-Based Paint. The Residential Lead-Based Paint Hazard Reduction Act of 1992, Subtitle B, Section 408 (commonly called Title X) regulates the use and disposal of LBP on Federal facilities. Federal agencies are required to comply with applicable Federal, state, and local laws relating to LBP activities and hazards. McGuire AFB has a Lead-Based Paint Management Program Plan that establishes the roles, responsibilities, and guidelines for activities involving the surveying and removal of LBP.

Polychlorinated Biphenyls. Polychlorinated biphenyls (PCBs) are a group of chemical mixtures used as insulators in electrical equipment such as transformers and fluorescent light ballasts. Federal regulations govern items containing 50 to 499 ppm PCBs. Chemicals classified as PCBs were widely manufactured and used in the United States throughout the 1950s and 1960s. PCB-containing oil is typically found in older electrical transformers and light fixtures (ballasts). Transformers containing greater than 500 ppm PCBs, between 50 and 500 ppm PCBs, and less than 50 ppm PCB are considered PCB, PCB-contaminated, and non-PCB, respectively.

Pesticides. Pest management practices at McGuire AFB are covered in the Pest Management Plan. Application of pesticides is addressed in the basewide SWPPP. McGuire AFB is currently utilizing an integrated pest management approach to pest control to minimize the types and quantities of pesticides used at the installation. Least-toxic chemical controls are used as a last resort (MAFB 2005c).

The application of pesticides, herbicides, and fertilizers varies across the installation, but focuses on two major areas: runways/taxiways and the golf course. With the exception of the golf course, pesticide management is currently handled from Facility 3450 (Entomology Building). Golf course pesticide operations are conducted out of Facility 1513. A pesticide management chemical inventory list is maintained at Facility 3450 (MAFB 2005c).

Radon. Radon is a naturally occurring radioactive gas found in soils and rocks. It comes from the natural breakdown or decay of uranium. Radon has the tendency to accumulate in enclosed spaces that are usually below ground and poorly ventilated (e.g., basements). Radon is an odorless, colorless gas that has been determined to increase the risk of developing lung cancer. In general, the risk increases as the level of radon and length of exposure increase.

USEPA has established a guidance radon level of 4 picocuries per liter (pCi/L) in indoor air for residences; however, there have been no standards established for commercial structures. Radon gas accumulation greater than 4 pCi/L is considered to represent a health risk to occupants.

Burlington County has a Zone 2 listing for radon. In Zone 2 areas, 99 percent of living areas and 92 percent of basements are below the USEPA radon guideline of 4 pCi/L (EDR 2007).

Environmental Restoration Program. The Defense Environmental Restoration Program (DERP) was formally established by Congress in 1986 to provide for the cleanup of DOD sites. The ERP and the Military Munitions Response Program (MMRP) are components of the DERP. The ERP requires each DOD installation to identify, investigate, and clean up hazardous waste disposal or release sites. The MMRP addresses nonoperational range lands that are suspected or known to contain UXO, discarded military munitions, or munitions constituent contamination. There were no MMRP sites identified.

The ERP for McGuire AFB has identified 42 sites, of which 36 are on McGuire AFB and 6 are on the BOMARC missile facility, a remote facility 11 miles east of McGuire AFB (MAFB 2004b). The 36 sites at McGuire AFB consist of old landfills, fire training areas, past equipment maintenance activities, and the bulk fuel storage area. Contamination in the form of elevated levels of VOCs, semivolatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons, metals, and pesticides are found in soil, sediments, and groundwater at many of these sites. Groundwater is impacted by fuels and chlorinated solvents in most instances. The locations of all ERP sites appear in **Figure 2-2**.

Through the Environmental Restoration Account, strategies have been developed for all sites to ensure cleanup as expeditiously as possible. The ERP sites are at various stages in the clean-up process, with some moving to completion, some in the active clean-up phase, and others still under investigation.

4. Environmental Consequences

The section contains four subsections. **Section 4.1** provides a general introduction to the environmental consequences analysis, including significance criteria for each resource area. **Section 4.2** presents the No Action Alternative, which is prescribed by CEQ regulations. **Section 4.3** provides a general analysis of the environmental consequences by resource area. **Section 4.4** provides the detailed analysis of the Proposed Action, as presented in **Section 2.1**. Potential cumulative effects that could occur as a result of implementing the Proposed Action and other past, present, and reasonably foreseeable projects are in **Section 5**.

4.1 Introduction

The intention of this section of the IDEA is to present both a general analysis of the environmental effects of installation development activities (see **Section 4.3**), as well as a summary of site-specific environmental effects of individual installation development projects (see **Section 4.4**). The general analysis identifies the general environmental effects on each resource area of the ongoing demolition, construction, and infrastructure upgrade activities, with a focus on avoiding those areas that are constraints to development. However, a general analysis of potential development activities alone does not provide the framework to assess adequately the potential environmental consequences of a single proposed project. Therefore, **Section 4.4** presents a detailed analysis of the representative demolition, construction, and infrastructure upgrades introduced in **Sections 2.1.2, 2.1.3, and 2.1.4**, respectively, to provide a range of potential consequences that could be expected from implementing the proposed projects with the greatest potential for adverse environmental effects. The representative projects were selected for detailed analysis because they are large in scale or have a unique aspect (e.g., proposed location or operational characteristics) with the potential to result in adverse environmental effects. In addition, **Section 4.4** contains a summary in tabular form of the environmental impacts associated with all projects identified over the next 5 years at McGuire AFB (refer to **Appendix A**). The analyses presented in **Sections 4.3 and 4.4** provide the basis for the cumulative effects analysis in **Section 5**. The No Action Alternative is presented in **Section 4.2** before the Proposed Action in order to provide a comparison of the potential environmental consequences of implementing the Proposed Action against taking no action.

The specific criteria for evaluating potential environmental effects of the No Action Alternative or the Proposed Action are described in the following text, identified by resource area. The significance of an action is also measured in terms of its context and intensity. The context and intensity of potential environmental effects are described in terms of duration, whether they are direct or indirect, the magnitude of the impact, and whether they are adverse or beneficial, as summarized below:

- **Short-term or long-term.** In general, short-term effects are those that would occur only with respect to a particular activity, for a finite period, or only during the time required for construction or installation activities. Long-term effects are those that are more likely to be persistent and chronic.
- **Direct or indirect.** A direct effect is caused by an action and occurs around the same time at or near the location of the action. An indirect effect is caused by an action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action.
- **Minor, moderate, or significant.** These relative terms are used to characterize the magnitude or intensity of an impact. A minor effect is slight, but detectable. A moderate effect is readily apparent. Significant effects are those that, in their context and due to their magnitude (severity), have the potential to meet the thresholds for significance set forth in CEQ regulations (40 CFR 1508.27) and, thus, warrant heightened attention and examination for potential means for

mitigation in order to fulfill the policies set forth in NEPA. Significance criteria by resource area are presented in the following text.

- **Adverse or beneficial.** An adverse effect is one having unfavorable or undesirable outcomes on the man-made or natural environment. A beneficial effect is one having positive outcomes on the man-made or natural environment.

The following text presents the criteria that would constitute a significant environmental effect resulting from implementation of the No Action Alternative (see **Section 4.2**), or the Proposed Action (either general demolition and construction activities as presented in **Section 4.3**, or any specific project as presented in **Section 4.4**). The same significance criteria are also applied to potential cumulative effects (see **Section 5**) of implementing the Proposed Action in conjunction with past, present, or reasonably foreseeable future actions.

Noise

Potential changes in the noise environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels), negligible (i.e., if the total area exposed to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased noise exposure to unacceptable noise levels). Projected noise effects are evaluated quantitatively and qualitatively. An action would be considered significant if it resulted in increased noise levels that were not compatible with Federal regulation, state regulation, or local ordinance.

Land Use

The significance of potential land use effects is based on the level of land use sensitivity in areas affected by a proposed action and compatibility of proposed actions with existing conditions. In general, a land use effect would be significant if the following were to occur:

- Be inconsistent or in noncompliance with existing land use plans or policies
- Preclude the viability of existing land use
- Preclude continued use or occupation of an area
- Be incompatible with adjacent land use to the extent that public health or safety is threatened
- Conflict with planning criteria established to ensure the safety and protection of human life and property.

Air Quality

Effects on air quality in NAAQS nonattainment areas are considered significant if the net changes in project-related pollutant emissions result in any of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Increase the frequency or severity of a violation of any ambient air quality standard
- Delay the attainment of any standard or other milestone contained in the SIP.

With respect to the General Conformity Rule, effects on air quality would be considered significant if the proposed Federal action would result in an increase of a nonattainment or maintenance area's emissions inventory by 10 percent or more for one or more nonattainment pollutants, or if such emissions exceed *de*

de minimis threshold levels established in 40 CFR 93.153(b) for individual nonattainment pollutants or for pollutants for which the area has been redesignated as a maintenance area.

The *de minimis* threshold emissions rates were established by USEPA in the General Conformity Rule to focus analysis requirements on those Federal actions with the potential to have significant air quality effects. The *de minimis* thresholds are similar, in most cases, to the definitions for major stationary sources of criteria and precursors to criteria pollutants under the CAA's New Source Review Program (CAA Title I). **Table 4-1** shows the *de minimis* thresholds of the pollutants for which McGuire AFB is in nonattainment.

In addition to the *de minimis* emissions thresholds, Federal PSD regulations define air pollutant emissions to be significant if the source is within 10 kilometers of any Class I area, and emissions would cause an increase in the concentration of any regulated pollutant in the Class I area of 1 $\mu\text{g}/\text{m}^3$ or more (40 CFR 52.21(b)(23)(iii)).

Table 4-1. Conformity *de minimis* Emissions Thresholds Applicable to McGuire AFB

Pollutant	<i>de minimis</i> Limit (tpy)
O₃ Moderate (8-hour standard) Nonattainment, Inside Ozone Transport Region	
VOC	50
NO _x	100
PM_{2.5} Nonattainment	
direct emissions	100
SO ₂	100
NO _x	100

Source: 40 CFR 93.153, as amended by *Federal Register* No 71, Vol 65, April 5, 2006, pp 17003–17009

Safety

Any increase in safety risks would be considered an adverse effect on safety. An effect would be significant if an action were to substantially increase risks associated with the safety of construction personnel, contractors, or the local community; substantially hinder the ability to respond to an emergency; or introduce a new health or safety risk for which the installation is not prepared or does not have adequate management and response plans in place.

Geological Resources

Protection of unique geological features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating potential effects of a proposed action on geological resources. Generally, adverse effects can be avoided or minimized if proper construction techniques, erosion-control measures, and structural engineering design are incorporated into project development.

Effects on geology and soils could be potentially significant if they would alter the lithology, stratigraphy, and geological structure that control groundwater quality, distribution of aquifers and confining beds, and groundwater availability; or change the soil composition, structure, or function within the environment.

Water Resources

Evaluation criteria for effects on water resources are based on water availability, quality, and use; existence of floodplains; and associated regulations. A proposed action would have significant effects on water resources if it were to do one or more of the following:

- Substantially reduce water availability or supply to existing users
- Overdraft groundwater basins
- Exceed safe annual yield of water supply sources
- Substantially affect water quality adversely
- Endanger public health by creating or worsening health hazard conditions
- Threaten or damage unique hydrologic characteristics
- Violate established laws or regulations adopted to protect water resources.

The potential effect of flood hazards on a proposed action is important if such an action occurs in an area with a high probability of flooding.

Biological Resources

The significance of effects on biological resources is based on the following:

- The importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource
- The proportion of the resource that would be affected relative to its occurrence in the region
- The sensitivity of the resource to proposed activities
- The duration of ecological ramifications.

Effects on biological resources would be significant if species or habitats of high concern are adversely affected over relatively large areas. Effects would also be considered significant if disturbances cause reductions in population size or distribution of a species of high concern.

Ground disturbance and noise associated with construction can directly or indirectly cause adverse effects on biological resources. Direct effects from ground disturbance are evaluated by identifying the types and locations of potential ground-disturbing activities in correlation to important biological resources. Habitat removal and damage or degradation of habitats might be adverse effects associated with ground-disturbing activities.

As a requirement under the ESA, Federal agencies must provide documentation that ensures that agency actions will not adversely affect the existence of any threatened or endangered species. The ESA requires that all Federal agencies avoid “taking” threatened or endangered species (which includes jeopardizing threatened or endangered species habitat). Section 7 of the ESA establishes a consultation process with the USFWS that ends with USFWS concurrence or a determination of the risk of jeopardy from a Federal

agency project. The “take” of a federally protected species under the ESA would be considered significant.

Pursuant to the PCMP (N.J.A.C. 7:50-6.33), the effects of the Proposed Action would be considered significant if either of the following were to occur:

- Irreversible adverse effect on habitats that are critical to the survival of any local population of state-listed threatened or endangered animal species.
- Development in the vicinity of Pinelands-listed threatened or endangered plants.

The significance of effects on wetland resources is proportional to the functions and values of the wetland complex. Quantification of wetlands functions and values, therefore, is based on the ecological quality of the site as compared with similar sites, and the comparison of the economic value of the habitat with the economic value of the proposed activity that would modify it. A significant adverse effect on wetlands would occur should either the major function or value of the wetland be substantially altered.

Pursuant to the PCMP (N.J.A.C. 7:50-6.7), effects on wetlands would be significant if one or more of the following modifications of a wetland would have an irreversible effect on the ecological integrity of the wetland and its biotic components including threatened and endangered species of plants or animals:

- An increase in surface water runoff discharging into a wetland
- A change in the normal seasonal flow patterns in the wetland
- An alteration of the water table in the wetland
- An increase in erosion resulting in increased sedimentation in the wetland
- A change in the natural chemistry of the ground or surface water in the wetland
- A loss of wetland habitat
- A reduction in wetland habitat diversity
- A change in wetlands species composition
- A significant disturbance of areas used by indigenous and migratory wildlife for breeding, nesting, or feeding.

The above significance criteria only apply to wetlands, not wetland transition areas.

Activities that occur in wetlands and wetland transition areas may be conducted pursuant to a general or individual permit, depending on the activity. The NJPC administers NJDEP’s general wetlands permit program in the Pinelands. For linear development projects (e.g., roads, utilities) and general development projects within the Pinelands, including those within wetlands and wetlands transition areas, an NJPC Application for Development must be completed and submitted to obtain all necessary permits (see letter from NJPC in **Appendix C**). It should be noted that the NJPC uses different processes to review linear development projects, as opposed to other activities proposed to occur within freshwater wetlands.

Cultural Resources

Under Section 106 of the NHPA, adverse effects on historic properties can include physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource’s significance; introducing visual or audible elements that are out of

character with the property or that alter its setting; neglecting the resource to the extent that it deteriorates or is destroyed; or the sale, transfer, or lease of the property out of agency ownership (or control) without adequate legally enforceable restrictions or conditions to ensure preservation of the property's historic significance.

For assessing the impacts of the Proposed Action on archeological resources, the APE is confined to the footprint of any proposed ground-disturbing activity (e.g., construction, grading in advance of paving, and excavation for new underground utilities). The APE for analysis of impacts on architectural resources includes buildings and structures that would be renovated or demolished, as well as historic buildings or structures with viewsheds that include the areas of proposed projects or that could be impacted by noise or vibration. The APE for analysis of impacts on resources of traditional, religious, or cultural significance to Native American tribes includes both those areas that would be impacted directly by ground disturbance as well as the viewshed and general setting of those resources.

Under NEPA, impacts on cultural resources are assessed as short-term or long-term; direct or indirect; and minor, moderate, or significant. Under Section 106 of the NHPA, the Proposed Action might have no effect, no adverse effect, or an adverse effect on historic properties.

Socioeconomic Resources

Construction expenditures are assessed in terms of direct effects on the local economy and related effects on other socioeconomic resources (e.g., housing). The magnitude of potential impacts can vary greatly, depending on the location of a proposed action. For example, implementation of an action that creates ten employment positions might go unnoticed in an urban area, but could have considerable impacts in a rural region. If potential socioeconomic changes were to result in substantial shifts in population trends or a decrease in regional spending or earning patterns, those effects would be considered adverse. A proposed action could have a significant effect with respect to the socioeconomic conditions in the surrounding ROI if the following were to occur:

- Change the local business volume, employment, personal income, or population that exceeds the ROI's historical annual change
- Adversely affect social services or social conditions, including property values, school enrollment, county or municipal expenditures, or crime rates
- Disproportionately impact minority populations or low-income populations.

Infrastructure

Effects on infrastructure are evaluated based on their potential for disruption or improvement of existing levels of service and additional needs for energy and water consumption, sanitary sewer and wastewater systems, and transportation patterns and circulation. Impacts might arise from physical changes to circulation, construction activities, introduction of construction-related traffic on local roads or changes in daily or peak-hour traffic volumes, and energy needs created by either direct or indirect workforce and population changes related to installation activities. In considering the basis for evaluating the significance of effects on infrastructure resources, several items are considered. These items include, for example, evaluating the degree to which the proposed construction projects could affect the existing solid waste management program and capacity of the area landfill. An effect might be considered adverse if a proposed action exceeded capacity of a utility.

Hazardous Materials and Wastes

Effects on hazardous materials and waste management would be considered significant if the Federal action resulted in noncompliance with applicable Federal and state regulations, or increased the amounts generated or procured beyond current McGuire AFB waste management procedures and capacities. Effects on the ERP would be considered significant if the Federal action disturbed (or created) contaminated sites resulting in adverse effects on human health or the environment. Effects on fuels management would be significant if the established management policies, procedures, and handling capacities could not accommodate the proposed activities.

4.2 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, McGuire AFB would not implement the projects proposed in the installation's community of plans, which would result in the continuation of existing conditions as described in **Section 3**. No direct environmental effects would be expected on the noise environment, land use, air quality, safety, geological resources, water resources, biological resources, cultural resources, socioeconomic resources, infrastructure, and hazardous materials and wastes. It is anticipated that future development would occur under the No Action Alternative, but those development projects would be analyzed through the preparation of project-specific NEPA documentation, as appropriate.

4.3 General Environmental Consequences of the Proposed Action by Resource Area

4.3.1 Noise

Intermittent short-term minor adverse effects from noise would be expected from the implementation of the Proposed Action.

Construction Noise. Building construction, modification, and demolition work can cause noise emissions above ambient sound levels. A variety of sounds come from graders, pavers, trucks, welders, and other work processes. **Table 3-1** lists noise levels associated with common types of construction equipment that are likely to be used under the Proposed Action. Since a typical urban neighborhood is usually around 60 to 70 dBA, noise emissions from construction projects can cause short-term, adverse effects.

Projects under the Proposed Action would require grading, paving, demolition, and building construction. All of the projects under the Proposed Action would occur on McGuire AFB. Some of these would occur close to military housing.

Construction noise varies depending on the type of construction being done, the area that the construction would occur in, and the distance from the source. Under the Proposed Action, the majority of projects are proposed in the center of the installation, with some projects proposed on the western edge. Populations several hundred feet away from the construction site could experience noise levels in the 70-dBA range. Populations adjacent to the project site could experience noise levels in the mid 80-dBA range. Examples of expected construction noise are as follows:

- Personnel living on the northeastern side of the installation, approximately 200 feet away from Buildings 2911 and 2913 and Facility 8510, would experience noise levels of approximately 78 dBA during the demolition of these buildings. These residents would also be approximately 2,440 feet from the site of the proposed Unified Headquarters Building and would experience noise levels of approximately 52 dBA during construction activities.

- Residents off the installation to the north, approximately 850 feet away from Building 3455, would experience noise levels of approximately 65 dBA during the demolition of this building. These residents would be about the same distance away from the construction of the GRDC and would experience noise levels of approximately 61 dBA during construction activities.
- Residents off the installation to the north, approximately 2,500 feet away from the proposed Auto Skills Center, would experience noise levels of approximately 56 dBA during the pavement demolition.

Demolition and construction activities would be expected to result in noise levels comparable to those indicated in **Table 4-2**. The noise levels shown in **Table 4-2** were calculated based on assumptions of several pieces of equipment operating at one time and should be considered only estimates for how loud a project site would sound at different distances.

Given the extent of the projects under the Proposed Action and the proximity to residents on the installation, adverse effects from construction noise are unavoidable. However, noise generation would last only for the duration of construction activities, and could be reduced through the use of equipment exhaust mufflers and restriction of construction activity to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.). It is not anticipated that the short-term increase in ambient noise levels from the Proposed Action would cause significant adverse effects on the surrounding populations.

Table 4-2. Estimated Noise Levels Resulting from Demolition and Construction Projects

Type of Activity	dBA at 50 feet	dBA at 300 feet	dBA at 500 feet	dBA at 1,000 feet	dBA at 3,000 feet
Demolition	90	74	70	64	54
Construction	85	70	65	59	50

Operational Impacts. It is not anticipated that vehicle traffic or aircraft operations would increase under the Proposed Action. No long-term effects on the ambient noise environment are anticipated as a result of the Proposed Action.

4.3.2 Land Use

Long-term beneficial effects would be expected on land use under the Proposed Action. The Proposed Action would occur entirely on McGuire AFB property. The proposed projects would be sited in a manner compatible with McGuire AFB's surrounding land uses and would avoid sensitive or constrained areas to the extent practicable. Proposed demolition projects would make some land available for proposed construction projects, which are all identified in **Appendix A**. Consequently, the proposed construction projects could be built in previously disturbed areas with compatible land use. Other demolition projects would remove facilities from the clear zones, thereby reducing incompatible land use. Proposed projects would occur in areas compatible with present and future land uses.

4.3.3 Air Quality

The Proposed Action would generate both temporary and long-term air pollutant emissions. The construction, demolition, and infrastructure projects related to the Proposed Action would generate air pollutant emissions as a result of grading, filling, compacting, trenching, demolition, and construction operations, but these emissions would be temporary and would not be expected to generate any off-site effects. The Proposed Action does not include a net increase in personnel or commuter vehicles.

Therefore, the Proposed Action's emissions from existing personnel and commuter vehicles would not result in an adverse impact on regional air quality. Regulated pollutant emissions from the Proposed Action would not contribute to or affect local or regional attainment status with the NAAQS.

The construction projects would generate total suspended particulate and PM₁₀ emissions as fugitive dust from ground-disturbing activities (e.g., grading, demolition, soil piles) and from combustion of fuels in construction equipment. Fugitive dust emissions would be greatest during the initial site preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity.

Fugitive dust emissions for various construction activities were calculated using emissions factors and assumptions published in USEPA's AP-42 (USEPA 2006c). These estimates assume that 230 working days are available per year for construction (accounting for weekends, weather, and holidays).

Construction operations would also result in short-term emissions of criteria pollutants as combustion products from construction equipment, as well as evaporative emissions from architectural coatings and asphalt paving operations. These emissions were calculated using emissions factors from USEPA's NONROAD emissions model (USEPA 2007c).

Because McGuire AFB is classified as a nonattainment area for 8-hour ozone and PM_{2.5}, General Conformity Rule requirements are applicable. However, the Proposed Action would generate emissions well below *de minimis* levels. In addition, the Proposed Action would generate emissions well below 10 percent of the emissions inventories for the MPIAQCR and the emissions would be short-term. Therefore, the demolition, construction, and infrastructure activities associated with the Proposed Action would not have significant effects on air quality at McGuire AFB or on regional or local air quality. **Appendix D** shows an example of how air emissions are calculated. **Section 4.4** discusses project-specific emissions in more detail.

Operational emissions associated with the Proposed Action would not be expected to result in adverse effects on air quality. Day-to-day operations associated with the Proposed Action would generate emissions of criteria pollutants as combustion products from the burning of natural gas by boilers used to provide comfort heating as well as the combustion of fuel oil by emergency generators to produce electrical power, but these emissions would typically be offset by the removal of older and more emissive equipment. In addition, local and regional pollutant effects resulting from direct and indirect emissions from stationary emissions sources under the Proposed Action would result in no new impacts on air quality as the same quantities of hazardous emitting chemical used under the existing procedures would be the same for new facilities and procedures. Any other project for the future out-years that would involve new or additional emissions would be addressed through Federal and state permitting program requirements under New Source Review regulations (40 CFR Parts 51 and 52).

4.3.4 Safety

Construction Site Safety. Short-term minor adverse effects could occur because implementation of the Proposed Action would slightly increase the short-term risk associated with construction contractors performing work at McGuire AFB during the normal workday because the level of such activity would increase. However, all construction contractors are required to follow and implement OSHA standards to establish and maintain safety procedures. Projects associated with the Proposed Action would not pose new or unacceptable safety risks to installation personnel or activities at the installation. The proposed projects would enable 305 AMW to meet future mission objectives at the installation and conduct or meet mission requirements in a safe operating environment. No long-term effects would be expected.

Construction workers could encounter contamination as a result of an ERP site or ACM and LBP. Demolition, construction, and infrastructure activities would be accomplished in accordance with Federal, state, and local regulations to minimize hazards associated with hazardous materials, wastes, and substances. These hazards are discussed in more detail in **Section 4.3.11**.

Explosive and Munitions Safety. Short-term minor adverse effects could occur during construction activities within the existing QD arcs. Contractors working in a QD arc would be exposed to an increased risk of potential explosions. No handling or transportation of munitions would occur while construction workers are within the QD arcs, which would minimize explosive safety risks. Any construction activities within the existing munitions storage area or EOD training area should be monitored for potential UXO. All projects located within QD arcs would be mission-necessary and consistent with current land uses inside the arc.

The Proposed Action would include demolition of the existing munitions storage facilities (Buildings 1913–1918 and 1939) and construction of 41 new earth-covered munitions storage igloos and other munitions administration and maintenance facilities. This project would be expected to result in long-term beneficial effects. The new munitions igloos would increase munitions storage capacity with newer, safer storage facilities. The QD arcs for the munitions storage area would remain the same following construction of the new igloos. See **Section 4.4.4** for analysis of the proposed demolition and construction in the munitions storage area (Projects D16 and C6, respectively).

4.3.5 Geological Resources

Topography. Long-term, negligible to minor, direct, adverse effects on the natural topography would be expected as a result of demolition, site preparation (i.e., grading, excavating, and recontouring), and construction under the Proposed Action. The majority of the Proposed Action project sites would occur in areas that were disturbed as a result of past installation activities.

Geology. Long-term, negligible to minor, direct, adverse effects on geological resources resulting from demolition, site preparation (i.e., grading, excavating, and recontouring), and construction activities would be expected as a result of implementing the Proposed Action. The majority of the Proposed Action project sites would occur in areas that were disturbed as a result of past installation activities.

Soils. Short-term and long-term, negligible to minor, adverse effects on soils would be expected as a result of the demolition of old facilities and construction of new facilities under the Proposed Action. Demolition and construction activities would directly affect the soils as a result of grading, excavation, placement of fill, compaction, mixing, or augmentation necessary to prepare the sites for development. Additional adverse effects could occur as a result of erosion and associated sedimentation during construction, especially in areas where vegetative cover was removed during site development. Construction projects would add impervious land mass, which would result in an increase in storm water runoff. However, implementation of erosion and sediment control and storm water best management practices (BMPs) during and after construction, designed consistent with all applicable permits, codes, ordinances, and regulations (see **Section 3.6.1**), would minimize the potential for adverse effects resulting from erosion and transport of sediments in storm water runoff. A site-specific ESCP that manages storm water and erosion and sedimentation both during and after construction might be prepared for projects that disturb 5,000 ft² or more of land (see **Section 3.6.1**). BMPs and standard erosion-control practices (e.g., silt fencing, sediment traps, application of water sprays, phased construction, and prompt revegetation of disturbed areas) would be implemented to reduce the effects of erosion and transport of sediments in storm water runoff for all construction projects regardless of size.

The Proposed Action has the potential to affect prime or unique farmlands, or farmlands of statewide importance. Land that is already in use for a designated purpose, such as a building, runway, or landing zone, would not be considered available for agriculture or use as farmland, so no effects would be expected. However, activities in forested or landscaped areas, where soil series with prime farmland classifications are present, might need to be coordinated with NRCS to determine if the site is prime farmland. Coordination with the Burlington County, New Jersey, Farmland Preservation Program would determine if an area would be considered farmland of statewide importance.

4.3.6 Water Resources

Short-term, minor, direct, adverse effects on groundwater and surface water would be expected as a result of demolition, construction, and infrastructure activities associated with the Proposed Action. Long-term, minor, indirect, adverse effects on groundwater and surface water quality would be expected as a result of the increases in impervious surfaces. Increases in impervious surfaces would change peak flow runoff, divert runoff to storm drains, and reduce runoff and infiltration of natural surfaces, which reduce shallow groundwater recharge over time. However, the McGuire AFB water allocation is sufficient for the installation population and the Proposed Action would not result in an increase in installation population (see **Section 4.3.10**). Water quality and human health would not be adversely affected by the Proposed Action.

Groundwater. The activities associated with the Proposed Action would have short-term and long-term, negligible, adverse effects on groundwater quality and recharge. It is assumed that the overall increase in impervious surfaces would slightly increase runoff to streams and decrease recharge of the aquifer system. Implementation of storm water and spill prevention BMPs developed consistent with the installation SWPPP and other applicable plans and regulations would minimize potential runoff or spill-related effects on groundwater quality and reduce potential adverse effects of increased impervious surfaces on groundwater recharge.

Surface Water. Implementation of the Proposed Action would be expected to have short-term, negligible, adverse effects on surface water and surface water quality. The size of each proposed project is presented in **Tables A-1, A-2, and A-3**. Overall, the Proposed Action could disturb as much as 6.2 million ft² (143 acres). However, many of the proposed infrastructure projects would involve pavement resurfacing or repair only (approximately 3.1 million ft², or 70 acres) and would not be expected to disturb the underlying soil. Proper engineering practices, erosion and sediment control, and storm water BMPs would be implemented during and after construction and would be consistent with the installation SWPPP and all applicable Federal, state, and local regulations and policies (see **Section 3.6.1**). These BMPs would minimize runoff-related impacts and the potential for adverse effects on surface water quality. A site-specific ESCP that manages storm water both during and after construction might be prepared for projects that disturb 5,000 ft² or more of land, but would be required for projects that disturb 1 acre or more (see **Section 3.6.1**). A negligible increase in the conveyance of nonpoint source pollutants in runoff to the tributaries on the installation could occur in association with construction and demolition activities.

Proposed demolition projects and some infrastructure projects have the potential to result in long-term, negligible, beneficial effects on surface water due to a reduction in the velocity and volume of storm water discharged to surface water as a result of a decrease in impervious surfaces. **Tables A-1 and A-3** detail the decreases in impervious surface associated with each demolition and applicable infrastructure project.

Proposed construction projects and some infrastructure projects would result in long-term, negligible, adverse effects on surface water due to increases of impervious surfaces associated with individual

projects, including the development of access roads and parking areas to accommodate the new facilities. The increases in impervious surfaces associated with each project are detailed in **Tables A-2** and **A-3**. Overall, the Proposed Action would result an increase of 101,600 ft² (2.3 acres) of impervious surfaces. Storm water BMPs would be implemented during and after construction and would be designed and implemented consistent with all applicable Federal, state, and local regulations and policies (see **Section 3.6.1**). These BMPs would minimize potential adverse effects on surface waters associated with the increase in impervious surfaces. An approved site-specific ESCP that manages storm water and erosion and sedimentation both during and after construction might be prepared for projects that disturb 5,000 ft² or more of land, but would be required for projects that disturb 1 acre or more (see **Section 3.6.1**). All projects, regardless of size, would use good housekeeping measures to reduce the potential for leaks and spills during construction, and BMPs to manage storm water runoff and erosion and sedimentation (MAFB 2005c).

Floodplain. In accordance with EO 11988, construction activities in the 100-year floodplain must be avoided. None of the proposed installation development activities would occur within the floodplain. Any construction activities within the 100-year floodplain at McGuire AFB would require approval from HQ AMC and separate NEPA analysis.

4.3.7 Biological Resources

The Proposed Action would result in short-term and long-term, negligible to minor, adverse effects on biological resources. Several protected species occur or have the potential to occur at McGuire AFB. While some natural areas exist, McGuire AFB is largely disturbed. The majority of the projects would occur on improved or disturbed areas of McGuire AFB. Due to past disturbance, these areas would not be considered valuable habitat.

Vegetation. Short-term and long-term, negligible to minor, adverse effects on vegetation could occur as a result of construction associated with the Proposed Action. The majority of projects associated with the Proposed Action would occur in the improved or disturbed areas of McGuire AFB, and would primarily affect landscaped species. The possible removal of trees and native vegetation could result in long-term minor adverse effects on vegetation. Vegetation clearing would be minimized to the extent possible, and any disturbed areas would be revegetated or landscaped with suitable plant species. Pursuant to N.J.A.C. 7:50-6.84(a)7, clearing of vegetation in excess of 1,500 ft² could require the submittal of an Application for Development to the NJPC (see letter from NJPC in **Appendix C**).

Long-term, minor, indirect, beneficial effects on vegetation could result from demolition projects. Project areas that are not redeveloped could be revegetated, creating additional green space on the installation.

Wildlife. Short-term, negligible to minor, adverse effects on wildlife could occur as a result of construction noise and minor loss of habitat associated with the Proposed Action. The majority of projects associated with the Proposed Action would occur in improved or disturbed areas of McGuire AFB that are not considered valuable wildlife habitat. Birds, mammals, and reptiles that occur at the installation might visit these areas, but are likely to spend the majority of their time in the undeveloped portions. Most wildlife that occurs at McGuire AFB is adapted to a suburban and urban environment. Therefore the effects of construction noise and heavy equipment use would be slightly adverse in the short-term. However, wildlife affected by noise would be expected to quickly recover once the construction noise ceased.

Long-term, minor, indirect, beneficial effects on wildlife habitat could result from demolition projects. Vegetation could grow and wildlife habitat could develop on disturbed areas if they are not redeveloped.

Protected and Sensitive Species. No adverse effects on federally listed species would be expected to occur as a result of implementing the Proposed Action; there are no federally listed species documented at McGuire AFB though the bog turtle is known to occur in the vicinity of McGuire AFB. State-endangered species that occur at McGuire AFB include the upland sandpiper, grasshopper sparrow, and savannah sparrow (MAFB 2001). Pursuant to the PCMP (N.J.A.C. 7:50-6.33), the effects of the Proposed Action would be considered significant if irreversible adverse effects on habitats that are critical to the survival of any local population of state-listed threatened or endangered animal species were to occur. Any project potentially affecting a state-listed species should be coordinated with NJDEP–New Jersey Division of Fish and Wildlife, in accordance with the guidelines set forth in the installation’s INRMP. BMPs would be used to avoid impacts on state-endangered and migratory species. No Pinelands-listed species are known to occur at McGuire AFB.

In a letter dated November 20, 2007, the USFWS concurred that the Proposed Action would not likely affect the federally listed bog turtle; guidelines for conducting bog turtle surveys were provided with the letter to aid in determining occurrence of suitable habitat and possibility for the presence of bog turtles (Staples 2007a, see **Appendix C**).

Wetlands. No direct effects on wetlands would occur as a result of the Proposed Action. There are no demolition, construction, or infrastructure activities proposed in wetlands. However, some demolition, construction, and infrastructure activities are proposed within 300 feet of wetlands. These projects could have long-term and short-term, minor, indirect, adverse effects on wetlands associated with storm water runoff and erosion and sedimentation. Storm water management and erosion and sediment control BMPs would be implemented to minimize and avoid these effects (see **Section 4.3.6**).

Long-term, minor, indirect, beneficial effects on wetlands could result from demolition projects in wetland transition areas, following stabilization of the project areas. Beneficial effects associated with a decrease in impervious surfaces could include a reduction in storm water runoff and an increase in infiltration into natural surfaces. Conversely, long-term, minor, indirect adverse effects on wetlands could result from construction projects in wetland transition areas. Storm water management would be incorporated into all construction projects.

Pursuant to Section 404 of the CWA, the New Jersey Freshwater Protection Wetlands Act (N.J.S.A. 13:9B), and Subchapter 6 of the PCMP (N.J.A.C. 7:50-6.1 to 6.14), adverse effects on wetlands and wetlands transition areas would be minimized to the maximum extent practicable. All required permits would be obtained prior to any activities that would affect wetland habitat or 300-foot transition areas, and any required mitigation would be implemented.

See **Sections 4.4.1.2, 4.4.2.2, 4.4.3.1, 4.4.3.2, 4.4.3.3, and 4.4.4** for identification of the projects proposed within 300 feet of wetlands, and for a discussion of the potential impacts associated with those projects. If a proposed project is relocated into a wetland, then that project would require approval from HQ AMC and additional NEPA analysis. Additional permitting pursuant to Section 404 of the CWA, the New Jersey Freshwater Protection Wetlands Act (N.J.S.A. 13:9B), and Subchapter 6 of the PCMP (N.J.A.C. 7:50-6.1 to 6.14) would also be required.

4.3.8 Cultural Resources

The statements made regarding the impacts of the Proposed Action on archeological resources are valid for all of the projects discussed in **Section 4.4**. The text provided here will, therefore, not be repeated in the discussions of the representative projects (**Sections 4.4.1, 4.4.2, and 4.4.3**) and all other projects (**Section 4.4.4**).

Archeological Resources. A review of previous investigation reports and correspondence between the New Jersey SHPO and McGuire AFB indicates that all of the acreage within the installation has been subjected to archeological survey or has been written off as not requiring survey due to previous disturbance. No prehistoric sites have been recorded within the boundaries of the installation. Eleven historic sites have been recorded; of these, three have been determined eligible for listing in the NRHP based on the results of Phase I survey and Phase II testing and evaluation investigations. These three sites (28Bu458, 28Bu459, and 28Bu473) are all outside of the APE for the Proposed Action; accordingly, the Proposed Action has no potential to impact archeological resources.

Should any future projects be proposed that have the potential to impact the three known sites, McGuire AFB will need to coordinate with the SHPO and any interested federally recognized Native American tribes regarding ways of avoiding, minimizing, or mitigating the impacts. In the event of any inadvertent find of archeological materials within the APE during implementation of the Proposed Action, McGuire AFB will follow the procedures for inadvertent discovery outlined in the installation's Integrated Cultural Resources Management Plan (ICRMP) (MAFB 2003).

Architectural Resources. A review of previous investigation reports and correspondence between the New Jersey SHPO and McGuire AFB indicates that all buildings and structures on the installation that were constructed prior to 1947 have been inventoried and evaluated. Of these, only the World War II temporary structures (Buildings 3202, 3301, 3303, 3304, 3305, 3306, 3310, 3311, 3312, 3314, 3315, 3405, 3413, 3415, 3426, 3462, and 3701) are considered eligible for listing in the NRHP. Under the 1986 Programmatic Memorandum of Agreement regarding World War II temporary structures, these structures can be demolished without further review under Section 106 of the NHPA. Alterations to these structures, however, or impacts on their setting (viewshed) would require review under Section 106.

McGuire AFB has also completed two investigations relating to the Cold War significance of its buildings and structures. These investigations found that only the SAGE building (Building 1907) and the BOMARC complex on Fort Dix had significant Cold War-era associations; the remaining buildings constructed between 1947 and 1989 were not considered to have sufficient association to be considered eligible under Criterion Consideration G for resources less than 50 years old. The McGuire AFB ICRMP (MAFB 2003) notes that the SHPO had not concurred with the results of these investigations.

The majority of buildings and structures at McGuire AFB were constructed between 1956 and 1963. These buildings have either recently turned 50 years of age or will turn 50 years old within the timeframe covered by the Proposed Action. The most recent evaluation of these buildings was completed in 1996 (AMC 1996) and only considered eligibility relative to Criterion Consideration G for Cold War-era significance; these buildings have not been evaluated under Criteria A–D of the NRHP. The collection of buildings constructed within this time period (1956–1963) also has not been evaluated as a historic district. If any of the buildings within the APE for the Proposed Action are determined eligible for listing in the NRHP, either individually or as contributing resources to a historic district, the effects of the Proposed Action on those buildings would need to be reviewed under Section 106 of the NHPA. Because of the possible NRHP eligibility of a number of the buildings within the APE (refer to **Section 4.4** for specific projects that have been identified), the Proposed Action has the potential to result in long-term, direct, moderate, and adverse impacts on historic properties. Therefore, in accordance with NHPA; AFI 32-7065, *Cultural Resources Management Program*; and the installation's ICRMP, McGuire AFB will evaluate potentially eligible structures and coordinate with the SHPO as required prior to implementation of a particular project.

Resources of Traditional, Religious, or Cultural Significance to Native American Tribes. McGuire AFB is not aware of any resources of interest to Native American tribes within the boundaries of the installation. Given the absence of evidence for pre-contact period use of this land area, it is unlikely that

such resources are present. However, McGuire AFB has not consulted with any federally recognized Native American tribes regarding this issue. Under the requirements of both NEPA and NHPA, consultation regarding the potential of the Proposed Action to impact resources of traditional, religious, or cultural significance should occur during the planning stages for the Proposed Action so that impacts can be avoided, minimized, or mitigated. Until that consultation has occurred, it is not possible to assess the impacts of this project on resources of traditional, religious, or cultural significance to Native American tribes.

4.3.9 Socioeconomic Resources

Socioeconomic Resources. Short-term minor direct beneficial impacts would be expected under the Proposed Action as a result of construction expenditures. The proposed demolition, construction, and infrastructure projects would cost approximately \$234 million over 5 years. The Gross State Product of New Jersey in 2006 was approximately \$453 billion (LWD 2007); therefore, the proposed construction, demolition, and infrastructure projects would represent a negligible percentage (less than 0.1 percent) of the Gross State Product per year over 5 years.

The Proposed Action does not involve a change of personnel at McGuire AFB, and the proposed construction and demolition activities would be temporary over the next 5 years. Therefore, no permanent or long-term effects on population, personal income, school enrollment, poverty levels, or other demographic or employment indicators in the ROI would be expected.

Environmental Justice. Potential adverse effects from new construction activities would occur on McGuire AFB with no adverse effects anticipated off-installation. Construction activities at McGuire AFB would be dispersed throughout the installation over the next 5 years. Possible adverse effects from construction such as increased traffic, noise, and decreased air quality would be minimal and would not likely be noticeable to residents off the installation. Therefore, no disproportionate impacts on minority or low-income populations from the Proposed Action were identified.

4.3.10 Infrastructure

The Proposed Action would not result in long-term adverse effects on the installation's infrastructure. Long-term beneficial effects would be realized from improved infrastructure and proposed projects. Most routine infrastructure improvements are categorically excluded from detailed analysis under Appendix B to 32 CFR Part 989 (i.e., A2.3.8, A2.3.9, A2.3.10, A2.3.11, A2.3.12, A2.3.13, or A2.3.14), unless a particular project is unusually large or traverses a sensitive area of the installation. Infrastructure projects that would normally be categorically excluded from analysis in an EA or EIS are not included in this IDEA (see **Appendix A** for a complete list of projects that are analyzed in this IDEA).

Airfield. Short-term, minor, direct, adverse effects on the airfield would be expected from the Proposed Action. McGuire AFB proposes several airfield upgrades, such as repair of both runways and parking ramps. Repair and construction of airfield pavements would temporarily place portions of the airfield out of service. This would create heavier traffic on the portions of the airfield that remain in service.

Long-term, minor, direct, beneficial effects on the airfield would be expected from the Proposed Action. Planned airfield pavement repairs and construction would improve the condition of the McGuire AFB airfield and aircraft operations at the installation. The long-term beneficial effects associated with the Proposed Action would outweigh the short-term adverse effect.

Transportation. Short-term, negligible, direct, adverse effects on the transportation network would be expected from the Proposed Action. Increased traffic associated with demolition and construction

vehicles would be expected to have a short-term minor adverse effect on the transportation network at McGuire AFB. The construction and demolition phase of the Proposed Action would require delivery of materials to and removal of debris from demolition and construction sites. Construction traffic would compose a small percentage of the total existing traffic; many of the vehicles would be driven to and kept on-site for the duration of construction and demolition, resulting in relatively few additional trips. The proposed installation development activities would occur at different times and locations on McGuire AFB which would further reduce construction traffic. Any potential increases in traffic volume associated with proposed demolition and construction activity would be temporary.

Long-term, minor, direct, beneficial effects on the transportation network would be expected from the Proposed Action. McGuire AFB proposes several transportation upgrades, such as repairing and resurfacing roads, adding an access road, adding parking lots, and other parking lot improvements. The Proposed Action would improve the condition of the transportation network at McGuire AFB and provide additional parking on the installation.

Electrical. Short-term, negligible, direct, adverse effects on the electrical system would be expected during demolition and construction of the proposed projects. Short-term electrical interruptions could be experienced when buildings are disconnected from or connected to the McGuire AFB electrical distribution system. Electrical power is available in all areas of the Proposed Action.

Long-term, negligible, indirect, beneficial effects on electrical systems would be expected from the Proposed Action by demolishing old buildings with outdated electrical systems and constructing new buildings. Due to the growth on the installation, and technological advancements, the electrical system is continually improved to meet growing needs at McGuire AFB. The Proposed Action would result in a negligible change in electrical demands on the installation.

Central Heating and Cooling. Short-term, negligible, adverse effects on the central heating system at McGuire AFB would be expected as a result of the Proposed Action. Short-term interruptions in heating and cooling services could be experienced when buildings are disconnected from or reconnected to the central heating system. The Proposed Action would result in a negligible change in demand on the central heating and cooling system.

Natural Gas. Short-term, negligible, direct, adverse effects on the natural gas system would be expected during construction of the proposed projects. Short-term electrical interruptions could be experienced when buildings are disconnected from or connected to the McGuire AFB natural gas system. The Proposed Action would result in a negligible change in natural gas demands at the installation.

Liquid Fuel. Long-term, minor, indirect, beneficial effects on the liquid fuels systems would be expected from the Proposed Action. Improvements for bulk fuels distribution, including repairing the truck offload facility would occur. Additionally, a Type III hydrant system would be constructed. These projects would create beneficial effects on the liquid fuel system by increasing the capacity and efficiency of the system.

Water Supply. Short-term negligible effects on the water supply systems would be expected from the Proposed Action. Short-term interruptions could be experienced when buildings are disconnected from or connected to the McGuire AFB water supply system. Water necessary for construction would be obtained from the McGuire AFB water supply system. Construction water needs would be very limited and have little effect on the water supply system. Water supply is available in all areas of the Proposed Action. The Proposed Action would result in a negligible change in demand for potable water.

Sanitary Sewer and Wastewater Systems. Short-term negligible effects on the sanitary sewer and wastewater systems would be expected from the Proposed Action. Short-term interruptions could be experienced when buildings are disconnected from or connected to the sanitary sewer and wastewater systems. Sanitary sewer is available in all areas of the Proposed Action. The Proposed Action would result in a negligible change in demand for sanitary sewer and wastewater systems use.

Storm Water Systems. Long-term, negligible, adverse effects on the McGuire AFB storm water system would be expected as a result of an increase in impervious surfaces associated with the Proposed Action. Any project that proposes 0.25 acres of “new” impervious surfaces or 1 acre of disturbance overall is considered a “major development” and triggers state storm water management rules (N.J.A.C. 7:8). The rules emphasize, as a primary consideration, the use of nonstructural storm water management techniques including minimizing disturbance, minimizing impervious surfaces, minimizing the use of storm water pipes, and preserving natural drainage features. The rules also set forth requirements for groundwater recharge, storm water runoff quantity control, and storm water runoff quality control. Additionally, a site-specific ESCP that manages storm water both during and after construction might be prepared for projects that disturb 5,000 ft² or more of land, but would be required for projects that disturb 1 acre or more (see **Section 3.6.1**). Proposed pavement resurfacing or repair projects would not result in ground disturbance or increase impervious surfaces, so adverse effects on storm water systems resulting from these types of projects would not be expected.

Communications. Short-term, negligible, adverse effects on the communications systems at McGuire AFB would be expected from the Proposed Action. Short-term interruptions could be experienced when buildings are disconnected from and connected to the communications systems. McGuire AFB upgrades the communications system on the installation as needed.

Solid Waste Management. Short-term, minor, direct, adverse effects would result from increased construction and demolition debris production. Solid waste generated from the proposed construction and demolition activities would consist of building materials such as solid pieces of concrete, metals (e.g., conduit, piping, and wiring), and lumber. Contractors would be required to recycle construction and demolition debris to the greatest extent possible as part of installation policy, thereby diverting it from landfills. The contractor would dispose of nonrecyclable construction and demolition debris at an off-site permitted landfill facility. As described in **Section 2.1**, construction and demolition activities would occur over an estimated 5-year timeframe.

Pollution Prevention. It is anticipated that the Proposed Action would not affect the pollution prevention program at McGuire AFB. Quantities of hazardous material and chemical purchases, off-installation transport of hazardous waste, disposal of solid waste, and energy consumption would continue. Operation of new facilities under the Proposed Action would require procurement of products containing hazardous materials, generation of hazardous waste, and consumption of energy consistent with the existing conditions.

4.3.11 Hazardous Materials and Wastes

The Proposed Action would not result in long-term adverse effects on hazardous materials use or hazardous waste generation. Short-term minor adverse effects resulting from use of hazardous materials during demolition and construction, such as sealants and solvents, would be minimal.

Hazardous Materials. No effects on hazardous materials management during demolition, construction, and operation of the proposed projects would be expected. Products containing hazardous materials would be procured and used in accordance with practices established at McGuire AFB. AFI 32-7086, *Hazardous Materials Management*, establishes procedures and standards that govern management and

procurement of hazardous materials throughout the USAF. This mechanism is referred to as the HAZMART. Contractors would be responsible for the management of hazardous materials, which would be handled in accordance with Federal and state regulations. Contractors must report use of hazardous materials to the HAZMART including pertinent information (e.g., MSDS). If a material that is less hazardous can be used, the HAZMART should make these recommendations. There would be no new chemicals or toxic substances used or stored at these installations. It is anticipated that the quantity of products containing hazardous materials used during the demolition and construction activities would be minimal and their use would be of short duration.

It is also anticipated that the quantities of hazardous materials removed from facilities proposed for demolition and used at facilities proposed for construction would not exceed current hazardous materials management capabilities at McGuire AFB.

Hazardous Wastes. Hazardous wastes generated during construction, demolition, and operation of the proposed projects would be negligible. Contractors would be responsible for the disposal of hazardous wastes in accordance with Federal and state laws and regulations. Contractors would also be required to follow the McGuire AFB Hazardous Waste Management Plan (AFIOH 2004). Waste produced would not be expected to affect the management plans or capacities for handling this waste. Therefore, the Proposed Action would contribute negligibly to the installation's hazardous waste management program and result in no adverse effects.

Asbestos-Containing Material. USAF regulations prohibit the use of ACM for new construction. Buildings scheduled for demolition could contain ACM, and, therefore, would need to be surveyed by the contractor prior to demolition activities. McGuire AFB keeps records on ACM maintenance and abatement. Sampling and abatement of ACM would occur prior to demolition activities and would be handled in accordance with the McGuire AFB Asbestos Management Program Plan (305 AMW 2003c) and USAF policy.

Lead-Based Paint. USAF regulations prohibit the use of LBP for new construction. Buildings scheduled for demolition could contain LBP and as such, it would be the Contractors responsibility to comply with all testing, abatement, and disposal procedures identified in the McGuire AFB Lead Based Paint Management Plan (305 AMW 2006) and USAF policy.

Polychlorinated Biphenyls. Short-term minor adverse effects from PCBs would be expected. The potential exists for PCB-containing equipment to be present in many of the structures proposed for demolition. If sampling shows PCBs to be present, the equipment would be disposed of in accordance with Federal, state, and local regulations. PCB contamination is associated with several of the ERP sites at McGuire AFB. Coordination with 305 CES/CEV regarding the nature of any potential PCB contamination at proposed work sites would be advisable.

Pesticides. Short-term minor adverse effects could be expected. Pesticide contamination is associated with several of the ERP sites at McGuire AFB. Coordination with 305 CES/CEV regarding the nature of any potential pesticide contamination at proposed work sites would be advisable. Future pesticide applications at the proposed projects would be conducted in accordance with the existing Pest Management Plan.

Radon. Burlington County has a Zone 2 listing for radon. In Zone 2 areas, 99 percent of living areas and 92 percent of basements are below the USEPA radon guideline of 4 pCi/L (EDR 2007). Consequently, McGuire AFB would be considered an area of low radon emissions and, therefore, no exposure to radon gas would be anticipated from the Proposed Action.

Environmental Restoration Program. There is a potential for workers to encounter contamination during construction and demolition activities within ERP sites. Therefore, it is recommended that a health and safety plan be prepared in accordance with OSHA requirements prior to commencement of demolition and construction activities in or near an ERP site. Workers performing soil-removal activities within ERP sites are required to have OSHA 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training. In addition to this training, supervisors are required to have an OSHA Site Supervisor certification. Should contamination be encountered, then handling, storage, and disposal activities would be conducted in accordance with applicable Federal, state, and local regulations; AFIs; and McGuire AFB programs and procedures. HAZWOPER regulations that protect workers and the public at or near a hazardous waste clean-up site are discussed in 29 CFR 1910.120 and 29 CFR Part 1926.

4.4 Detailed Environmental Consequences of the Proposed Action

The section presents the potential environmental consequences that could occur as a result of the Proposed Action. Sections 4.4.1, 4.4.2, and 4.4.3 analyze in detail those projects identified in Section 2 as representative of potential environmental consequences because of size or other sensitive aspects of these projects.

4.4.1 Representative Demolition Projects

4.4.1.1 D1. Demolish Building 2911, Building 2913, and Facility 8510

Building 2911, the Shoppette, was constructed in 1957, and Building 2913, the Exchange Services Station, was constructed in 1960. Facility 8510 is used for POV parking and surrounds Buildings 2911 and 2913. These facilities are old and have outlived their useful lives. Project D1 would demolish both buildings (13,414 ft² and 3,300 ft², respectively) and the pavement (12,222 square yards [yd²] or approximately 110,000 ft²) and create open space on McGuire AFB that could be used for future development. As shown in Figure 4-1, there are no sensitive areas or resources in the project area.

Noise. Short-term minor adverse effects on noise levels would be expected as a result of the demolition of these two buildings and the parking lot. The noise emanating from the proposed demolition would be localized, short-term, and intermittent during construction equipment and machinery operations. Table 3-1 shows the predicted noise levels for various pieces of construction equipment operating at 50 feet from the source, and Table 4-2 shows estimated noise levels that would be expected at varying distances from a demolition site. Heavy construction equipment would be operated periodically during demolition, which would limit the duration of increased noise levels. The proposed demolition would be expected to result in noise levels comparable to those indicated in Table 4-2. This area of McGuire AFB is used for administrative and community purposes; populations potentially affected by noise would include mainly USAF personnel in the barracks across South Bolling Boulevard. Personnel would be approximately 200 feet from the source of the demolition noise; noise levels would be very loud, and comparable to a very noisy urban area (approximately 78 dBA, refer to Figure 3-1 and Table 4-2).

Land Use. Long-term beneficial effects would be expected from demolition of Buildings 2911 and 2913 and Facility 8510. Demolition activities would have beneficial effects on the installation's organizational functions by removing old, outdated facilities and creating space for future projects. The construction of new facilities where land has been made available by demolition reduces the amount of undisturbed land required for future development. The demolition of these facilities, which are currently within the administrative land use category, would make land available for the construction of new facilities. No changes in land use are planned in direct association with this project, but the demolition would make available a large portion of unconstrained and previously disturbed land for future development; any future development of this land would be compatible with present and future land uses.

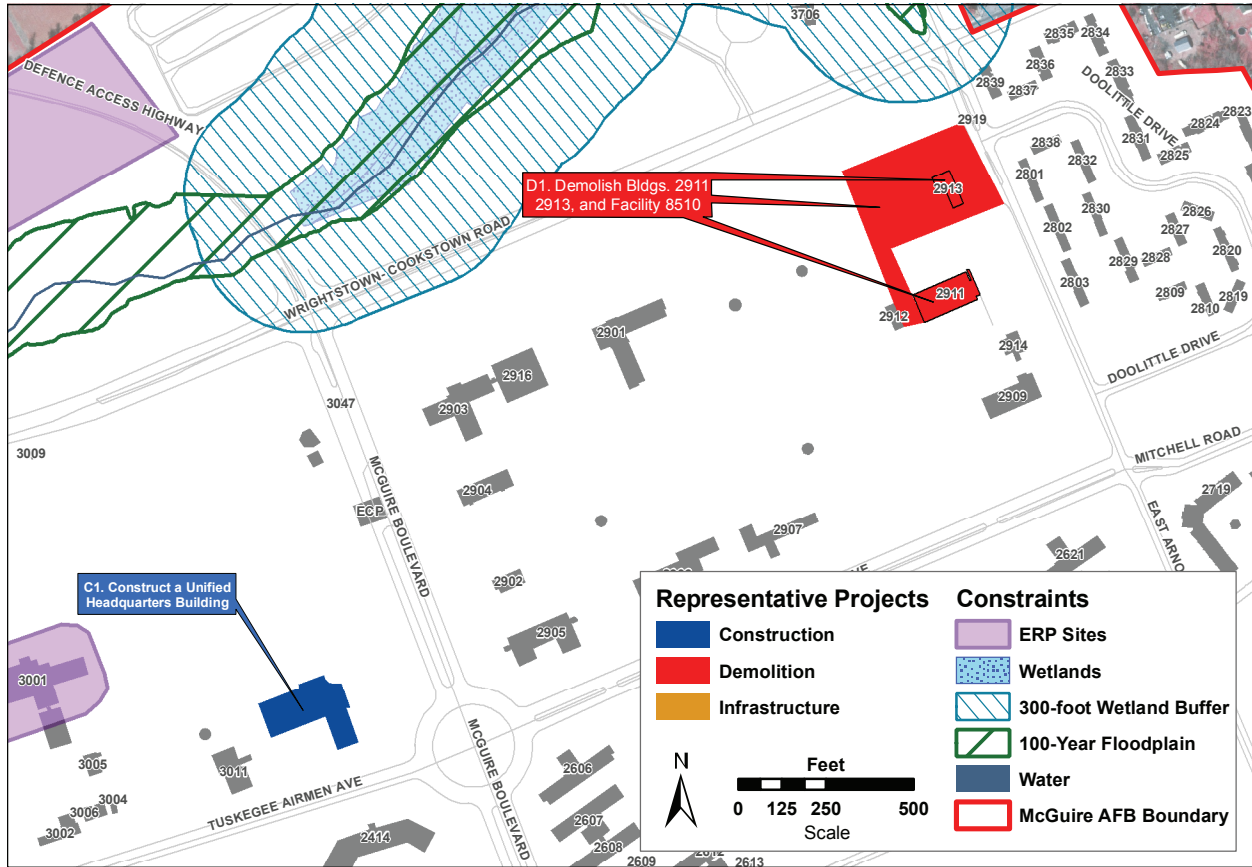


Figure 4-1. Proposed Projects D1 and C1 Relative to Known Constraints

Air Quality. Short-term minor adverse effects would be expected as a result of the demolition of the Building 2911, Building 2913, and Facility 8510. Demolition activities would result in air emissions from the operation of heavy machinery. Fugitive particulate matter would be minimized by continually spraying water over the demolition area. Demolition of these facilities would be expected to result in air emissions comparable to those indicated in **Table 4-3**. This project would not exceed *de minimis* thresholds, nor would it produce criteria pollutant emissions exceeding 10 percent of the regional emissions inventory.

Table 4-3. Expected Criteria Pollutant Emissions Resulting from Project D1

	NO _x (tpy)	VOC (tpy)	CO (tpy)	SO ₂ (tpy)	PM (tpy)	PM _{2.5} (tpy)
Estimated D1 Emissions	2.355	0.140	0.931	0.047	3.778	0.682
MPIAQCR <i>de minimis</i> threshold	100	50	NA	100	NA	100
Project Percentage of Regional Emissions Inventory (MPIAQCR)	0.0009%	<0.0001%	<0.0001%	<0.0001%	0.0034%	0.0017%

Sources: emissions calculated using USEPA 2007c and USEPA 2006c, region emissions estimated using USEPA 2006a

Note: NA = not applicable

Safety. Short-term minor adverse effects could occur. Demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adherence to established OSHA, USEPA, and USAF safety regulations. Because of their ages, Buildings 2911 and 2913 should be assumed to contain ACM and LBP; these materials require appropriate removal, handling, and disposal during demolition activities by qualified personnel.

Geological Resources. Short-term minor adverse effects would be expected as a result of grading, excavating, and recontouring of the soil. A total of 126,712 ft² (2.9 acres) of soil would be disturbed. The proposed demolition would require authorization under the statewide NJPDES Construction and Mining Activity General Storm Water Permit (NJ0088323) or an individual permit. An ESCP would be developed as a requirement of the permit. The development of an ESCP with BMPs to manage erosion and sedimentation and storm water runoff during and after demolition would minimize the effects of erosion and sedimentation. The demolition project would also comply with the installation's SWPPP (MAFB 2005c) and all applicable Federal, state, and local regulations and policies.

The Urban Land-Collington complex, 0 to 5 percent slopes is mapped under Buildings 2911 and Facility 2913 and 8510. This complex of soils is not hydric and it does not have a farmland classification. Therefore, no adverse effects on prime farmland would occur as a result of this project.

Water Resources. The demolition of Buildings 2911 and 2913 and Facility 8510 has the potential to result in short-term, negligible, adverse effects on water resources as a result of erosion and sedimentation associated with ground-disturbing activities (126,712 ft² [2.9 acres]) during demolition. The proposed demolition would require authorization under the statewide NJPDES Construction and Mining Activity General Storm Water Permit (NJ0088323) or an individual permit. An ESCP would be developed as a requirement of the permit. The development of an ESCP with BMPs to manage storm water runoff during and after demolition would minimize effects on surface water and groundwater. The demolition project would also comply with the installation's SWPPP (MAFB 2005c) and all applicable Federal, state, and local regulations and policies.

The demolition of Buildings 2911 and 2913 and Facility 8510 has the potential to result in long-term, negligible, beneficial effects on water resources associated with a decrease in impervious surfaces. The demolition of these buildings would result in a decrease of 126,712 ft² (2.9 acres) of impervious surfaces (see **Table A-1**). This decrease would result in a negligible reduction in the velocity and volume of storm water runoff.

Biological Resources. No adverse effects on biological resources would occur as a result of demolition of Buildings 2911 and 2913 and Facility 8510. The proposed demolition is in an area that is heavily disturbed. There is minimal existing vegetation, no suitable habitat for wildlife, and no wetlands. Furthermore, there are no known federally protected species that occur at McGuire AFB. No state-endangered or rare species would be affected by this project. McGuire AFB is committed to managing biological resources in accordance with all applicable Federal, state, and local regulations and policies.

Cultural Resources. Neither of the buildings proposed for demolition under Project D1 have been evaluated for eligibility under Criteria A–D of the NRHP. The collection of buildings constructed within this time period (1956–1963) at McGuire AFB also has not been evaluated as a historic district. If Buildings 2911 and 2913 are determined eligible for listing in the NRHP, either individually or as contributing resources to a historic district, the effects of the Proposed Action on those buildings would need to be reviewed under Section 106 of the NHPA. Because of the possible NRHP eligibility of Buildings 2911 and 2913, Project D1 has the potential to have long-term, direct, moderate, and adverse impacts on historic properties. Therefore, in accordance with NHPA; AFI 32-7065, *Cultural Resources Management Program*; and the installation's ICRMP, McGuire AFB will evaluate Buildings 2911 and 2913 and coordinate with the SHPO as required prior to implementation of Project D1.

Project D1 would involve minimal ground disturbance and would be limited to previously disturbed areas. Accordingly, Project D1 has no potential to impact resources of traditional, religious, or cultural significance to Native American tribes.

Socioeconomic Resources. Negligible effects on socioeconomic resources would be expected from the proposed demolition of Buildings 2911 and 2913 and Facility 8510. Estimated demolition costs would be approximately \$70,000, and demolition activities would only provide temporary employment for contractors in the area. Demolition would occur entirely on McGuire AFB and have little potential to affect off-installation residents adversely.

Infrastructure. Negligible effects on infrastructure resources would be expected from the demolition of Buildings 2911 and 2913 and Facility 8510. Removal of these facilities would result in less demand for certain utilities, but this reduction would be negligible when compared with total installation usage. Short-term adverse effects would be expected as a result of the generation of approximately 9,820 tons of demolition debris (USEPA 1998). This is a short-term adverse effect in that debris would only be generated during the demolition activities; however, debris that is not recycled would be landfilled, which would be considered a long-term irreversible adverse effect.

Hazardous Materials and Wastes. No long-term effects on hazardous materials management or hazardous waste generation would be expected as a result of the proposed demolition of Buildings 2911 and 2913. However, because of their age, the buildings should be assumed to contain both ACM and LBP. Sampling for ACM and LBP should occur prior to any demolition activities so that these materials can be properly characterized, handled, and disposed of in accordance with the McGuire AFB Asbestos Management Program Plan (305 AMW 2003c), Lead-Based Paint Management Plan (305 AMW 2006), and USAF policy.

4.4.1.2 D2. Demolish Buildings 3450, 3412, and 3455

Building 3450 (an engineering maintenance shop) and Building 3455 (a retail warehouse) were both constructed in 1943 (2,436 ft² and 20,995 ft², respectively), and Building 3412 (an engineering maintenance shop) was constructed in 1954 (10,388 ft²). These facilities are old and have outlived their useful lives. Project D2 would demolish all three buildings and create open space for construction of the GRDC, Spiral 2A (construction of the GRDC is presented and analyzed in **Section 4.4.2.2**). As shown in **Figure 4-2**, there are wetlands and ERP sites in the project vicinity.

Noise. Short-term minor adverse effects on noise levels would be expected as a result of the demolition of these three buildings. The noise emanating from the proposed demolition would be localized, short-term, and intermittent during construction equipment and machinery operations. **Table 3-1** shows the predicted noise levels for various pieces of construction equipment operating at 50 feet from the source, and **Table 4-2** shows estimated noise levels that would be expected at varying distances from a demolition site. Heavy construction equipment would be operated periodically during demolition, which would limit the duration of increased noise levels. The proposed demolition would be expected to result in noise levels comparable to those indicated in **Table 4-2**. This area of McGuire AFB is used for industrial and community purposes; populations potentially affected by noise would include USAF personnel working in hangars, maintenance facilities, and community facilities. Personnel would be approximately 50 feet from the source of the demolition noise; noise levels would be comparable to that of a very noisy urban area (approximately 90 dBA, refer to **Figure 3-1** and **Table 4-2**). Residential areas north of the demolition projects would be approximately 850 feet away and would experience noise levels of approximately 65 dBA during demolition activities.

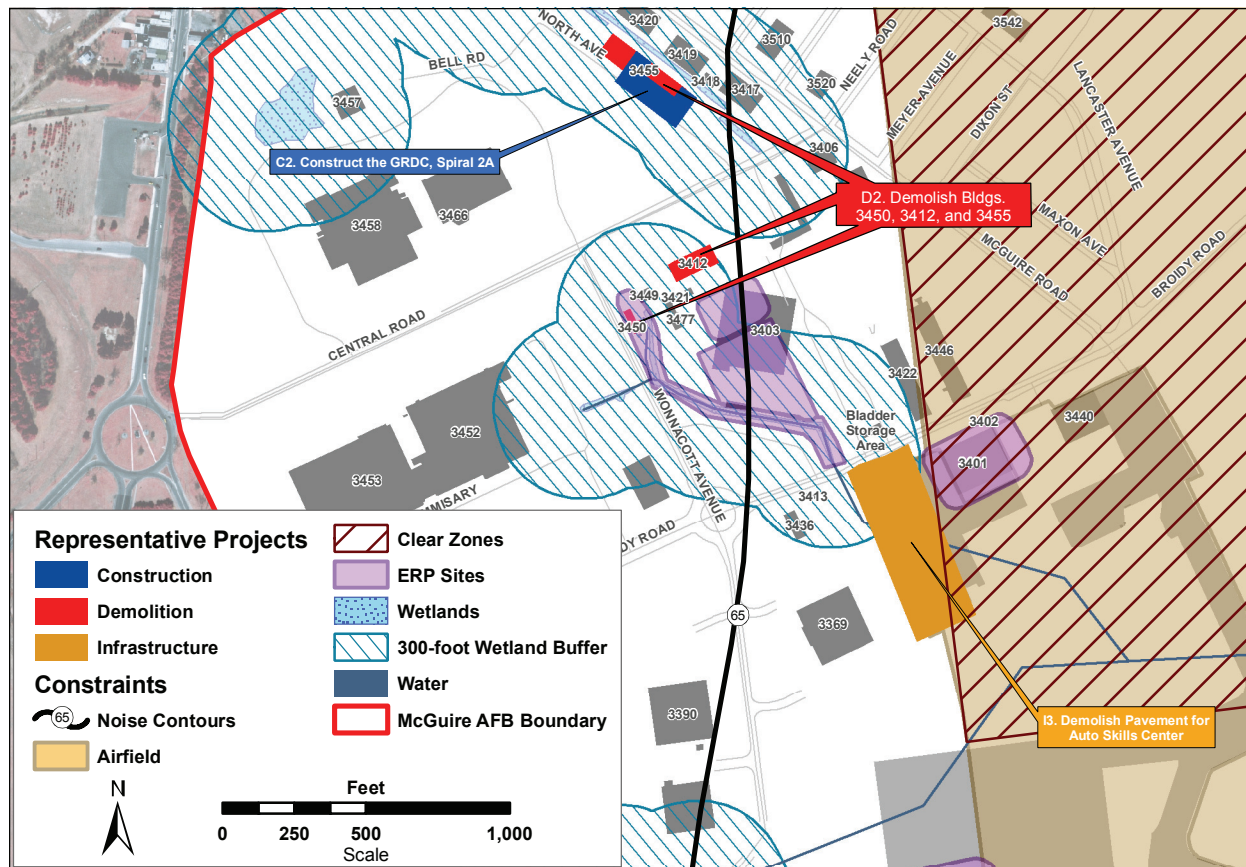


Figure 4-2. Proposed Projects D2, C2, and I3 Relative to Known Constraints

Land Use. Long-term beneficial effects would be expected from demolition of Buildings 3450, 3412, and 3455. Demolition activities would have beneficial effects on the installation's organizational functions by removing old, outdated facilities and, in the case of Building 3450, creating space for the proposed GRDC (see **Section 4.4.2.2**). The construction of new facilities where land has been made available by demolition reduces the amount of undisturbed land required for future development. The demolition of these facilities, which are currently within industrial and community commercial areas, would make land available for the construction of new industrial and community commercial facilities. Present and future land uses would be compatible under the Proposed Action, and no changes in land use functions would be expected.

Air Quality. Short-term minor adverse effects would be expected as a result of the demolition of the Buildings 3450, 3412, and 3455. Demolition activities would result in air emissions from the operation of heavy machinery. Fugitive particulate matter would be minimized by continually spraying water over the demolition area. Demolition of these facilities would be expected to result in air emissions comparable to those indicated in **Table 4-4**. This project would not exceed *de minimis* thresholds, nor would it produce criteria pollutant emissions exceeding 10 percent of the regional emissions inventory.

Table 4-4. Expected Criteria Pollutant Emissions Resulting from Project D2

	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)
Estimated D2 Emissions	0.638	0.038	0.252	0.013	1.009	0.183
MPIAQCR <i>de minimis</i> threshold	100	50	NA	100	NA	100
Project Percentage of Regional Emissions Inventory (MPIAQCR)	0.0002%	<0.0001%	<0.0001%	<0.0001%	0.0009%	0.0004%

Sources: emissions calculated using USEPA 2007c, region emissions estimated using USEPA 2006a

Note: NA = not applicable

Safety. Short-term minor adverse effects could occur. Demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adherence to established OSHA, USEPA, and USAF safety regulations. Because of their ages, Buildings 3450, 3412, and 3455 should be assumed to contain ACM and LBP; these materials require appropriate characterization, handling, and disposal during demolition activities by qualified personnel. Building 3450 is within an ERP site, and Building 3412 is near an ERP site. See the discussion under *Hazardous Materials and Wastes* for more information regarding the contamination at this ERP site.

Geological Resources. Short-term, minor, adverse effects would be expected from grading, excavating, and recontouring of the soil. A total of 33,819 ft² (0.78 acres) of soil would be disturbed. An ESCP could be developed with BMPs to manage erosion, sedimentation, and storm water runoff during and after demolition, minimizing the effects of erosion and sedimentation. The demolition project would also comply with the installation's SWPPP (MAFB 2005c) and all applicable Federal, state, and local regulations and policies.

The soils mapped at Buildings 3450, 3412, and 3455 are Collington loam, 0 to 2 percent slopes and Adelphia fine sandy loam, 0 to 2 percent slopes. Adelphia fine sandy loam has potential for the occurrence of hydric inclusions, which are an indicator of potential locations of wetlands (see *Wetlands* in **Sections 3.7.2** and **4.3.7**). Collington is not a hydric soil. Both soils are prime farmland soils. Because buildings occur on these areas, this land would not be considered available for agriculture or use as farmland. Therefore, no effects on prime farmland would be expected.

Water Resources. The demolition of Buildings 3450, 3412, and 3455 has the potential to result in short-term, negligible, adverse effects on water resources as a result of erosion and sedimentation associated with ground-disturbing activities (33,819 ft² [0.78 acres]) during demolition. An ESCP could be developed with BMPs to manage storm water runoff during and after demolition, minimizing the effects on surface water and groundwater. The demolition project would also comply with the installation's SWPPP (MAFB 2005c) and all applicable Federal, state, and local regulations and policies.

The demolition of Buildings 3450, 3412, and 3455 has the potential to result in long-term, negligible, beneficial effects on water resources associated with a decrease in impervious surfaces. The demolition of these buildings would result in a decrease of 33,819 ft² (0.78 acres) of impervious surfaces (see **Table A-1**). This decrease would result in a negligible reduction in the velocity and volume of storm water runoff.

Biological Resources. No adverse effects on vegetation, wildlife, or protected and sensitive species would occur as a result of demolition of Buildings 3450, 3412, and 3455. The proposed construction is in an area that is heavily disturbed. There is minimal existing vegetation and minimal suitable habitat for wildlife. Furthermore, there are no known federally protected species that occur at McGuire AFB. No state-endangered or rare species would be affected by this project.

Buildings 3450, 3412, and 3455 are within 300 feet of wetlands. This project could have short-term, minor, indirect, adverse effects on wetlands associated with storm water runoff and erosion and sedimentation during demolition. These potential effects would be minimized following stabilization and revegetation of the project areas. Storm water management and erosion and sediment control BMPs would be implemented to avoid potential adverse effects during demolition (see **Section 4.3.6**). This project would remove impervious surfaces in wetland transition areas, which could result in long-term, indirect, beneficial effects on wetlands. As discussed in **Section 4.4.2.2**, a portion of this project area is proposed for redevelopment.

All necessary and required permits would be obtained prior to conducting any activities that would affect wetland habitat, and any required mitigation would be implemented. McGuire AFB is committed to managing biological resources in accordance with all applicable Federal, state, and local regulations and policies.

Cultural Resources. Buildings 3450 and 3455 have been evaluated as not eligible for listing in the NRHP (AMC 1995). Building 3412 has not been evaluated for eligibility under Criteria A–D of the NRHP. If Building 3412 is determined eligible for listing in the NRHP, the effects of the Proposed Action on this building would need to be reviewed under Section 106 of the NHPA. Because of the possible NRHP eligibility of Building 3412, Project D2 has the potential to have long-term, direct, moderate, and adverse impacts on historic properties. Therefore, in accordance with NHPA; AFI 32-7065, *Cultural Resources Management Program*; and the installation's ICRMP, McGuire AFB will evaluate Building 3412 and coordinate with the SHPO as required prior to implementation of Project D2.

Project D2 would involve minimal ground disturbance, and would be limited to previously disturbed areas. Accordingly, Project D2 has no potential to impact resources of traditional, religious, or cultural significance to Native American tribes.

Socioeconomic Resources. Negligible effects on socioeconomic resources would be expected from the proposed demolition of Buildings 3450, 3412, and 3455. The demolition activities would provide temporary employment for contractors in the area. Demolition would occur entirely on McGuire AFB and have little potential to affect off-installation residents adversely.

Infrastructure. Negligible effects on infrastructure resources would be expected from the demolition of Buildings 3450, 3412, and 3455. Removal of these facilities would result in less demand for certain utilities, but this reduction would be negligible when compared with total installation usage. Short-term adverse effects would be expected as a result of the generation of approximately 2,621 tons of demolition debris (USEPA 1998). This is a short-term adverse effect in that debris would only be generated during the demolition activities; however, debris that is not recycled would be landfilled, which would be considered a long-term irreversible adverse effect.

Hazardous Materials and Wastes. No long-term effects on hazardous materials management or hazardous waste generation would be expected as a result of the proposed demolition of Buildings 3450, 3412, and 3455. However, because of age, these buildings should be assumed to contain both ACM and LBP. Sampling for ACM and LBP should occur prior to any demolition activities so that these materials can be properly characterized, handled, and disposed of in accordance with the McGuire AFB Asbestos

Management Program Plan (305 AMW 2003c), Lead-Based Paint Management Plan (305 AMW 2006), and USAF policy.

Building 3450 was formerly a pesticide wash area and is associated with ERP site OT-06. Soil and surface water contamination exists above regulatory thresholds for such pesticides as chlordane, dieldrin, and DDT. Demolition of the facility and removal of soil in the area would result in long-term minor beneficial effects. Prior to demolition, 305 CES/CEV should be closely consulted as to the procedures to be followed during the project. Care should be exercised regarding the excavation of the site and a Health and Safety Plan developed to protect demolition workers. Health and safety personnel should also be present from onset of the work.

4.4.1.3 D3. Demolish Buildings 1825 and 2308

Building 1825 (a Security Forces storage facility) was constructed in 1962, and Building 2308 (a civil engineering self-help facility) was constructed in 1957 (4,960 ft² and 12,881 ft², respectively). These facilities are old and have outlived their useful lives. Project D3 would demolish both buildings. The demolition of Building 2308 would create open space for construction of the Unified Security Forces Operations Facility. Upon construction of the Unified Security Forces Operations Facility, Building 1825 would no longer be needed, so demolition would create open space. Construction of the Unified Security Forces Operations Facility is presented and analyzed in **Section 4.4.2.3**. As shown in **Figure 4-3**, an ERP site is in the vicinity of Building 1825.

Noise. Short-term minor adverse effects on noise levels would be expected as a result of the demolition of these two buildings. The noise emanating from the proposed demolition would be localized, short-term, and intermittent during construction equipment and machinery operations. **Table 3-1** shows the predicted noise levels for various pieces of construction equipment operating at 50 feet from the source, and **Table 4-2** shows estimated noise levels that would be expected at varying distances from a demolition site. Heavy construction equipment would be operated periodically during demolition, which would limit the duration of increased noise levels. The proposed demolition would be expected to result in noise levels comparable to those indicated in **Table 4-2**. Building 1825 is used for airfield and aircraft operations; Building 2308 is currently used for community services but future land use would be administrative (MAFB 2005a). Populations potentially affected by noise would include USAF personnel working in the airfield maintenance facilities and office-type facilities. Personnel would be approximately 75 feet or more from the source of the demolition noise; noise levels would be comparable to that of a very noisy urban area (about 86 dBA, refer to **Figure 3-1** and **Table 4-2**). The nearest residential unit would be approximately 3,800 feet northeast of the demolition and would experience noise levels of approximately 52 dBA during demolition activities.

Land Use. Long-term beneficial effects would be expected from demolition of Buildings 1825 and 2308. Demolition activities would have beneficial effects on the installation's organizational functions by removing old, outdated facilities and creating space for new projects. The construction of new facilities where land has been made available by demolition reduces the amount of undisturbed land required for future development. The demolition of these facilities would make land available for the construction of new facilities. No change in land use would be expected following demolition of Building 1825, but the area where Building 2308 is currently located is planned for future administrative uses (MAFB 2005a). Present and future land uses would be compatible under the Proposed Action.

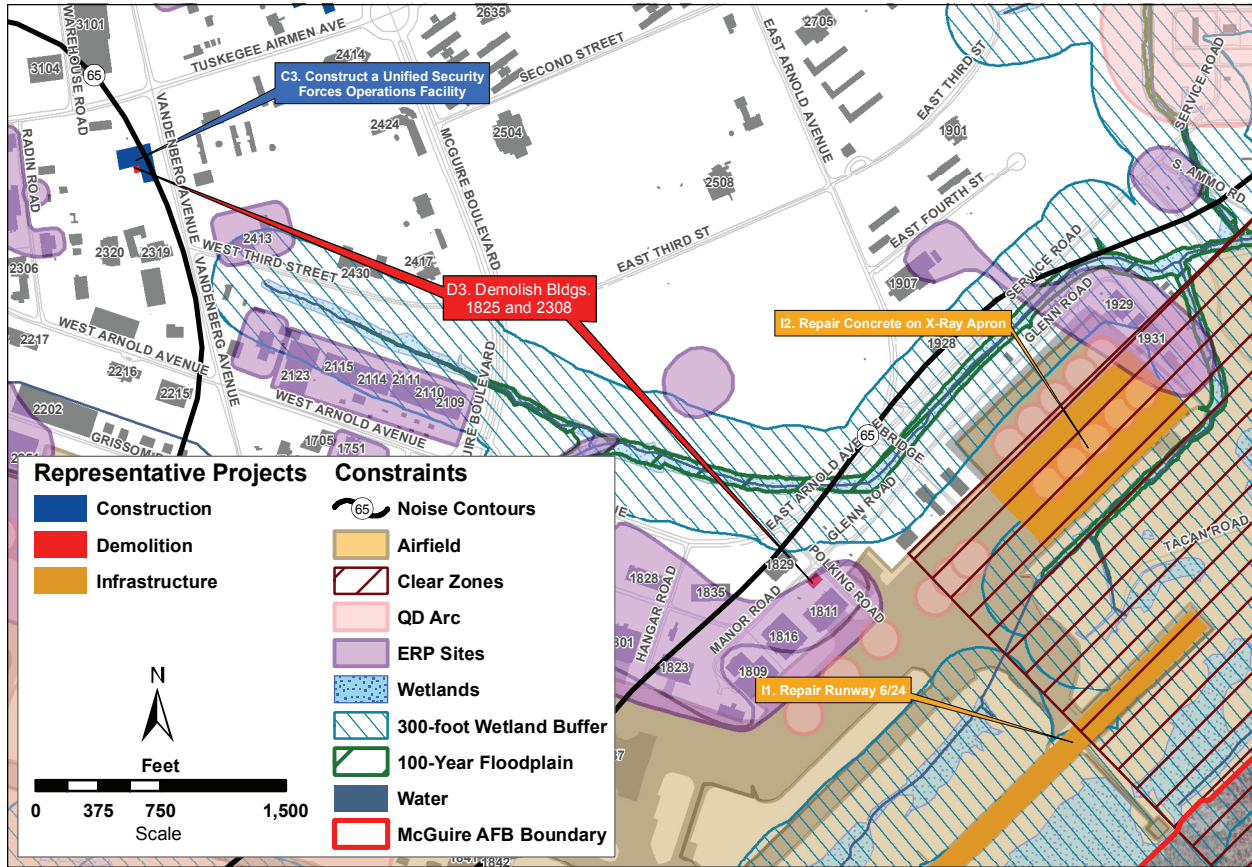


Figure 4-3. Proposed Projects D3, C3, and I2 Relative to Known Constraints

Air Quality. Short-term minor adverse effects would be expected as a result of the demolition of Buildings 1825 and 2308. Demolition activities would result in air emissions from the operation of heavy machinery. Fugitive particulate matter would be minimized by continually spraying water over the demolition area. Demolition of these facilities would be expected to result in air emissions comparable to those indicated in **Table 4-5**. This project would not exceed *de minimis* thresholds, nor would it produce criteria pollutant emissions exceeding 10 percent of the regional emissions inventory.

Table 4-5. Expected Criteria Pollutant Emissions Resulting from Project D3

	NO _x (tpy)	VOC (tpy)	CO (tpy)	SO ₂ (tpy)	PM ₁₀ (tpy)	PM _{2.5} (tpy)
Estimated D3 Emissions	0.347	0.021	0.137	0.007	0.533	0.097
MPIAQCR <i>de minimis</i> threshold	100	50	NA	100	NA	100
Project Percentage of Regional Emissions Inventory (MPIAQCR)	0.0001%	<0.0001%	<0.0001%	<0.0001%	0.0005%	0.0002%

Sources: emissions calculated using USEPA 2007c and USEPA 2006c, region emissions estimated using USEPA 2006a

Note: NA = not applicable

Safety. Short-term minor adverse effects could occur. Demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adherence to established OSHA, USEPA, and USAF safety regulations. Because of their ages, Buildings 1825 and 2308 should be assumed to contain ACM and LBP; these materials require appropriate characterization, handling, and disposal during demolition activities by qualified personnel. Building 1825 is within an ERP site; contamination appears to be confined to groundwater only, so no safety risks would be expected during construction activities. See the discussion under *Hazardous Materials and Wastes* for more information regarding the contamination at this ERP site.

Geological Resources. Short-term, minor, adverse effects would be expected from grading, excavating, and recontouring of the soil. A total of 17,841 ft² (0.41 acres) of soil would be disturbed. An ESCP could be developed with BMPs to manage erosion, sedimentation, and storm water runoff during and after demolition, minimizing the effects of erosion and sedimentation. The demolition project would also comply with the installation's SWPPP (MAFB 2005c) and all applicable Federal, state, and local regulations and policies.

The Urban Land-Collington complex, 0 to 5 percent slopes is mapped under Buildings 1825 and 2308. This complex of soils is not hydric and it does not have a farmland classification. Therefore, no adverse effects on prime farmland would occur as a result of this project.

Water Resources. The demolition of Buildings 1825 and 2308 has the potential to result in short-term, negligible, adverse effects on water resources as a result of erosion and sedimentation associated with ground-disturbing activities (17,841 ft² [0.41 acres]) during demolition. An ESCP could be developed with BMPs to manage storm water runoff during and after demolition, minimizing the effects on surface water and groundwater. The demolition project would also comply with the installation's SWPPP (MAFB 2005c) and all applicable Federal, state, and local regulations and policies.

The demolition of Buildings 1825 and 2308 has the potential to result in long-term, negligible, beneficial effects on water resources associated with a decrease in impervious surfaces. The demolition of these buildings would result in a decrease of 17,841 ft² (0.41 acres) of impervious surfaces (see **Table A-1**). This decrease would result in a negligible reduction in the velocity and volume of storm water runoff.

Biological Resources. No adverse effects on biological resources would occur as a result of demolition of the Buildings 1825 and 2308. The proposed demolition is in an area that is heavily disturbed. There is minimal existing vegetation, no suitable habitat for wildlife, and no wetlands. Furthermore, there are no known federally protected species that occur at McGuire AFB. No state-endangered or rare species would be affected by this project. McGuire AFB is committed to managing biological resources in accordance with all applicable Federal, state, and local regulations and policies.

Cultural Resources. Buildings 1825 and 2308 have not been evaluated for eligibility under Criteria A–D of the NRHP. The collection of buildings constructed within this time period (1956–1963) at McGuire AFB also has not been evaluated as a historic district. If Buildings 1825 and 2308 are determined eligible for listing in the NRHP, either individually or as contributing resources to a historic district, the effects of the Proposed Action on those buildings would need to be reviewed under Section 106 of the NHPA. Because of the possible NRHP eligibility of Buildings 1825 and 2308, Project D3 has the potential to have long-term, direct, moderate, and adverse impacts on historic properties. Therefore, in accordance with NHPA; AFI 32-7065, *Cultural Resources Management Program*; and the installation's ICRMP, McGuire AFB will evaluate Buildings 1825 and 2308 and coordinate with the SHPO as required prior to implementation of Project D3.

Project D3 would involve minimal ground disturbance and would be limited to previously disturbed areas. Accordingly, Project D3 has no potential to impact resources of traditional, religious, or cultural significance to Native American tribes.

Socioeconomic Resources. Negligible effects on socioeconomic resources would be expected from the proposed demolition of Buildings 1825 and 2308. The demolition activities would provide temporary employment for contractors in the area. Demolition would occur entirely on McGuire AFB and have little potential to affect off-installation residents adversely.

Infrastructure. Negligible effects on infrastructure resources would be expected from the demolition of Buildings 1825 and 2308. Removal of these facilities would result in less demand for certain utilities, but this reduction would be negligible when compared with total installation usage. Short-term adverse effects would be expected as a result of the generation of 1,383 tons of demolition debris (USEPA 1998). This is a short-term adverse effect in that debris would only be generated during the demolition activities; however, debris that is not recycled would be landfilled, which would be considered a long-term irreversible adverse effect.

Hazardous Materials and Wastes. No long-term effects on hazardous materials management or hazardous waste generation would be expected as a result of the proposed demolition of Buildings 1825 and 2308. However, because of age, the buildings should be assumed to contain both ACM and LBP. Sampling for ACM and LBP should occur prior to any demolition activities so that these materials can be properly characterized, handled, and disposed of in accordance with the McGuire AFB Asbestos Management Program Plan (305 AMW 2003c), Lead-Based Paint Management Plan (305 AMW 2006), and USAF policy. The ERP sites (SS-034 and LF-023) in the vicinity of Building 1825 would not be disturbed during demolition since contamination appears to be confined to groundwater.

4.4.2 Representative Construction Projects

4.4.2.1 C1. Construct a Unified Headquarters Building

The USAF relies heavily on the mission relationship between active-duty and associate reserve forces to achieve total mission objectives. Currently, elements of the 305 AMW and 514 AMW are scattered over the entire installation, which impedes the flow of command-level information. The existing 305 AMW headquarters facility (Building 2901) is an old facility that has also been identified as a vulnerable target because it does not meet AT/FP setback requirements. The existing 514 AMW headquarters facility (Building 2217) is undersized and constrained from expansion by its proximity to C-17 mission facilities; critical elements of the 514 AMW are in multiple facilities across the installation. Project C1 would provide a unified headquarters facility (approximately 59,200 ft²) for 305 AMW and 514 AMW, which would include administrative offices, conference rooms, special purpose areas, storage, mechanical rooms, and restrooms. As shown in **Figure 4-1**, there are no sensitive areas or resources in the project area.

Noise. Short-term minor adverse effects on noise levels would be expected as a result of the construction of this facility. The noise emanating from the proposed construction would be localized, short-term, and intermittent during construction equipment and machinery operations. **Table 3-1** shows the predicted noise levels for various pieces of construction equipment operating at 50 feet from the source, and **Table 4-2** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would be operated periodically during construction, which would limit the duration of increased noise levels. The construction of this facility would be expected to result in noise levels comparable to those indicated in **Table 4-2**. This area of McGuire AFB is used for administrative purposes; populations potentially affected by noise would include USAF personnel working in offices,

and would be near community facilities as well. Personnel would be approximately 350 feet from the source of the construction noise; noise levels would be comparable to that of a commercial area (approximately 68 dBA, refer to **Figure 3-1** and **Table 4-2**).

Land Use. No effects would be expected from construction of the Unified Headquarters Building. The construction of this facility would be within an administrative land use area and outside the DNL of 65 dBA noise contour. Present and future land uses would be compatible, and no changes in land use functions would be expected.

Air Quality. Short-term minor adverse effects would be expected as a result of the construction of the Unified Headquarters Building. Construction activities would result in air emissions from the operation of heavy machinery. Fugitive particulate matter would be minimized by continually spraying water over the construction area. Construction of the facility would be expected to result in air emissions comparable to those indicated in **Table 4-6**. This project would not exceed *de minimis* thresholds, nor would it produce criteria pollutant emissions exceeding 10 percent of the regional emissions inventory.

Table 4-6. Expected Criteria Pollutant Emissions Resulting from Project C1

	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)
Estimated C1 Emissions	4.587	0.563	2.022	0.360	1.476	0.491
MPIAQCR <i>de minimis</i> threshold	100	50	NA	100	NA	100
Project Percentage of Regional Emissions Inventory (MPIAQCR)	0.0017%	0.0002%	0.0001%	0.0002%	0.0018%	0.0014%

Sources: emissions calculated using USEPA 2007c and USEPA 2006c, region emissions estimated using USEPA 2006a

Note: NA = not applicable

Safety. Short-term minor adverse effects could occur. Construction activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adherence to established Federal, state, and local safety regulations. No long-term effects would be expected.

Geological Resources. Short-term, minor, adverse effects would be expected from grading, excavating, and recontouring of the soil. Construction of a Unified Headquarters Building would disturb approximately 59,202 ft² (1.36 acres) of soil. The proposed construction of the Unified Headquarters Building would require authorization under the statewide NJPDES Construction and Mining Activity General Storm Water Permit (NJ0088323) or an individual permit. The proposed construction would require that an ESCP be developed. The development of an ESCP with BMPs to manage erosion and sedimentation and storm water runoff during and after demolition would minimize the effects of erosion and sedimentation. The construction project would also comply with the installation's SWPPP (MAFB 2005c) and all applicable Federal, state, and local regulations and policies.

The soils that are mapped in the area proposed for construction are the Adelphia fine sandy loam, 0 to 2 percent slopes and Urban Land-Collington complex, 0 to 5 percent slopes. Urban Land-Collington complex is not hydric and it does not have a farmland classification. Adelphia fine sandy loam, 0 to 2 percent slopes is a prime farmland soil. Prior to construction, coordination should occur with NRCS to determine if the area would be classified as prime farmland and if so, how much potential prime farmland would be affected.

Water Resources. Short-term, negligible, adverse effects could occur from grading, excavating, and recontouring of the soil and possible use of construction-related hazardous materials and other potential pollutants during construction. These activities have the potential to result in the transport of sediment and other construction-related pollutants in runoff from the construction site. The proposed construction of the Unified Headquarters Building would require authorization under the statewide NJPDES Construction and Mining Activity General Storm Water Permit (NJ0088323) or an individual permit. An ESCP would be developed as a requirement of the permit. The development of an ESCP with BMPs to manage erosion and sedimentation and storm water runoff during and after construction would minimize impacts on surface water and groundwater. The construction project would also implement spill prevention practices and comply with the installation's SWPPP (MAFB 2005c) and all applicable Federal, state, and local regulations and policies.

Long-term, negligible, adverse effects would be expected on water resources. The proposed Unified Headquarters Building would add 59,202 ft² (1.36 acres) of impervious surfaces (see **Table A-2**). The area proposed for construction is largely impervious and heavily disturbed. Additionally, the site-specific SWPPP would manage storm water after construction, minimizing long-term effects.

Biological Resources. No to negligible adverse effects on biological resources would occur as a result of construction of the Unified Headquarters Building. The proposed construction is in an area that is heavily disturbed. Landscaped vegetation occurs in the project area. This area provides minimal habitat for wildlife and no wetlands occur in proximity to the area. Furthermore, there are no known federally protected species that occur at McGuire AFB. No state-endangered or rare species would be affected by this project. McGuire AFB is committed to managing biological resources in accordance with all applicable Federal, state, and local regulations and policies.

Cultural Resources. Buildings in the vicinity of the proposed Unified Headquarters Building include some buildings that are more than 50 years old that have not been evaluated and buildings constructed in the 1970s. Based on the mixture of building ages, construction of the new building should not represent a visual impact on the setting of the older buildings. Accordingly, Project C1 has no potential to affect architectural resources.

Project C1 would involve ground-disturbing activities and construction of a new building, both of which have the potential to impact resources of traditional, religious, or cultural significance to Native American tribes, if present. Under the requirements of both NEPA and NHPA, consultation regarding the potential of the Proposed Action to impact resources of traditional, religious, or cultural significance should occur during the planning stages for the Proposed Action so that impacts can be avoided, minimized, or mitigated. Until that consultation has occurred, it is not possible to assess the impacts of this project on resources of traditional, religious, or cultural significance to Native American tribes.

Socioeconomic Resources. Minor beneficial effects on socioeconomic resources would be expected from the proposed construction of a Unified Headquarters Building. The estimated cost of construction for this facility is approximately \$24 million; it is assumed that local materials and contractors would be used. As of 2000, approximately 23,700 and 44,300 residents of Burlington and Ocean counties (respectively) were employed in the construction industries. Therefore, there would be ample construction workers available near McGuire AFB. Construction would occur entirely on McGuire AFB and would have little potential to affect off-installation residents adversely.

Infrastructure. Overall, negligible effects on infrastructure resources would be expected from the construction of the proposed Unified Headquarters Building. The increased demand for utility services, such as water supply, electricity, natural gas, and sanitary sewer, would be offset by the decreased demand resulting from the demolition of Buildings 2911 and 2913. This change in utility demand would

be negligible when compared with total installation usage. Short-term adverse effects would be expected as a result of the generation of approximately 130 tons of construction debris (USEPA 1998). This is a short-term adverse effect in that debris would only be generated during construction activities; however, debris that is not recycled would be landfilled, which would be considered a long-term irreversible adverse effect. Construction debris is generally composed of clean materials, and most of this waste would be recycled or ground into gravel for reuse.

Hazardous Materials and Wastes. Short-term minor adverse effects would be expected from the use of hazardous materials during the construction process. The proposed Unified Headquarters Building would not generate new waste streams, and, therefore, no modifications to McGuire AFB permits or hazardous materials or wastes would be expected. McGuire AFB is committed to managing hazardous materials and wastes according to the installation's Hazardous Materials Management Plan (AFI 32-7086, *Hazardous Materials Management*); Hazardous Waste Management Plan (AFIOH 2004); and all applicable Federal, state, and local regulations and policies. This project would not affect or be affected by ERP sites.

4.4.2.2 C2. Construct the GRDC, Spiral 2A

The 621 CRW and 21st Expeditionary Mobility Task Force/Air Mobility Operations Group share administrative space in Building 1907, resulting in overcrowded conditions. Building 1907 is almost 2.5 miles from the Global Support Squadron warehouse and deployable equipment assets, which can result in unavoidable delays during mobilization. Overcrowded conditions and scattered facilities negatively affect the 621 CRW's ability to rapidly deploy and perform critical missions. Project C2 would provide administrative facility space (39,945 ft²) for the 816th and 817th Contingency Response Groups (816 CRG and 817 CRG) of the 621 CRW. The proposed GRDC, Spiral 2A building would be three stories tall, resulting in a footprint of 13,315 ft². As shown in **Figure 4-2**, the proposed GRDC, Spiral 2A would be constructed in the vicinity of the existing Building 3455 (see **Section 4.4.1.2**), and there are wetlands near the project area.

Noise. Short-term minor adverse effects on noise levels would be expected as a result of the construction of this facility. The noise emanating from the proposed construction would be localized, short-term, and intermittent during construction equipment and machinery operations. **Table 3-1** shows the predicted noise levels for various pieces of construction equipment operating at 50 feet from the source, and **Table 4-2** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would be operated periodically during construction, which would limit the duration of increased noise levels. The construction of this facility would be expected to result in noise levels comparable to those indicated in **Table 4-2**. This area of McGuire AFB is used for industrial activities; populations potentially affected by noise would include USAF personnel working in vehicle maintenance or other light industrial activities. Personnel would be approximately 50 feet from the source of the demolition noise; noise levels would be comparable to that of a very noisy urban area (86 dBA, refer to **Figure 3-1** and **Table 4-2**). Medical facilities on the installation (west of the proposed GRDC) and residential areas off the installation (north of the proposed GRDC) would be approximately 850 feet away; these areas would experience noise levels of approximately 61 dBA during construction activities.

Land Use. No effects would be expected from construction of the GRDC. The construction of this facility would be within an industrial land use area and outside the DNL of 65 dBA noise contour. Present and future land uses would be compatible, and no changes in land use functions would be expected.

Air Quality. Short-term minor adverse effects would be expected as a result of the construction of GRDC, Spiral 2A. Construction activities would result in air emissions from the operation of heavy

machinery. Fugitive particulate matter would be minimized by continually spraying water over the construction area. Construction of the facility would be expected to result in air emissions comparable to those indicated in **Table 4-7**. This project would not exceed *de minimis* thresholds, nor would it produce criteria pollutant emissions exceeding 10 percent of the regional emissions inventory.

Table 4-7. Expected Criteria Pollutant Emissions Resulting from Project C2

	NO _x (tpy)	VOC (tpy)	CO (tpy)	SO ₂ (tpy)	PM ₁₀ (tpy)	PM _{2.5} (tpy)
Estimated C2 Emissions	4.587	0.528	2.022	0.360	1.146	0.491
MPIAQCR <i>de minimis</i> threshold	100	50	NA	100	NA	100
Project Percentage of Regional Emissions Inventory (MPIAQCR)	0.0017%	0.0002%	0.0001%	0.0002%	0.0013%	0.0012%

Sources: emissions calculated using USEPA 2007c and USEPA 2006c, region emissions estimated using USEPA 2006a

Note: NA = not applicable

Safety. Short-term minor adverse effects could occur. Construction activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adherence to established Federal, state, and local safety regulations. No long-term effects would be expected.

Geological Resources. Short-term, minor, adverse effects would be expected from grading, excavating, and recontouring of the soil. Construction of the GRDC, Spiral 2A would disturb 13,315 ft² (0.3 acres) of soil. An ESCP could be developed with BMPs to manage erosion and sedimentation and storm water runoff during and after demolition, minimizing the effects of erosion and sedimentation. The construction project would also comply with the installation's SWPPP (MAFB 2005c) and all applicable Federal, state, and local regulations and policies.

Adelphia fine sandy loam, 0 to 2 percent slopes is mapped in the area proposed for construction. The soil has potential for the occurrence of hydric inclusions, and it is designated as a prime farmland soil. The locations of hydric soil inclusions are an indicator of potential locations of wetlands (see *Wetlands* in **Sections 3.7.2** and **4.3.7**). Because a building occurs on this area, the land would not be considered available for agriculture or use as farmland. Therefore, no effects on prime farmland would be expected.

Water Resources. Short-term, negligible, adverse effects could occur from grading, excavating, and recontouring of the soil and possible use of construction-related hazardous materials and other potential pollutants during construction. These activities have the potential to result in the transport of sediment and other construction-related pollutants in runoff from the construction site. The proposed construction would require that an ESCP be developed. The development of an ESCP with BMPs to manage erosion and sedimentation and storm water runoff during and after construction would minimize impacts on surface water and groundwater. The construction project would also implement spill prevention practices and comply with the installation's SWPPP (MAFB 2005c) and all applicable Federal, state, and local regulations and policies.

Long-term, negligible, adverse effects would be expected on water resources. The proposed GRDC, Spiral 2A would add 13,315 ft² (0.3 acres) of impervious surfaces (see **Table A-2**). The area proposed for construction is largely impervious and heavily disturbed. Additionally, the site-specific SWPPP would manage storm water after construction, minimizing long-term impacts.

Biological Resources. No to negligible adverse effects on vegetation, wildlife, or protected or sensitive species would occur as a result of construction of the GRDC, Spiral 2A. The proposed construction is in an area that is heavily disturbed. Landscaped vegetation occurs in the project area. This area provides minimal habitat for wildlife. Furthermore, there are no known federally protected species that occur at McGuire AFB. No state-endangered or rare species would be affected by this project.

The proposed construction of the GRDC, Spiral 2A is within 300 feet of wetlands. This project could have minor, indirect, adverse impacts on wetlands associated with storm water runoff and erosion and sedimentation. Storm water management and erosion and sediment control BMPs would be implemented to avoid these effects (see **Section 4.3.6**). The GRDC, Spiral 2A is proposed within the existing footprint of Building 3455, which is proposed for demolition as discussed in **Section 4.4.1.2**. Therefore, it is anticipated that there would be no net increase in impervious surfaces in this portion of McGuire AFB associated with construction of the GRDC, Spiral 2A.

All necessary and required permits would be obtained prior to any activities that would affect wetland habitat, and any required mitigation would be implemented. McGuire AFB is committed to managing biological resources in accordance with all applicable Federal, state, and local regulations and policies.

Cultural Resources. With the exception of Building 3455, which has been evaluated as not eligible for listing in the NRHP, buildings in the vicinity of the proposed GRDC Spiral 2A were constructed in the 1990s. Accordingly, Project C2 has no potential to affect architectural resources.

Project C2 would involve ground-disturbing activities and construction of a new building, both of which have the potential to impact resources of traditional, religious, or cultural significance to Native American tribes, if present. Under the requirements of both NEPA and NHPA, consultation regarding the potential of the Proposed Action to impact resources of traditional, religious, or cultural significance should occur during the planning stages for the Proposed Action so that impacts can be avoided, minimized, or mitigated. Until that consultation has occurred, it is not possible to assess the impacts of this project on resources of traditional, religious, or cultural significance to Native American tribes.

Socioeconomic Resources. Minor beneficial effects on socioeconomic resources would be expected from the proposed construction of the GRDC, Spiral 2A. The estimated cost of construction for this facility is approximately \$12 million; it is assumed that local materials and contractors would be used. Construction would occur entirely on McGuire AFB and would have little potential to affect off-installation residents adversely.

Infrastructure. Overall, negligible effects on infrastructure resources would be expected from the construction of the proposed GRDC, Spiral 2A. The increased demand for utility services, such as water supply, electricity, natural gas, and sanitary sewer, would be offset by the decreased demand resulting from the demolition of Buildings 3450, 3412, and 3455. This change in utility demand would be negligible when compared with total installation usage. Short-term adverse effects would be expected as a result of the generation of approximately 87 tons of construction debris (USEPA 1998). This is a short-term adverse effect in that debris would only be generated during construction activities; however, debris that is not recycled would be landfilled, which would be considered a long-term irreversible adverse effect. Construction debris is generally composed of clean materials, and most of this waste would be recycled or ground into gravel for reuse.

Hazardous Materials and Wastes. Short-term minor adverse effects would be expected from the use of hazardous materials during the construction process. The proposed GRDC, Spiral 2A would not generate new waste streams, and, therefore, no modifications to McGuire AFB permits or hazardous materials or wastes would be expected. McGuire AFB is committed to managing hazardous materials and wastes

according to the installation's Hazardous Materials Management Plan (AFI 32-7086, *Hazardous Materials Management*); Hazardous Waste Management Plan (AFIOH 2004); and all applicable Federal, state, and local regulations and policies. This project would not affect or be affected by ERP sites.

4.4.2.3 C3. Construct a Unified Security Forces Operations Facility

The existing 305/514 Security Forces Squadron (SFS) facility does not meet AT/FP requirements. It is currently overcrowded and would not be able to accommodate additional personnel from the Air National Guard, Army, and Navy once McGuire AFB assumes installation management functions of Joint Base McGuire-Dix-Lakehurst. The existing facility lacks adequate square footage for nearly every aspect of current and projected Security Forces operations. Project C3 would provide a unified SFS Operations Facility (approximately 38,000 ft²) for 305, 514, and 108 SFS, which would include parking (170,000 ft²), landscaping, utilities, and communications as required. As shown in **Figure 4-3**, there are no sensitive areas or resources in the project area, though the proposed building would be within the 65 dBA noise contour.

Noise. Short-term minor adverse effects on noise levels would be expected as a result of the construction of this facility. The noise emanating from the proposed construction would be localized, short-term, and intermittent during construction equipment and machinery operations. **Table 3-1** shows the predicted noise levels for various pieces of construction equipment operating at 50 feet from the source, and **Table 4-2** shows estimated noise levels that would be expected at varying distances from a construction site. Heavy construction equipment would be operated periodically during the demolition, which would limit the duration of increased noise levels. The construction of this facility would be expected to result in noise levels comparable to those indicated in **Table 4-2**. This area of McGuire AFB is currently used for community services, but future land use would be administrative (MAFB 2005a). Populations potentially affected by noise would include USAF personnel working in office-type facilities. Personnel would be approximately 100 feet from the source of the construction noise; noise levels would be comparable to that of a noisy urban residential area (about 79 dBA, refer to **Figure 3-1** and **Table 4-2**). The nearest residential unit would be approximately 3,800 feet northeast of the construction and would experience noise levels of approximately 48 dBA during construction activities. Increases in noise levels from construction would be negligible in comparison with the existing airport environment.

Land Use. Minor adverse effects would be expected from construction of the Unified Security Forces Operations Facility. As shown in **Figure 4-1**, this facility would be affected by noise levels at or above a DNL value of 65 dBA from aircraft operations at McGuire AFB (MAFB 1999). Government services are generally considered compatible in an area with noise levels between 65 to 69 dBA (SLUCM 1965). However, the designation of "compatible" in this instance reflects individual Federal agency and program considerations of general cost and feasibility factors, as well as past community experiences and program objectives. Noise level reduction can be achieved through incorporation of noise attenuation measures into the design and construction of the structure. Incorporation of noise attenuation would ensure that this administrative facility is compatible with the noise levels from aircraft operations.

Air Quality. Short-term minor adverse effects would be expected as a result of the construction of a Unified Security Forces Operations Facility. Construction activities would result in air emissions from the operation of heavy machinery. Fugitive particulate matter would be minimized by continually spraying water over the construction area. Construction of the facility would be expected to result in air emissions comparable to those indicated in **Table 4-8**. This project would not exceed *de minimis* thresholds, nor would it produce criteria pollutant emissions exceeding 10 percent of the regional emissions inventory.

Table 4-8. Expected Criteria Pollutant Emissions Resulting from Project C3

	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)
Estimated C3 Emissions	5.060	0.550	2.215	0.369	5.236	1.077
MPIAQCR <i>de minimis</i> threshold	100	50	NA	100	NA	100
Project Percentage of Regional Emissions Inventory (MPIAQCR)	0.0019%	0.0002%	0.0001%	0.0002%	0.0048%	0.0026%

Sources: emissions calculated using USEPA 2007c and USEPA 2006c, region emissions estimated using USEPA 2006a

Note: NA = not applicable

Safety. Short-term minor adverse effects could occur. Construction activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adherence to established Federal, state, and local safety regulations. No long-term effects would be expected.

Geological Resources. Short-term, minor, adverse effects would be expected as a result of grading, excavating, and recontouring of the soil. Construction of the Unified Security Operations Facility would disturb approximately 207,674 ft² (4.8 acres) of soil. The proposed construction would require authorization under the statewide NJPDES Construction and Mining Activity General Storm Water Permit (NJ0088323) or an individual permit. The proposed construction would require that an ESCP be developed. The development of an ESCP with BMPs to manage erosion and sedimentation and storm water runoff during and after demolition would minimize impacts of erosion and sedimentation. The construction project would also comply with the installation's SWPPP (MAFB 2005c) and all applicable Federal, state, and local regulations and policies.

The Urban Land-Collington complex, 0 to 5 percent slopes is mapped in the area proposed for construction. This complex of soils is not hydric, and it does not have a farmland classification. Therefore, no adverse effects on prime farmland would occur as a result of this project.

Water Resources. Short-term, negligible, adverse effects could occur from grading, excavating, and recontouring of the soil and possible use of construction-related hazardous materials and other potential pollutants during construction. These activities have the potential to result in the transport of sediment and other construction-related pollutants in runoff from the construction site into receiving water bodies. The proposed Unified Security Operations Facility would require authorization under the statewide NJPDES Construction and Mining Activity General Storm Water Permit (NJ0088323) or an individual permit. An ESCP would be developed. The development of an ESCP with BMPs to manage erosion and sedimentation and storm water runoff during and after construction would minimize impacts on surface water and groundwater. The construction project would also implement spill prevention practices and comply with the installation's SWPPP (MAFB 2005c) and all applicable Federal, state, and local regulations and policies.

Long-term, negligible, adverse effects would be expected on water resources. The proposed Unified Security Operations Facility would add 207,674 ft² (4.8 acres) of impervious surfaces (see **Table A-2**). The area proposed for construction is largely impervious and heavily disturbed. Additionally, the site-specific SWPPP would manage storm water after construction, minimizing long-term effects.

Biological Resources. No effects on biological resources would occur as a result of construction of the Unified Security Forces Operation Building. The proposed construction is in an area that is heavily disturbed. There is minimal existing vegetation, minimal suitable habitat for wildlife, and no wetlands in proximity to the project areas. Furthermore, there are no known federally protected species that occur at McGuire AFB. No state-endangered or rare species would be affected by this project. McGuire AFB is committed to managing biological resources in accordance with all applicable Federal, state, and local regulations and policies.

Cultural Resources. Buildings in the vicinity of the proposed Unified Headquarters Building include a building that is more than 50 years old that has not been evaluated (Building 2304) as well as a building constructed in 1995 (Building 2321). Based on the mixture of building ages, construction of the new building should not represent a visual impact on the setting of the older building. Accordingly, Project C3 has no potential to affect architectural resources.

Project C3 would involve ground-disturbing activities and construction of a new building, both of which have the potential to impact resources of traditional, religious, or cultural significance to Native American tribes, if present. Under the requirements of both NEPA and NHPA, consultation regarding the potential of the Proposed Action to impact resources of traditional, religious, or cultural significance should occur during the planning stages for the Proposed Action so that impacts can be avoided, minimized, or mitigated. Until that consultation has occurred, it is not possible to assess the impacts of this project on resources of traditional, religious, or cultural significance to Native American tribes.

Socioeconomic Resources. Minor beneficial effects on socioeconomic resources would be expected from the proposed construction of a Unified Security Forces Operations Facility. The estimated cost of construction for this facility is approximately \$12 million; it is assumed that local materials and contractors would be used. Construction would occur entirely on McGuire AFB and would have little potential to affect off-installation residents adversely.

Infrastructure. Overall, negligible effects on infrastructure resources would be expected from the construction of the Unified Security Forces Operations Facility. The increased demand for utility services, such as water supply, electricity, natural gas, and sanitary sewer, would be offset by the decreased demand resulting from the demolition of Buildings 1825 and 2308. This change in utility demand would be negligible when compared with total installation usage. Short-term adverse effects would be expected as a result of the generation of approximately 83 tons of construction debris (USEPA 1998). This is a short-term adverse effect in that debris would only be generated during construction activities; however, debris that is not recycled would be landfilled, which would be considered a long-term irreversible adverse effect. Construction debris is generally composed of clean materials, and most of this waste would be recycled or ground into gravel for reuse.

Hazardous Materials and Wastes. Short-term minor adverse effects would be expected from the use of hazardous materials during the construction process. The proposed Unified Security Forces Operations Facility would not generate new waste streams, and, therefore, no modifications to McGuire AFB permits or hazardous materials or wastes would be expected. McGuire AFB is committed to managing hazardous materials and wastes according to the installation's Hazardous Materials Management Plan (AFI 32-7086, *Hazardous Materials Management*); Hazardous Waste Management Plan (AFIOH 2004); and all applicable Federal, state, and local regulations and policies. This project would not affect or be affected by ERP sites.

4.4.3 Representative Infrastructure Projects

4.4.3.1 I1. Repair Runway 06/24

The threshold, touchdown zone, and precision approach path indicator and edge lights for Runway 06/24 are misaligned and do not comply with current AMC standards. Runway lights and associated lighting and taxiway signage are aligned for a 200-foot wide runway and need to be realigned to a 150-foot runway. Portions of the airfield surface are beginning to deteriorate and form uneven surfaces where water can pool.

Project I1 would provide for the general repair of Runway 06/24. The runway centerline would be resurfaced to address structurally related stress, which would include milling the top 3 inches of the surface; sealing remaining cracks; and applying tack coat, a 1-inch base of asphalt, and a 2-inch sealing surface (22,222 yd² or 200,000 ft²). Low spots of the runway would be graded and drainage structures installed to correct drainage problems at various places of the runway (13,889 yd² or 125,000 ft²). The runway pavement would be reconfigured to a 150-foot wide runway, resulting in an overall decrease of impervious surfaces (500,000 ft²). The touchdown zones would be removed and replaced (400,000 ft²). Airfield lighting would be recircuited, replaced, and realigned as needed, including the approach lighting, touchdown zone lights, taxiway edge lights, runway edge lights, precision approach path indicator lights, and centerline lights. The runway would be grooved and marked as required. The I1 project area includes the entire length of the runway, including the overruns, though milling and repairs would be accomplished on the pavement areas that are degraded. The entire project area is shown in **Figure 2-2** and a partial project area is shown in **Figure 4-3**. There are wetlands that occur on either side of the existing runway with more wetlands at the Runway 24 end.

Noise. Short-term minor adverse effects on noise levels would be expected as a result of the runway repair. The noise emanating from the proposed project would be localized, short-term, and intermittent during construction equipment and machinery operations. **Table 3-1** shows the predicted noise levels for various pieces of construction equipment operating at 50 feet from the source. Heavy construction equipment would be operated periodically during the project, which would limit the duration of increased noise levels. The predicted noise levels shown in **Table 4-2** are comparable to the noise levels that would be expected for pavement demolition and construction; pavement demolition would be louder than pavement construction. This area of McGuire AFB is used for airfield activities where the dominant component of the noise environment is from aircraft operations. Populations potentially affected by noise would be at least 1,300 feet away, so increases in noise levels from construction would be minor in comparison with the existing airport environment.

Land Use. No effects would be expected from repair of Runway 06/24. There would be no changes in land use.

Air Quality. Short-term minor adverse effects would be expected as a result of the repair of Runway 06/24. Construction activities would result in air emissions from the operation of heavy machinery. Fugitive particulate matter would be minimized by continually spraying water over the construction area. Repairing Runway 06/24 pavements would be expected to result in air emissions comparable to those indicated in **Table 4-9**. This project would not exceed *de minimis* thresholds, nor would it produce criteria pollutant emissions exceeding 10 percent of the regional emissions inventory.

Table 4-9. Expected Criteria Pollutant Emissions Resulting from Project II

	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)
Estimated II Emissions	5.592	0.324	2.270	0.112	57.718	8.914
MPIAQCR <i>de minimis</i> threshold	100	50	NA	100	NA	100
Project Percentage of Regional Emissions Inventory (MPIAQCR)	0.0021%	0.0001%	0.0002%	<0.0001%	0.0525%	0.0216%

Sources: emissions calculated using USEPA 2007c and USEPA 2006c, region emissions estimated using USEPA 2006a

Note: NA = not applicable

Safety. Short-term minor adverse and long-term beneficial effects could occur. Construction activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adherence to established Federal, state, and local safety regulations. Contractors working in or near the runway and the airfield must be aware of and follow flightline safety procedures.

Implementation of the Proposed Action would result in overall safety improvements to the runway by repairing cracked pavements and upgrading various airfield lighting systems. This would result in long-term beneficial effects by providing a safer operating environment.

Geological Resources. Short-term, minor, adverse effects would be expected from grading, excavating, and recontouring of the soil. At least 500,000 ft² (11.5 acres) of soil would be disturbed as a result of realigning the runway pavements from 200 feet wide to 150 feet wide; replacing the touchdown zones could disturb 400,000 ft² (9.2 acres) if replacement would require the removal of the entire slab so that soil is exposed. However, the disturbance would occur within the footprint of the existing runway. The proposed repair would require authorization under the statewide NJPDES Construction and Mining Activity General Storm Water Permit (NJ0088323) or an individual permit and an ESCP. The development of an ESCP with BMPs to manage erosion and sedimentation and storm water runoff during and after demolition would minimize the effects of erosion and sedimentation. The infrastructure project would also comply with the installation's SWPPP (MAFB 2005c) and all applicable Federal, state, and local regulations and policies.

The soils mapped under Runway 06/24 include Adelphia-Urban Land complex, 0 to 5 percent slopes; Atsion fine sand, 0 to 2 percent slopes; Evesboro fine sand, 0 to 5 percent slopes; Evesboro-Urban Land complex, 0 to 5 percent slopes; Udorthents-Urban Land complex, 0 to 8 percent slopes; and Keyport-Urban Land Complex, 0 to 10 percent slopes. Atsion fine sand, 0 to 2 percent slopes, is both a hydric soil and a prime farmland soil. Because the existing runway occurs on this area, the land would not be considered available for agriculture or use as farmland. Therefore, no effects on prime farmland would be expected.

Water Resources. Short-term, negligible, adverse effects could occur from grading, excavating, and recontouring of the soil and possible use of construction-related hazardous materials and other potential pollutants during the demolition of runway pavements (500,000 ft²) and possibly during the replacement of the touchdown zones (400,000 ft²). These activities have the potential to result in transport of sediment and other construction-related pollutants in runoff from the construction site. Portions of Runway 06/24 are near an unnamed tributary of South Run, Larkins Run, Jacks Run, and an unnamed stream in the center of the airfield. The proposed repair of Runway 06/24 would require authorization under the

statewide NJPDES Construction and Mining Activity General Storm Water Permit (NJ0088323) or an individual permit and an ESCP. The development of an ESCP with BMPs to manage erosion and sedimentation and storm water runoff during and after construction would minimize effects on surface water and groundwater. The construction project would also implement spill prevention practices and comply with the installation's SWPPP (MAFB 2005c) and all applicable Federal, state, and local regulations and policies.

The demolition of pavement has the potential to result in long-term, negligible, beneficial effects on water resources associated with a decrease in impervious surfaces. The proposed pavement demolition would result in a decrease of approximately 500,000 ft² (11.5 acres) of impervious surfaces. This decrease would result in a negligible reduction in the velocity and volume of storm water runoff. McGuire AFB proposes other mission-essential infrastructure projects associated with Runway 18/36 that would increase impervious surfaces, offsetting this pavement demolition (i.e., Project I6, I7, and I9, see **Section 4.4.4**).

Biological Resources. Minor adverse effects on vegetation, wildlife, and protected or sensitive species could occur as a result of the repair of Runway 06/24. The footprint of the project is within the existing Runway 06/24. The proposed construction is in an area that is heavily disturbed. Mowed airfield habitat surrounds the project area. Mowed airfield is breeding and nesting habitat for grassland bird species including the state-listed species of upland sandpiper (endangered), grasshopper sparrow (threatened), and savannah sparrow (threatened). These species could be disturbed by noise associated with construction operations. However, these species are adapted to aircraft operations that occur in the area. Therefore, indirect effects on these species would be expected to be negligible. Correspondence with New Jersey Fish and Wildlife, Endangered and Nongame Species Programs, would be conducted and any BMPs would be implemented prior and during construction activities to minimize potential for adverse effects. There are no known federally protected species that occur at McGuire AFB.

The proposed repair of Runway 06/24 is within 300 feet of wetlands. This project could have short-term, minor, indirect, adverse effects on wetlands associated with storm water runoff and erosion and sedimentation. Storm water management and erosion and sediment control BMPs would be implemented to avoid these effects during pavement demolition activities (see **Section 4.3.6**).

It is estimated that of the 500,000 ft² of total pavement that would be removed, approximately 143,000 ft² of impervious surfaces would be removed from the wetland transition area. Long-term, minor, indirect, beneficial effects of wetlands could result from this project following stabilization of the project area. Beneficial effects associated with a minor decrease in impervious surfaces could include a reduction in storm water runoff and an increase in infiltration into natural surfaces. However, the overall decrease in impervious surfaces would be negligible following implementation of other proposed mission-essential infrastructure upgrades to Runway 18/36 (i.e., Projects I7 and I9, see **Section 4.4.4**) that would offset the benefits of this project.

All necessary and required permits would be obtained prior to any activities that would affect wetland habitat, and any required mitigation would be implemented. McGuire AFB is committed to managing biological resources in accordance with all applicable Federal, state, and local regulations and policies.

Cultural Resources. Although the project would occur within the viewshed of a number of buildings that are 50 years old or older that have not been evaluated for NRHP eligibility, the repairs to the runway would not alter the current viewshed in a manner that would visually impact historic properties. Similarly, any ground disturbance would be restricted to already disturbed, paved areas, and no new landscape features would be introduced as a result of the project. Accordingly, Project I1 has no potential to affect cultural resources.

Socioeconomic Resources. Minor beneficial effects on socioeconomic resources would be expected from the proposed repair of Runway 06/24. The estimated cost of construction for this project is approximately \$14 million; it is assumed that local materials and contractors would be used. Repair activities would occur entirely on McGuire AFB and would have little potential to affect off-installation residents adversely.

Infrastructure. Long-term major beneficial effects would be expected by the improvement of airfield pavements. Negligible effects on utilities and other infrastructure systems would be expected from the proposed pavement demolition and construction of new pavement. Short-term adverse effects would be expected as a result of the generation of as much as 66,000 tons of debris from demolition and construction (USACE 1976). This is a short-term adverse effect in that debris would only be generated during construction activities; however, debris that is not recycled would be landfilled, which would be considered a long-term irreversible adverse effect.

Hazardous Materials and Wastes. Short-term minor adverse effects would be expected from the use of hazardous materials during the pavement repair process of Runway 06/24. No long-term effects would be expected. McGuire AFB is committed to managing hazardous materials and wastes according to the installation's Hazardous Materials Management Plan (AFI 32-7086, *Hazardous Materials Management*); Hazardous Waste Management Plan (AFIOH 2004); and all applicable Federal, state, and local regulations and policies. This project would not affect or be affected by ERP sites.

4.4.3.2 I2. Repair Concrete on X-Ray Apron

The X-ray apron concrete is 45 years old and degraded. Further deterioration of the concrete could render this apron unusable for aircraft operations. Project I2 would repair the concrete on the X-ray apron by replacing the concrete slab, sealing joints, replacing spalls and edges with cement-epoxy, and sealing the slab surface with methacrylate monomer. The project area includes the entire X-ray apron (558,000 ft²), though the footprint of the X-ray apron would remain unchanged. As shown in **Figure 4-3**, the X-ray apron is near ERP sites and wetlands, as well as various operational constraints.

Noise. Short-term minor adverse effects on noise levels would be expected as a result of the apron repairs. The noise emanating from the proposed project would be localized, short-term, and intermittent during construction equipment and machinery operations. **Table 3-1** shows the predicted noise levels for various pieces of construction equipment operating at 50 feet from the source. Heavy construction equipment would be operated periodically during the project, which would limit the duration of increased noise levels. The predicted noise levels shown in **Table 4-2** are comparable to the noise levels that would be expected for pavement demolition and construction; pavement demolition would be louder than pavement construction. This area of McGuire AFB is used for airfield activities where the dominant component of the noise environment is from aircraft operations and aircraft maintenance. Populations potentially affected by noise would be approximately 100 feet from the source of the paving and grading noise; noise levels would be comparable to that of a very noisy urban area (about 86 dBA, refer to **Figure 3-1** and **Table 4-2**).

Land Use. No effects would be expected from repair of the X-ray apron. Although the apron is within the clear zone for Runway 24, airfield aprons are compatible with clear zone requirements. There would be no changes in land use.

Air Quality. Short-term minor adverse effects would be expected as a result of repairing the concrete on the X-ray apron. Construction activities would result in air emissions from the operation of heavy machinery. Fugitive particulate matter would be minimized by continually spraying water over the construction area. Repairing the concrete on the X-ray apron would be expected to result in air emissions

comparable to those indicated in **Table 4-10**. This project would not exceed *de minimis* thresholds, nor would it produce criteria pollutant emissions exceeding 10 percent of the regional emissions inventory.

Table 4-10. Expected Criteria Pollutant Emissions Resulting from Project I2

	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)
Estimated I2 Emissions	11.695	0.691	4.644	0.234	16.717	3.081
MPIAQCR <i>de minimis</i> threshold	100	50	NA	100	NA	100
Project Percentage of Regional Emissions Inventory (MPIAQCR)	0.0044%	0.0003%	0.0003%	0.0001%	0.0152%	0.0075%

Sources: emissions calculated using USEPA 2007c and USEPA 2006c, region emissions estimated using USEPA 2006a

Note: NA = not applicable

Safety. Short-term minor adverse and long-term beneficial effects could occur. Construction activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adherence to established Federal, state, and local safety regulations. Contractors working in or near the flightline must be aware of and follow flightline safety procedures. During construction activities, hot cargo would not be within the project area.

Implementation of the Proposed Action would result in overall safety improvements to the apron by repairing cracked concrete. This would result in long-term beneficial effects by providing a safer operating environment.

Geological Resources. No effects on geological resources would be expected. The proposed repair of the X-ray apron would remove the surface slab only and would not be expected to disturb the underlying soil. However, in the event that ground disturbance becomes necessary to repair the apron, McGuire AFB would adhere to all state and Federal permitting requirements and prepare an ESCP with BMPs to manage erosion, sedimentation, and storm water runoff.

Water Resources. Short-term, negligible, adverse effects on water resources would be expected. The proposed repair of the X-ray apron would remove the surface slab only and would not be expected to disturb the underlying soil, so no effects as a result of construction-related soil disturbance would occur. The use of construction-related hazardous materials and other potential pollutants during repair of the concrete on the X-ray apron could introduce pollutants in storm water runoff from the construction site. The X-ray apron is about 100 feet from South Run and an unnamed tributary of South Run. However, the proposed project would not result in an increase in impervious surfaces. The construction project would also implement spill prevention practices and comply with the installation's SWPPP (MAFB 2005c) and all applicable Federal, state, and local regulations and policies.

In the event that ground-disturbance becomes necessary to repair the apron, McGuire AFB would adhere to state and Federal permitting requirements and prepare an ESCP with BMPs to manage erosion, sedimentation, and storm water runoff.

Biological Resources. No adverse effects on vegetation, wildlife, or protected or sensitive species would occur as a result of the repair of the X-ray apron. The footprint of the project is within the existing X-ray apron footprint. The proposed construction is in an area that is heavily disturbed. There is minimal

existing vegetation and no suitable habitat for wildlife. Furthermore, there are no known federally protected species that occur at McGuire AFB. No state endangered or rare species would be affected by this project.

The proposed repair of the X-ray apron is within 300 feet of wetlands. However, there would be no increase in impervious surfaces associated with this project, nor would there be ground-disturbing activity. Therefore this project would not be expected to result in adverse effects on wetlands.

Any permits that are determined necessary would be obtained prior to initiating activities that would affect wetland habitat, and any required mitigation would be implemented. McGuire AFB is committed to managing biological resources in accordance with all applicable Federal, state, and local regulations and policies.

Cultural Resources. Although the project would occur within the viewshed of a number of buildings that are 50 years old or older that have not been evaluated for NRHP eligibility, the repairs to the apron would not alter the current viewshed in a manner that would visually impact historic properties. Similarly, any ground disturbance would be restricted to already disturbed, paved areas, and no new landscape features would be introduced as a result of the project. Accordingly, Project I2 has no potential to affect cultural resources.

Socioeconomic Resources. Negligible to minor beneficial effects on socioeconomic resources would be expected from the proposed repair of concrete on the X-ray apron. The estimated cost of repair for the X-ray apron is \$3.9 million; it is assumed that local materials and contractors would be used. Construction would occur entirely on McGuire AFB and would have little potential to affect off-installation residents adversely.

Infrastructure. Long-term major beneficial effects would be expected by the improvement of airfield pavements. Negligible effects on utilities and other infrastructure systems would be expected from the proposed pavement demolition and construction of new pavement. Short-term adverse effects would be expected as a result of the generation of as much as 18,414 tons of debris from demolition and construction (USACE 1976). This is a short-term adverse effect in that debris would only be generated during construction activities; however, debris that is not recycled would be landfilled, which would be considered a long-term irreversible adverse effect.

Hazardous Materials and Wastes. Short-term minor adverse effects would be expected from the use of hazardous materials during the pavement demolition and construction process. No long-term effects would be expected. McGuire AFB is committed to managing hazardous materials and wastes according to the installation's Hazardous Materials Management Plan (AFI 32-7086, *Hazardous Materials Management*); Hazardous Waste Management Plan (AFIOH 2004); and all applicable Federal, state, and local regulations and policies.

A portion of the proposed apron repair project occurs within ERP site SS-035. Contamination by VOCs (benzene), SVOCs, and metals appears to be confined to groundwater. Potential effects associated with this project would be negligible because it is unlikely that groundwater would be encountered during any construction activities. However, prior to initiating the project, 305 CES/CEV should be closely consulted as to procedures to be followed. Care should be exercised regarding the level of disturbance of the site and a Health and Safety Plan developed to protect construction workers.

4.4.3.3 I3. Demolish Pavement for Auto Skills Center

This project would demolish pavement (approximately 324,000 ft²) that is currently used as an aircraft parking area for small privately owned planes for the Aero Club and Civil Air Patrol. Demolition would provide the necessary space to construct a new Auto Skills Center in the future (construction of the Auto Skills Center is not analyzed as a component of Project I3 but is included in this IDEA as Project C9 in **Section 4.4.4**). As shown in **Figure 4-2**, Project I3 would be near several ERP sites and crosses storm water drainage channels. A portion of the pavement is near wetlands.

Noise. Short-term minor adverse effects on noise levels would be expected as a result of the pavement demolition. The noise emanating from the proposed project would be localized, short-term, and intermittent during construction equipment and machinery operations. **Table 3-1** shows the predicted noise levels for various pieces of construction equipment operating at 50 feet from the source. Heavy construction equipment would be operated periodically during the demolition, which would limit the duration of increased noise levels. The predicted noise levels shown in **Table 4-2** are comparable to the noise levels that would be expected for pavement demolition. This area of McGuire AFB is currently used for aircraft operations and maintenance and airfield pavements; noise associated with aircraft operations is a dominant component of the existing noise environment. Populations potentially affected by noise would be approximately 150 feet from the source of the grading and paving noise; noise levels would be comparable to that of a very noisy urban residential area (approximately 76 dBA, refer to **Figure 3-1** and **Table 4-2**).

Land Use. No adverse effects would be expected from demolition of the pavement; however, the pavement would be demolished in order to construct an Auto Skills Center. The current land use is aircraft operations and maintenance, but the future Auto Skills Center would be an industrial land use. Aircraft operations and maintenance and industrial uses are compatible. Any redevelopment of this site following demolition should avoid encroaching on the runway clear zone; development within the clear zone would be considered an incompatible land use.

Air Quality. Short-term minor adverse effects would be expected as a result of the demolition of pavement for the Auto Skills Center. Demolition activities would result in air emissions from the operation of heavy machinery. Fugitive particulate matter would be minimized by continually spraying water over the demolition area. Demolition of the pavement for Auto Skills Center would be expected to result in air emissions comparable to those indicated in **Table 4-11**. This project would not exceed *de minimis* thresholds, nor would it produce criteria pollutant emissions exceeding 10 percent of the regional emissions inventory.

Table 4-11. Expected Criteria Pollutant Emissions Resulting from Project I3

	NO _x (tpy)	VOC (tpy)	CO (tpy)	SO ₂ (tpy)	PM ₁₀ (tpy)	PM _{2.5} (tpy)
Estimated I3 Emissions	6.019	0.357	2.379	0.120	9.660	1.743
MPIAQCR <i>de minimis</i> threshold	100	50	NA	100	NA	100
Project Percentage of Regional Emissions Inventory (MPIAQCR)	0.0023%	0.0002%	0.0002%	<0.0001%	0.0088%	0.0042%

Sources: emissions calculated using USEPA 2007c and USEPA 2006c, region emissions estimated using USEPA 2006a

Note: NA = not applicable

Safety. Short-term minor adverse effects could occur. Demolition activities pose an increased risk of construction-related accidents, but this level of risk would be managed by adherence to established Federal, state, and local safety regulations. Contractors working in or near the flightline must be aware of and follow flightline safety procedures. The existing parking lot is near an ERP site; contamination appears to be confined to groundwater only, so no safety risks would be expected during construction activities. See the discussion under *Hazardous Materials and Wastes* for more information regarding the contamination at this ERP site.

Geological Resources. Short-term, minor, adverse effects would be expected from grading, excavating, and recontouring of the soil. Approximately 324,000 ft² (7.4 acres) of soil would be disturbed. The proposed demolition would require authorization under the statewide NJPDES Construction and Mining Activity General Storm Water Permit (NJ0088323) or an individual permit. An ESCP would be developed. The development of an ESCP with BMPs to manage erosion and sedimentation and storm water runoff during and after demolition would minimize the effects of erosion and sedimentation. The demolition project would also comply with the installation's SWPPP (MAFB 2005c) and all applicable Federal, state, and local regulations and policies.

Soils that underlie the pavement for the Auto Skills Center include Udorthents, wet substratum, 0 to 8 percent slopes and Sassafras sandy loam, 2 to 5 percent slopes. Sassafras sandy loam has potential for the occurrence of hydric inclusions, which are an indicator of potential locations of wetlands (see *Wetlands* in **Sections 3.7.2** and **4.3.7**). Udorthents are not hydric. The Sassafras sandy loam, 2 to 5 percent slopes is a prime farmland soil. Because pavement occurs on this area, the land would not be considered available for agriculture or use as farmland. Therefore, no effects on prime farmland would be expected.

Water Resources. Short-term, negligible, adverse effects could occur from disturbance and exposure of soils during the demolition of the pavement for the Auto Skills Center. These activities have the potential to result in transport of sediment and other construction-related pollutants in runoff from the demolition site. The proposed demolition would require authorization under the statewide NJPDES Construction and Mining Activity General Storm Water Permit (NJ0088323) or an individual permit. An ESCP would be developed. The development of an ESCP with BMPs to manage erosion and sedimentation and storm water runoff during and after construction would minimize effects on surface water and groundwater. The construction project would also implement spill prevention practices and comply with the installation's SWPPP (MAFB 2005c) and all applicable Federal, state, and local regulations and policies.

The demolition of pavement for the Auto Skill Center has the potential to result in long-term, negligible, beneficial effects on water resources associated with a decrease in impervious surfaces. The demolition of these buildings would result in a decrease of approximately 324,000 ft² (7.4 acres) of impervious surfaces (see **Table A-3**). This decrease would result in a negligible reduction in the velocity and volume of storm water runoff. Portions of this project area would be redeveloped as the proposed Auto Skills Center (Project C9), which is analyzed in **Section 4.4.4**.

Biological Resources. No adverse effects on vegetation, wildlife, or protected or sensitive species would occur as a result of the demolition of the pavement for the Auto Skills Center. The footprint of the project is within existing pavement. There is minimal existing vegetation and no suitable habitat for wildlife. Furthermore, there are no known federally protected species that occur at McGuire AFB. No state-endangered or rare species would be affected by this project.

The proposed demolition of the pavement is within 300 feet of wetlands. This project could have short-term, minor, indirect, adverse effects on wetlands associated with storm water runoff and erosion and

sedimentation. Storm water management and erosion and sediment control BMPs would be implemented to avoid these effects (see **Section 4.3.6**).

It is estimated that of the 324,000 ft² of total pavement to be demolished, approximately 48,000 ft² of impervious surfaces would be removed from the wetland transition area, and approximately 8,000 ft² would be redeveloped as a result of Project C9 (see **Section 4.4.4**). Long-term, minor, indirect, beneficial effects of wetlands could result from this project following stabilization of the project area. Beneficial effects associated with a minor decrease in impervious surfaces could include a reduction in storm water runoff and an increase in infiltration into natural surfaces within the wetland transition areas.

All necessary and required permits would be obtained prior to any activities that would affect wetland habitat, and any required mitigation would be implemented. McGuire AFB is committed to managing biological resources in accordance with all applicable Federal, state, and local regulations and policies.

Cultural Resources. Although the project would occur within the viewshed of a number of buildings that are 50 years old or older that have not been evaluated for NRHP eligibility, the proposed pavement would not alter the current viewshed in a manner that would visually impact historic properties. Similarly, any ground disturbance would be restricted to already disturbed, paved areas, and no new landscape features would be introduced as a result of the project. Accordingly, Project I3 has no potential to affect cultural resources.

Socioeconomic Resources. Negligible effects on socioeconomic resources would be expected from the demolition of pavement for the Auto Skills Center. The estimated cost of demolition for this facility is approximately \$100,000; it is assumed that local contractors would be used. Demolition would occur entirely on McGuire AFB and would have little potential to affect off-installation residents adversely.

Infrastructure. Negligible effects on infrastructure resources would be expected from the proposed pavement demolition and construction of new pavement. Short-term adverse effects would be expected as a result of the generation of as much as 10,530 tons of debris from demolition and construction (calculated using the density of asphalt and USACE 1976). This is a short-term adverse effect in that debris would only be generated during construction activities; however, debris that is not recycled would be landfilled, which would be considered a long-term irreversible adverse effect.

Hazardous Materials and Wastes. Short-term minor adverse effects would be expected from the use of hazardous materials during the pavement removal process at the Auto Skills Center. No long-term effects would be expected. McGuire AFB is committed to managing hazardous materials and wastes according to the installation's Hazardous Materials Management Plan (AFI 32-7086, *Hazardous Materials Management*); Hazardous Waste Management Plan (AFIOH 2006); and all applicable Federal, state, and local regulations and policies.

A portion of the proposed demolition project occurs within ERP site SS-040. Concentrations above regulatory limits of VOCs, SVOCs, and metals appear to be confined to groundwater, so Project I3 would be expected to have negligible effects. However, prior to initiating the project, 305 CES/CEV should be closely consulted as to procedures to be followed. Care should be exercised regarding the level of disturbance of the site and a Health and Safety Plan developed to protect construction workers.

4.4.4 Analysis of All Proposed Projects

Table 4-12 summarizes the potential environmental consequences associated with the remainder of the installation development projects that are identified in **Appendix A** but not previously analyzed as representative projects in **Sections 4.4.1, 4.4.2, and 4.4.3**. The proposed locations for these projects are

identified in **Figures 4-4** through **4-11**. The intent of the table in this section is to focus on those potential environmental consequences that would be expected as a result of location- or operation-specific activities. All demolition and construction activities generally would be expected to result in some increased noise, increased air emissions, potential for erosion and transport of sediment into surface water bodies, generation of small amounts of hazardous materials and wastes, and generation of construction and demolition waste. All demolition and construction activities generally would be expected to result in minor beneficial effects on socioeconomics as a result of job creation and materials procurement. Furthermore, it should be assumed that demolition or renovation activities in older buildings have the potential to disturb asbestos or LBP and the appropriate identification, handling, removal, and disposal of those materials would occur in accordance with existing McGuire AFB management plans and Federal, state, DOD, and USAF regulations and guidance. These types of short-term, construction-related effects are identified in **Section 4.3** in the general analysis and **Sections 4.4.1, 4.4.2, and 4.4.3** in the detailed analyses of the representative projects. Therefore, they are not identified as constraints to development in **Table 4-12** for each project; it is assumed that, in the absence of unique constraints, the potential environmental effects associated with the size of a demolition or construction project would be similar to those described in **Sections 4.4.1, 4.4.2, and 4.4.3**. The potential environmental consequences associated with implementation of all other projects are analyzed following **Table 4-12**; the potential constraints that are identified in **Table 4-12** (i.e., those not identified as “no or negligible effects”) are elaborated upon in the following analysis by resource area.

All construction and demolition activities would adhere to McGuire AFB’s existing plans and policies that have been identified and referenced throughout **Sections 2, 3, 4, and 7** of this IDEA. **Table 4-12** is not meant to substitute for or initiate coordination that might be required as a result of the proposed activities; it is meant to identify potential effects on sensitive resources. The following summarizes the potential adverse effects associated with constraints for the projects identified in **Appendix A** and the existing management plans and policies regarding those affected resources.

Table 4-12. Potential Environmental Consequences from All Proposed Projects Listed in Appendix A

Project Identification Number and Title	Figure	Land Use	Safety	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Hazardous Materials and Wastes
Proposed Demolition Projects								
D4. Demolish Building 3401, CE Horizontal Shop and Disaster Preparedness Building.	4-8	⊕ CZ	-	⊗ ESCP	⊗ ESCP	-	-	⊗ ERP
D5. Demolish Buildings 2604 and 2605, Temporary Gymnasiums.	4-7	-	-	⊗ ESCP	⊗ ESCP	-	⊗ Atc	-
D6. Demolish Building 2610.	4-6	-	-	⊗ ESCP	⊗ ESCP	-	⊗ Atc	-
D7. Demolish Building 2609.	4-6	-	-	⊗ ESCP	⊗ ESCP	-	⊗ Atc	-
D8. Demolish Building 1912, Visiting Airmen's Quarters Dormitory.	4-7	-	-	⊗ ESCP	⊗ ESCP	-	⊗ Atc	-
D9. Demolish Building 3446, 514th Communications Facility.	4-5 & 4-8	⊕ CZ	-	⊗ ESCP	⊗ ESCP	-	-	-
D10. Demolish Building 1748 (Aerial Port Squadron [APS] Cargo/Grid Staging Area project).	4-9	-	-	⊗ ESCP	⊗ ESCP	-	-	-

Legend:

- No effects or negligible effects ⊕ Potential minor beneficial effects ⊗ Potential minor adverse effects ■ Potentially significant (greater magnitude than representative projects)

Key:

65 dBA = Within the 65 dBA noise contour
CZ = Within the Clear Zone
QD = Within or near QD arcs

FS = Farmland soil affected
ESCP = Erosion and sediment control plan recommended

NJPDES = NJPDES permit required
WT = Project within wetland transition area
SS = State-protected species potentially affected

VC = Vegetation clearing requires coordination with NJPC
WE = Potential effects on wildlife

Atc = Potentially affected structure has not been surveyed
VS = Potentially affected viewshed
EC = Environmental Cleanup Site

ERP = Within or near known ERP site
HAZ = Change in quantity or storage for hazardous materials or wastes

Table 4-12. Potential Environmental Consequences from All Proposed Projects Listed in Appendix A (continued)

Project Identification Number and Title	Figure	Land Use	Safety	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Hazardous Materials and Wastes
D11. Demolish Building 3440, Base Engineering Storage.	4-8	⊕ CZ	-	⊗ ESCP	⊗ ESCP	-	-	-
D12. Demolish Building 3542, 514th Civil Engineering Headquarters.	4-5	⊕ CZ	-	⊗ ESCP	⊗ ESCP	-	-	-
D13. Demolish Building 1931, Disaster Preparedness Facility.	4-10	⊕ CZ	-	⊗ ESCP	⊗ ESCP	⊗⊕ WT	⊗ Atc	⊗ ERP
D14. Demolish Buildings 2418 and 2419, Temporary Lodging Facilities.	4-6	-	-	⊗ ESCP	⊗ ESCP	-	-	-
D15. Demolish Building 1911, Education Center.	4-7	-	-	⊗ ESCP	⊗ ESCP	-	⊗ Atc	-
D16. Demolish Buildings 1913, 1914, 1915, 1916, 1917, 1918, and 1939 and remediate 10 acres (Munitions Storage Area project).	4-7	-	⊗ QD	⊗ ESCP	⊗ ESCP	⊗⊕ WT	⊗ Atc	⊗⊕ HAZ, EC
D17. Demolish Building 1623, NDI Laboratory.	4-11	-	-	⊗ ESCP	⊗ ESCP	⊗⊕ WT, SS	⊗ Atc	⊗ ERP

Legend:

- No effects or negligible effects ⊕ Potential minor beneficial effects ⊗ Potential minor adverse effects ■ Potentially significant (greater magnitude than representative projects)

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VC = Vegetation clearing requires coordination with NJPC
WE = Potential effects on wildlife

Atc = Potentially affected structure has not been surveyed
VS = Potentially affected viewshed
EC = Environmental Cleanup Site

ERP = Within or near known ERP site
HAZ = Change in quantity or storage for hazardous materials or wastes

Table 4-12. Potential Environmental Consequences from All Proposed Projects Listed in Appendix A (continued)

Project Identification Number and Title	Figure	Land Use	Safety	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Hazardous Materials and Wastes
D18. Demolish Building 2225, C-141 Squadron Operations Building.	4-9	-	-	⊗ ESCP	⊗ ESCP	-	⊗ Atc	-
D19. Demolish Facility 1925, Power Check Pad.	4-7 & 4-10	-	-	-	-	⊗⊕ WT	-	⊗ ERP
D20. Demolish Building 1932, Civil Engineering Readiness.	4-10	⊕ CZ	-	-	-	⊗⊕ WT	⊗ Atc	⊗ ERP
D21. Demolish Building 2912, Honor Guard Building.	4-7	-	-	-	-	-	⊗ Atc	-
D22. Demolish Building 1933, Pump House D hydrant system.	4-10	-	-	-	-	⊗⊕ WT	⊗ Atc	⊗ HAZ
D23. Demolish Building 3449, Biomedical Engineering Storage Facility.	4-5	-	-	-	-	⊗⊕ WT	-	⊗ ERP
D24. Demolish Building 1927, Falcons Talon Bird Contractor Building.	4-7 & 4-10	⊕ CZ	-	-	-	⊗⊕ WT	-	⊗ ERP
D25. Demolish Building 1512, Sewage Treatment.	4-10	-	-	-	-	-	-	-

Legend:

- No effects or negligible effects ⊕ Potential minor beneficial effects ⊗ Potential minor adverse effects ■ Potentially significant (greater magnitude than representative projects)

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NJPDES = NJPDES permit required
WT = Project within wetland transition area
SS = State-protected species potentially affected

VC = Vegetation clearing requires coordination with NJPC
WE = Potential effects on wildlife

Atc = Potentially affected structure has not been surveyed
VS = Potentially affected viewshed
EC = Environmental Cleanup Site

ERP = Within or near known ERP site
HAZ = Change in quantity or storage for hazardous materials or wastes

Table 4-12. Potential Environmental Consequences from All Proposed Projects Listed in Appendix A (continued)

Project Identification Number and Title	Figure	Land Use	Safety	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Hazardous Materials and Wastes
D26. Demolish Building 1827, Base Supply and Equipment Warehouse.	4-10	-	-	-	-	-	-	⊗ ERP
D27. Demolish Building 3402, Mechanical Building.	4-8	⊕ CZ	-	-	-	-	-	⊗ ERP
D28. Demolish Building 3424, Base Hazardous Storage Facility.	4-5	-	-	-	-	⊗⊕ WT	-	⊗ HAZ
D29. Demolish Building 1934, A/SE Storage Facility.	4-10	⊕ CZ	-	-	-	⊗⊕ WT	-	⊗ ERP
D30. Demolish Building 1740, Pulverizer.	4-9	-	-	-	-	-	⊗ Atc	-
Proposed Construction Projects								
C4. Construct Precision Measurement Equipment Laboratory (PMEL).	4-7	-	-	⊗ ESCP	⊗ ESCP	-	⊗ Atc, VS	-
C5. Construct an addition to Building 2217 and renovate existing office.	4-9	⊗ 65 dBA	-	⊗ ESCP	⊗ ESCP	-	-	-

Legend:

- No effects or negligible effects ⊕ Potential minor beneficial effects ⊗ Potential minor adverse effects ■ Potentially significant (greater magnitude than representative projects)

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QD = Within or near QD arcs

FS = Farmland soil affected
ESCP = Erosion and sediment control plan recommended

NJPDES = NJPDES permit required
WT = Project within wetland transition area
SS = State-protected species potentially affected

VC = Vegetation clearing requires coordination with NJPC
WE = Potential effects on wildlife

Atc = Potentially affected structure has not been surveyed
VS = Potentially affected viewshed
EC = Environmental Cleanup Site

ERP = Within or near known ERP site
HAZ = Change in quantity or storage for hazardous materials or wastes

Table 4-12. Potential Environmental Consequences from All Proposed Projects Listed in Appendix A (continued)

Project Identification Number and Title	Figure	Land Use	Safety	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Hazardous Materials and Wastes
C6. Construct 41 earth-covered igloos, a munitions maintenance administration facility, munitions maintenance shop facility, and inert spares storage facility with concrete pad.	4-7	-	⊕ QD	⊗ ESCP	⊗ ESCP	⊗ WT	-	⊗ HAZ
C7. Construct a joint-base family support center.	4-6	-	-	⊗ ESCP	⊗ ESCP	-	-	-
C8. Construct a Civil Engineer Training Facility.	4-6	-	-	⊗ ESCP	⊗ ESCP	⊗ VC, WE	-	-
C9. Construct an Auto Skills Center.	4-8	-	-	⊗ ESCP	⊗ ESCP	⊗ WT	-	⊗ ERP, HAZ
C10. Construct a Golf Course Maintenance and Pesticide Storage/Mixing Facility.	4-7	-	⊗ QD	⊗ ESCP	⊗ ESCP	⊗ WT	-	⊗ ERP, HAZ
C11. Construct a facility for Airlift Control Flight and vehicle storage.	4-5	⊗ 65 dBA	-	⊗ FS, ESCP	⊗ ESCP	⊗ VC, WE	-	-

Legend:

- No effects or negligible effects ⊕ Potential minor beneficial effects ⊗ Potential minor adverse effects ■ Potentially significant (greater magnitude than representative projects)

Key:

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CZ = Within the Clear Zone

QD = Within or near QD arcs

FS = Farmland soil affected
ESCP = Erosion and sediment control plan recommended

NJPDES = NJPDES permit required
WT = Project within wetland transition area
SS = State-protected species potentially affected

VC = Vegetation clearing requires coordination with NJPC
WE = Potential effects on wildlife

Atc = Potentially affected structure has not been surveyed
VS = Potentially affected viewshed
EC = Environmental Cleanup Site

ERP = Within or near known ERP site
HAZ = Change in quantity or storage for hazardous materials or wastes

Table 4-12. Potential Environmental Consequences from All Proposed Projects Listed in Appendix A (continued)

Project Identification Number and Title	Figure	Land Use	Safety	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Hazardous Materials and Wastes
C12. Construct a School Age Program facility.	4-4	-	-	-	-	⊗ WT, VC, WE	-	-
C13. Construct an addition to Building 1750, Vehicle Maintenance.	4-9	⊗ 65 dBA	-	-	-	-	-	⊗ ERP
C14. Construct a communications warehouse.	4-7	-	-	⊗ FS	-	-	⊗ Atc, VS	-
C15. Construct a readiness warehouse.	4-10	⊗ 65 dBA	-	-	-	⊗ WT	-	-
C16. Construct a Civil Engineering Squadron Electrical Shop transformer storage building.	4-7	-	-	-	-	-	⊗ Atc, VS	⊗ ERP, HAZ
C17. Construct a liquid fuels maintenance facility.	4-7	-	-	-	-	-	-	⊗ ERP, HAZ
C18. Construct an overhang for Building 3515.	4-5	-	-	-	-	⊗ WT	-	-

Legend:

- No effects or negligible effects ⊕ Potential minor beneficial effects ⊗ Potential minor adverse effects ■ Potentially significant (greater magnitude than representative projects)

Key:

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CZ = Within the Clear Zone
QD = Within or near QD arcs

FS = Farmland soil affected
ESCP = Erosion and sediment control plan recommended

NJPDES = NJPDES permit required
WT = Project within wetland transition area
SS = State-protected species potentially affected

VC = Vegetation clearing requires coordination with NJPC
WE = Potential effects on wildlife

Atc = Potentially affected structure has not been surveyed
VS = Potentially affected viewshed
EC = Environmental Cleanup Site

ERP = Within or near known ERP site
HAZ = Change in quantity or storage for hazardous materials or wastes

Table 4-12. Potential Environmental Consequences from All Proposed Projects Listed in Appendix A (continued)

Project Identification Number and Title	Figure	Land Use	Safety	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Hazardous Materials and Wastes
C19. Add to Building 3011, Family Support Center.	4-6	-	-	-	-	-	-	-
C20. Add to Building 1730, Base Operations Facility.	4-9	⊗ 65 dBA	-	-	-	-	-	-
C21. Construct an addition to Building 1712 and parking for 514 AMW firefighters.	4-9	-	-	⊗ ESCP	⊗ ESCP	-	-	⊗ ERP
C22. Construct an addition to Building 1809A, PMEL.	4-9	⊗ 65 dBA	-	-	-	-	⊗ Atc	⊗ ERP
C23. Construction an ambulance garage.	4-5	-	-	⊗ FS	-	-	-	-
C24. Construct an AFRC recruiting facility and parking.	4-7	-	-	⊗ ESCP	⊗ ESCP	⊗ WT, VC, WE	⊗ Atc, VS	-
C25. Construct three covered motorcycle parking shelters at Buildings 2424, 2600, and 2700.	4-6	-	-	-	-	-	-	-

Legend:

- No effects or negligible effects ⊕ Potential minor beneficial effects ⊗ Potential minor adverse effects ■ Potentially significant (greater magnitude than representative projects)

Key:

65 dBA = Within the 65 dBA noise contour
CZ = Within the Clear Zone
QD = Within or near QD areas

FS = Farmland soil affected
ESCP = Erosion and sediment control plan recommended

NJPDES = NJPDES permit required
WT = Project within wetland transition area
SS = State-protected species potentially affected

VC = Vegetation clearing requires coordination with NJPC
WE = Potential effects on wildlife

Atc = Potentially affected structure has not been surveyed
VS = Potentially affected viewshed
EC = Environmental Cleanup Site

ERP = Within or near known ERP site
HAZ = Change in quantity or storage for hazardous materials or wastes

Table 4-12. Potential Environmental Consequences from All Proposed Projects Listed in Appendix A (continued)

Project Identification Number and Title	Figure	Land Use	Safety	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Hazardous Materials and Wastes
C26. Construct an annex to Building 3011 and parking for 514th Family Support Center.	4-6	-	-	⊗ ESCP	⊗ ESCP	-	-	-
C27. Add to Building 2218, 305 AMW and 514 AMW Maintenance Headquarters.	4-8	⊗ 65 dBA	-	-	-	-	⊗ Atc	-
C28. Add to and repair Building 2304, Base Honor Guard Facility.	4-6	⊗ 65 dBA	-	-	-	-	⊗ Atc	-
C29. Construct a loading dock canopy for Building 1719, Defense Courier Services.	4-9	-	-	-	-	-	-	-
C30. Construct latrines at Building 3101, Central Deployment Center.	4-6	-	-	-	-	-	-	-
C31. Construct an entrance to Building 2907, Post Office.	4-6	-	-	-	-	-	⊗ Atc	-
C32. Add to/alter Building 1616, Fire Training Facility.	4-11	-	-	⊗ FS, NJPDES	⊗ NJPDES	⊗ WT, SS	-	-

Legend:

- No effects or negligible effects ⊕ Potential minor beneficial effects ⊗ Potential minor adverse effects ■ Potentially significant (greater magnitude than representative projects)

Key:

65 dBA = Within the 65 dBA noise contour
CZ = Within the Clear Zone
QD = Within or near QD arcs

FS = Farmland soil affected
ESCP = Erosion and sediment control plan recommended

NJPDES = NJPDES permit required
WT = Project within wetland transition area
SS = State-protected species potentially affected

VC = Vegetation clearing requires coordination with NJPC
WE = Potential effects on wildlife

Atc = Potentially affected structure has not been surveyed
VS = Potentially affected viewshed
EC = Environmental Cleanup Site

ERP = Within or near known ERP site
HAZ = Change in quantity or storage for hazardous materials or wastes

Table 4-12. Potential Environmental Consequences from All Proposed Projects Listed in Appendix A (continued)

Project Identification Number and Title	Figure	Land Use	Safety	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Hazardous Materials and Wastes
Proposed Infrastructure Projects								
I4. Repair southern portion of main ramp taxiway.	4-9	-	⊗ QD	-	-	-	-	⊗ ERP
I5. Repair Alpha/Bravo parking ramp.	4-10	-	⊗ QD	-	-	-	-	⊗ ERP
I6. Construct overrun for Runway 36.	4-8	-	-	⊗ NJPDES	⊗ NJPDES	⊗ VC	-	-
I7. Construct overrun for Runway 18.	4-11	-	-	⊗ FS, NJPDES	⊗ NJPDES	⊗ WT, SS	-	-
I8. Repair apron, Romeo, and Compass.	4-6	-	-	-	-	-	-	-
I9. Construct shoulders along Runway 18/36.	4-11	-	-	⊗ FS, NJPDES	⊗ NJPDES	⊗ WT, VC, SS	-	-
I10. Repair Transportation Working Capital Fund (TWCF) apron.	4-9	-	⊗ QD	-	-	-	-	⊗ ERP

Legend:

- No effects or negligible effects ⊕ Potential minor beneficial effects ⊗ Potential minor adverse effects ■ Potentially significant (greater magnitude than representative projects)

Key:

65 dBA = Within the 65 dBA noise contour
CZ = Within the Clear Zone
QD = Within or near QD arcs

FS = Farmland soil affected
ESCP = Erosion and sediment control plan recommended

NJPDES = NJPDES permit required
WT = Project within wetland transition area
SS = State-protected species potentially affected

VC = Vegetation clearing requires coordination with NJPC
WE = Potential effects on wildlife

Atc = Potentially affected structure has not been surveyed
VS = Potentially affected viewshed
EC = Environmental Cleanup Site

ERP = Within or near known ERP site
HAZ = Change in quantity or storage for hazardous materials or wastes

Table 4-12. Potential Environmental Consequences from All Proposed Projects Listed in Appendix A (continued)

Project Identification Number and Title	Figure	Land Use	Safety	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Hazardous Materials and Wastes
I11. Construct APS/Cargo staging area.	4-9	-	-	⊗ NJPDES	⊗ NJPDES	-	-	-
I12. Repair parking at Challenger School, including demolishing abandoned paved surfaces.	4-4	-	-	⊗ NJPDES	⊗ NJPDES	⊗ WT	-	-
I13. Demolish Facilities 2512 and 2518, Athletic Softball Fields (each 1 acre).	4-7	-	-	⊗ NJPDES	⊗ NJPDES	-	-	-
I14. Resurface Lancaster Avenue.	4-5	-	-	-	-	-	-	-
I15. Resurface Engineering Drive South.	4-8	-	-	-	-	-	-	-
I16. Replace bulk fuels distribution components, including repairing truck offload facility, and demolish Building 2106 and separator, fill stands, associated piping, and underground offload piping around Buildings 2104 and 2105.	4-6	-	-	⊗ NJPDES	⊗ NJPDES	-	⊗ Atc	⊗ ERP, HAZ

Legend:

- No effects or negligible effects ⊕ Potential minor beneficial effects ⊗ Potential minor adverse effects ■ Potentially significant (greater magnitude than representative projects)

Key:

65 dBA = Within the 65 dBA noise contour
CZ = Within the Clear Zone
QD = Within or near QD arcs

FS = Farmland soil affected
ESCP = Erosion and sediment control plan recommended

NJPDES = NJPDES permit required
WT = Project within wetland transition area
SS = State-protected species potentially affected

VC = Vegetation clearing requires coordination with NJPC
WE = Potential effects on wildlife

Atc = Potentially affected structure has not been surveyed
VS = Potentially affected viewshed
EC = Environmental Cleanup Site

ERP = Within or near known ERP site
HAZ = Change in quantity or storage for hazardous materials or wastes

Table 4-12. Potential Environmental Consequences from All Proposed Projects Listed in Appendix A (continued)

Project Identification Number and Title	Figure	Land Use	Safety	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Hazardous Materials and Wastes
I17. Construct new Type III Hydrant System at Victor Row.	4-10	-	⊗ QD	⊗ NJPDES	⊗ NJPDES	⊗ WT	-	⊗ HAZ
I18. Demolish Facility 2519, Athletic Softball Field (1 acre).	4-6	-	-	⊗ NJPDES	⊗ NJPDES	-	-	-
I19. Repair concrete pavement on Alpha taxiway.	4-11	-	⊗ QD	-	-	-	-	-
I20. Construct four tennis courts.	4-7	-	-	⊗ ESCP	⊗ ESCP	⊗ VC, WE	⊗ Atc	-
I21. Resurface White Street.	4-8	-	-	-	-	-	-	-
I22. Repave Family Support Center parking lot.	4-6	-	-	-	-	-	-	-
I23. Repair asphalt, East Arnold Avenue.	4-9	-	-	-	-	⊗ WT	-	⊗ ERP
I24. Repair asphalt at Building 3455, Reserve Medical Training.	4-5	-	-	-	-	⊗ WT	-	-

Legend:

- No effects or negligible effects ⊕ Potential minor beneficial effects ⊗ Potential minor adverse effects ■ Potentially significant (greater magnitude than representative projects)

Key:

65 dBA = Within the 65 dBA noise contour
CZ = Within the Clear Zone
QD = Within or near QD area

FS = Farmland soil affected
ESCP = Erosion and sediment control plan recommended

NJPDES = NJPDES permit required
WT = Project within wetland transition area
SS = State-protected species potentially affected

VC = Vegetation clearing requires coordination with NJPC
WE = Potential effects on wildlife

Atc = Potentially affected structure has not been surveyed
VS = Potentially affected viewshed
EC = Environmental Cleanup Site

ERP = Within or near known ERP site
HAZ = Change in quantity or storage for hazardous materials or wastes

Table 4-12. Potential Environmental Consequences from All Proposed Projects Listed in Appendix A (continued)

Project Identification Number and Title	Figure	Land Use	Safety	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Hazardous Materials and Wastes
I25. Replace and repair hydrant outlet pits on Oscar pavement as necessary and removal of contaminated soil.	4-8	-	⊗ QD	⊗ ESCP	⊗ ESCP	-	-	⊗ HAZ, ERP
I26. Construct sidewalk at Tuskegee Avenue.	4-7	-	-	⊗ ESCP	⊗ ESCP	-	-	-
I27. Construct deicing vehicle parking pads, Phase 2.	4-9	-	-	⊗ ESCP	⊗ ESCP	-	-	⊗ ERP
I28. Construct road for access to vehicle storage fueling station.	4-6	-	-	⊗ ESCP	⊗ ESCP	⊗ VC, WE	-	-
I29. Construct an additional parking lot for Building 1835.	4-9	-	-	⊗ ESCP	⊗ ESCP	⊗ VC, WE	-	⊗ ERP
I30. Repair Taxiway Hotel.	4-9	-	⊗ QD	-	-	-	-	⊗ ERP
I31. Add to the aboveground storage tanks at Building 2309, Aeromedical Staging Squadron Facility.	4-9	-	-	-	-	-	-	⊗ HAZ

Legend:

- No effects or negligible effects ⊕ Potential minor beneficial effects ⊗ Potential minor adverse effects ■ Potentially significant (greater magnitude than representative projects)

Key:

65 dBA = Within the 65 dBA noise contour

CZ = Within the Clear Zone

QD = Within or near QD arcs

FS = Farmland soil affected
ESCP = Erosion and sediment control plan recommendedNJPDES = NJPDES permit required
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WE = Potential effects on wildlifeAtc = Potentially affected structure has not been surveyed
VS = Potentially affected viewshed
EC = Environmental Cleanup SiteERP = Within or near known ERP site
HAZ = Change in quantity or storage for hazardous materials or wastes

Table 4-12. Potential Environmental Consequences from All Proposed Projects Listed in Appendix A (continued)

Project Identification Number and Title	Figure	Land Use	Safety	Geological Resources	Water Resources	Biological Resources	Cultural Resources	Hazardous Materials and Wastes
I32. Repair Taxiway Bravo.	4-9 & 4-10	-	⊗ QD	-	-	-	-	-
I33. Install access road to Product Recovery Tank and replace driveway at Building 1840, Ground Equipment Service Station.	4-9	-	-	-	-	-	-	-
I34. Demolish pavements in the vicinity of Building 3573.	4-5	-	-	⊗ FS	-	-	-	-
I35. Repair asphalt at Buildings 2414 and 2911.	4-6 & 4-7	-	-	-	-	-	-	-
I36. Replace Well A.	4-5	-	-	⊗ FS, ESCP	⊗ ESCP	-	-	⊗ ERP
I37. Remove underground water tank at Building 1614, Fireman Training Facility.	4-11	-	-	-	-	⊗ WT, SS	-	⊗ ERP

Legend:

- No effects or negligible effects ⊕ Potential minor beneficial effects ⊗ Potential minor adverse effects ■ Potentially significant (greater magnitude than representative projects)

Key:

65 dBA = Within the 65 dBA noise contour
CZ = Within the Clear Zone
QD = Within or near QD arcs

FS = Farmland soil affected
ESCP = Erosion and sediment control plan recommended

NJPDES = NJPDES permit required
WT = Project within wetland transition area
SS = State-protected species potentially affected

VC = Vegetation clearing requires coordination with NJPC
WE = Potential effects on wildlife

Atc = Potentially affected structure has not been surveyed
VS = Potentially affected viewshed
EC = Environmental Cleanup Site

ERP = Within or near known ERP site
HAZ = Change in quantity or storage for hazardous materials or wastes

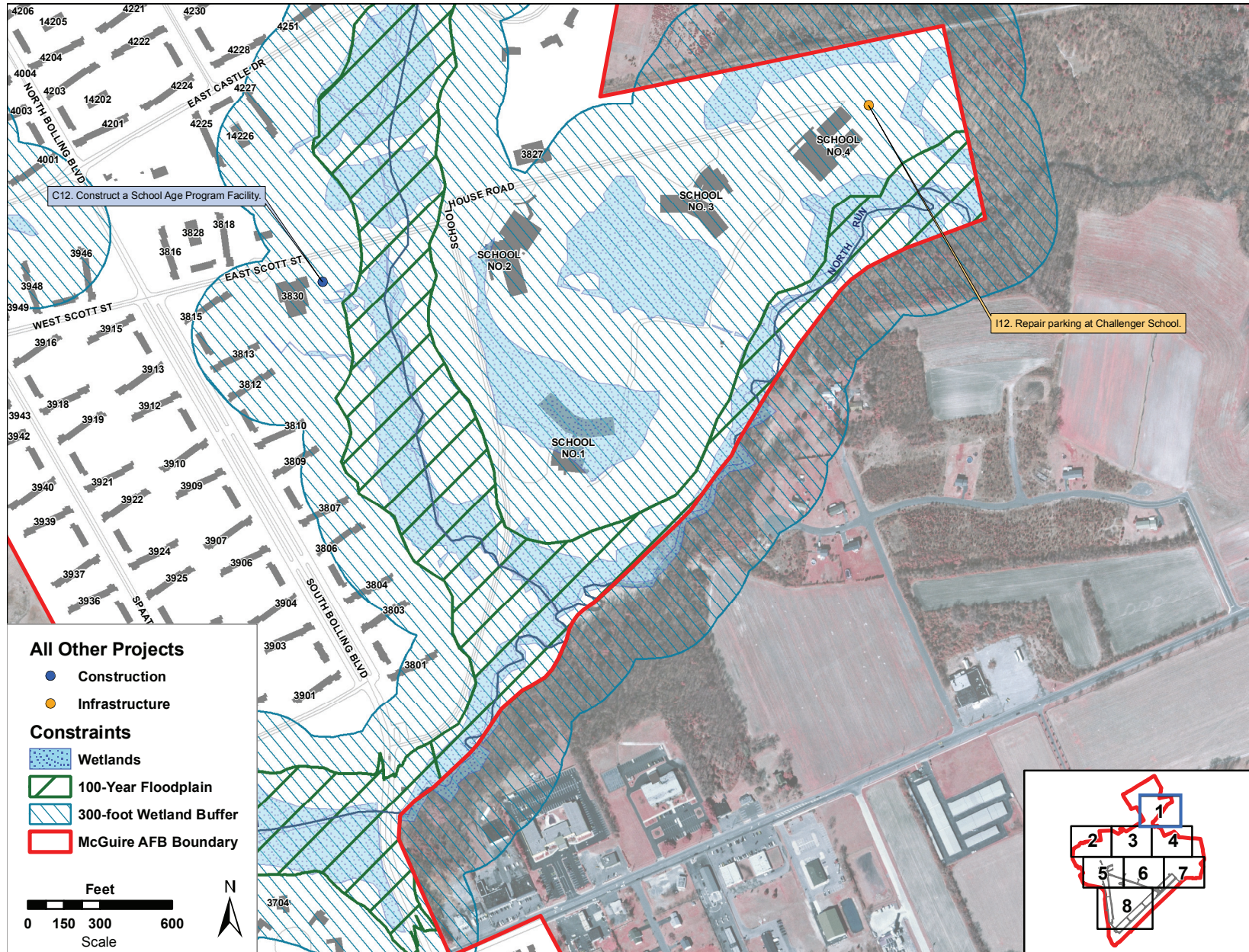


Figure 4-4. Proposed Project Locations Relative to Known Constraints, Map 1 of 8

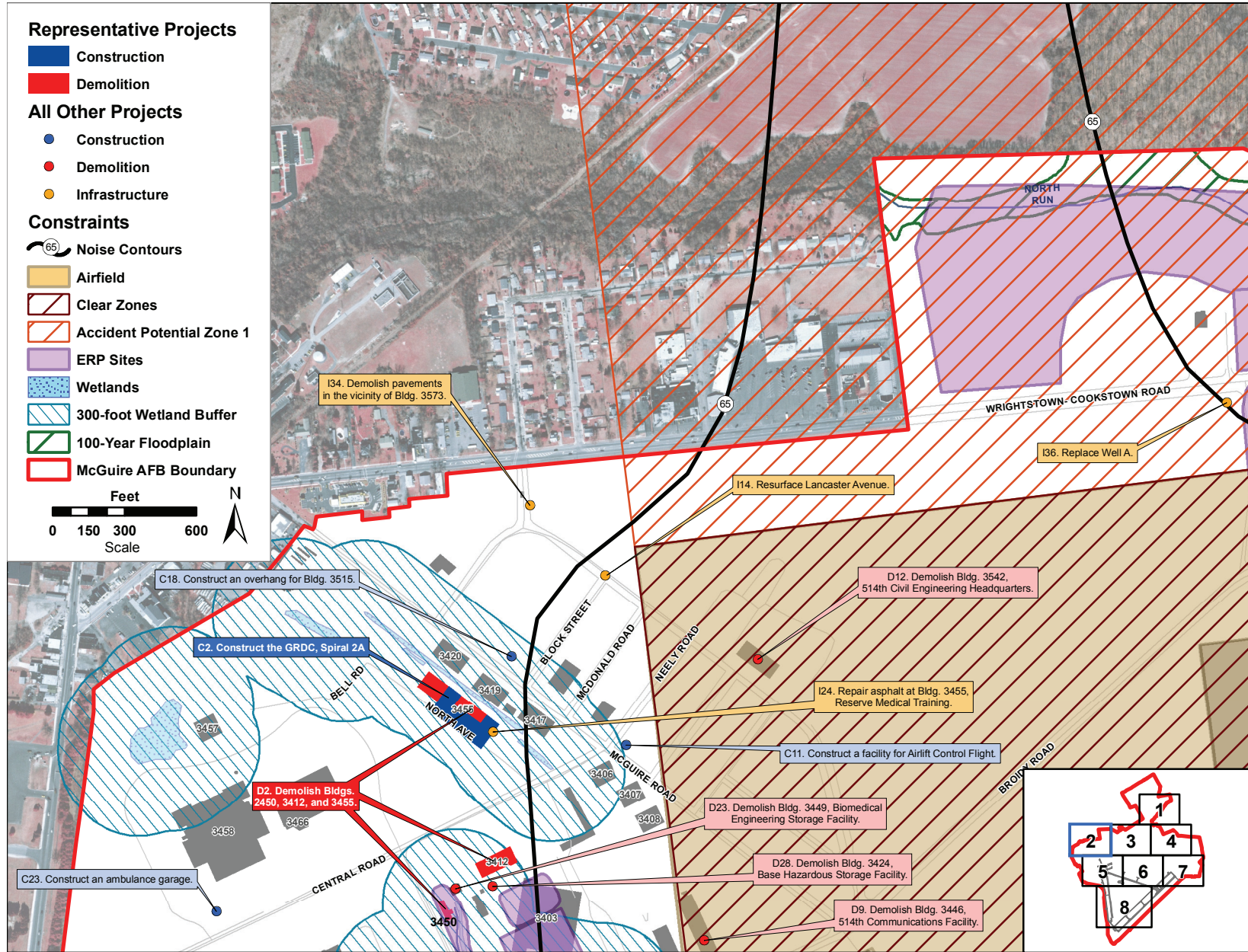


Figure 4-5. Proposed Project Locations Relative to Known Constraints, Map 2 of 8

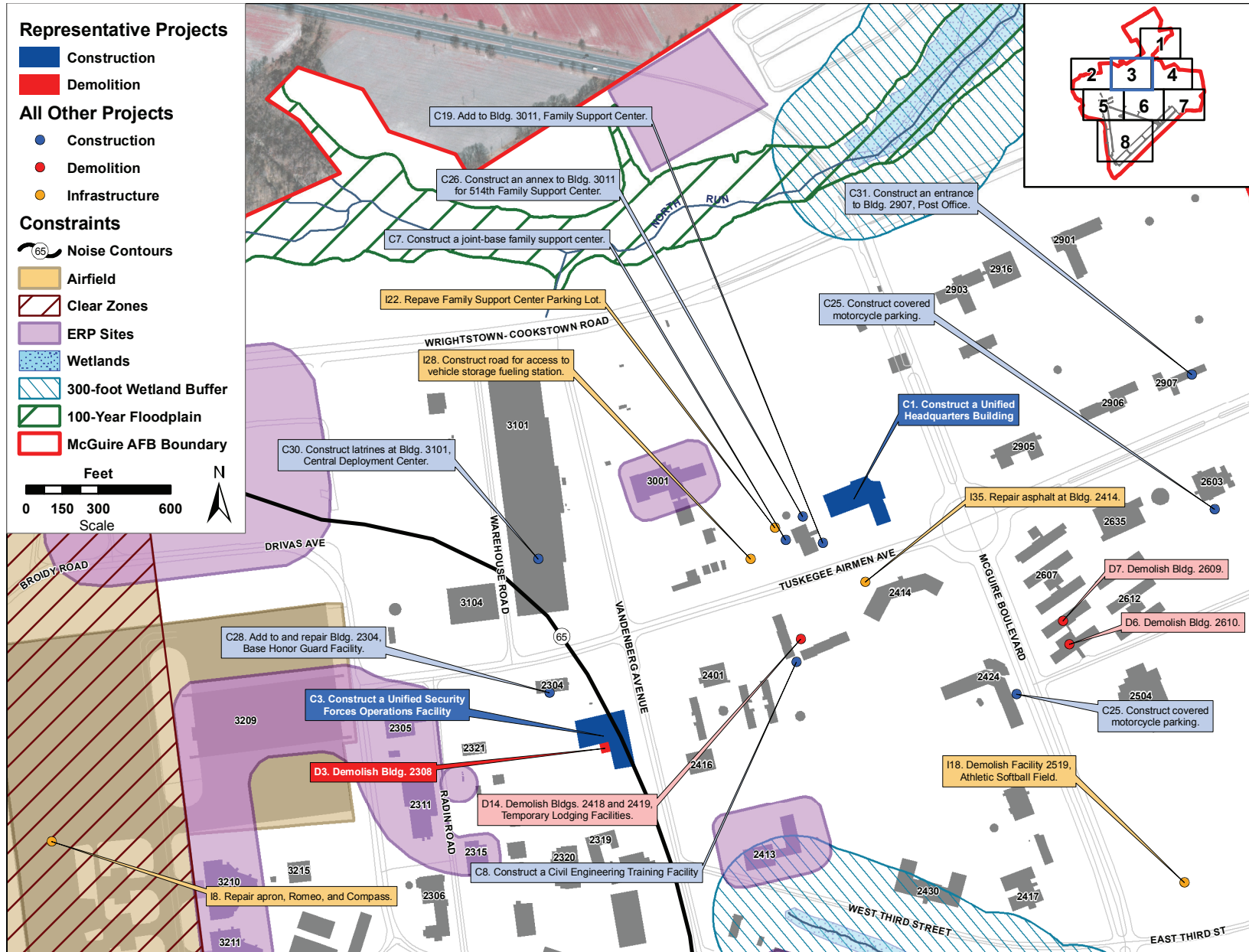


Figure 4-6. Proposed Project Locations Relative to Known Constraints, Map 3 of 8

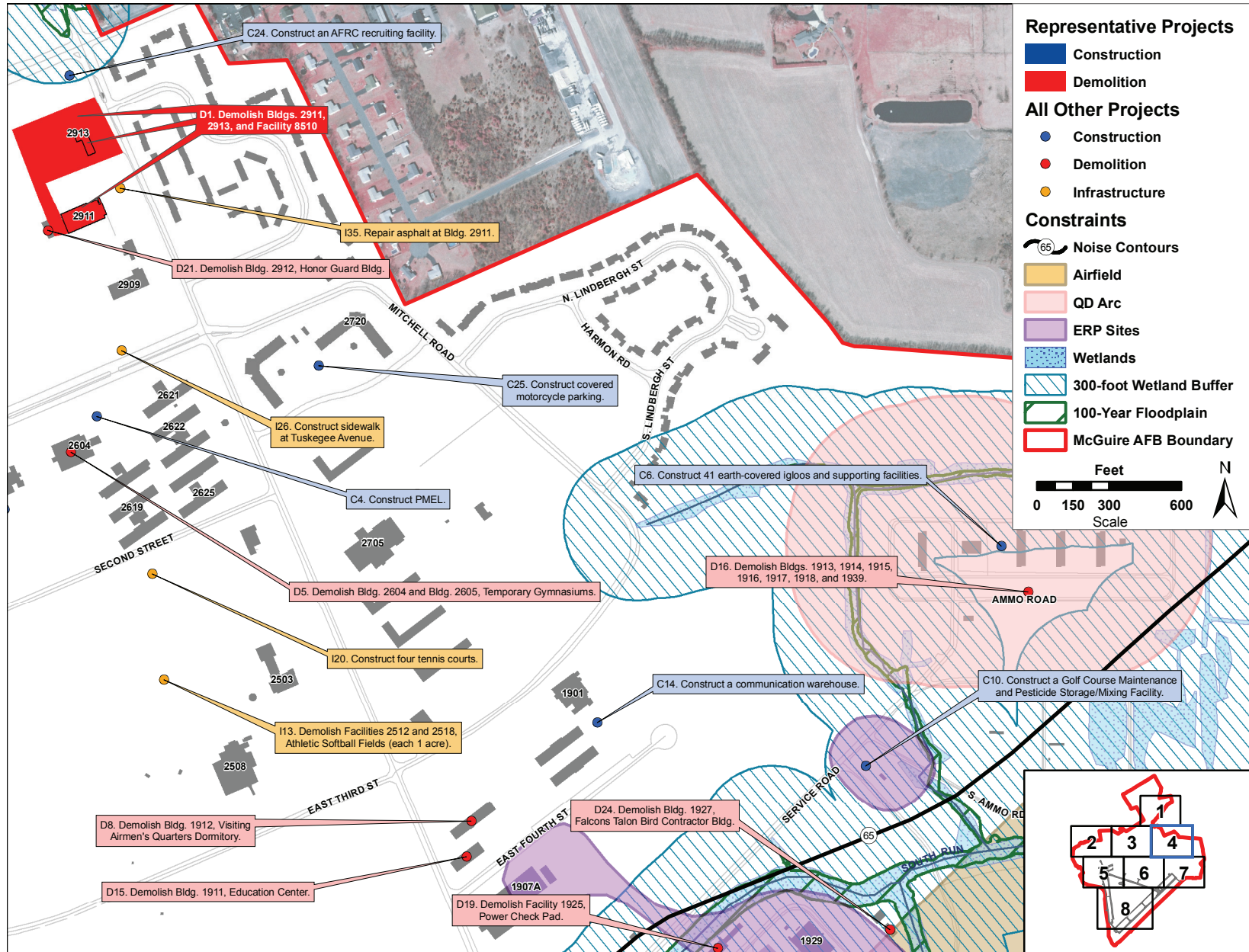


Figure 4-7. Proposed Project Locations Relative to Known Constraints, Map 4 of 8

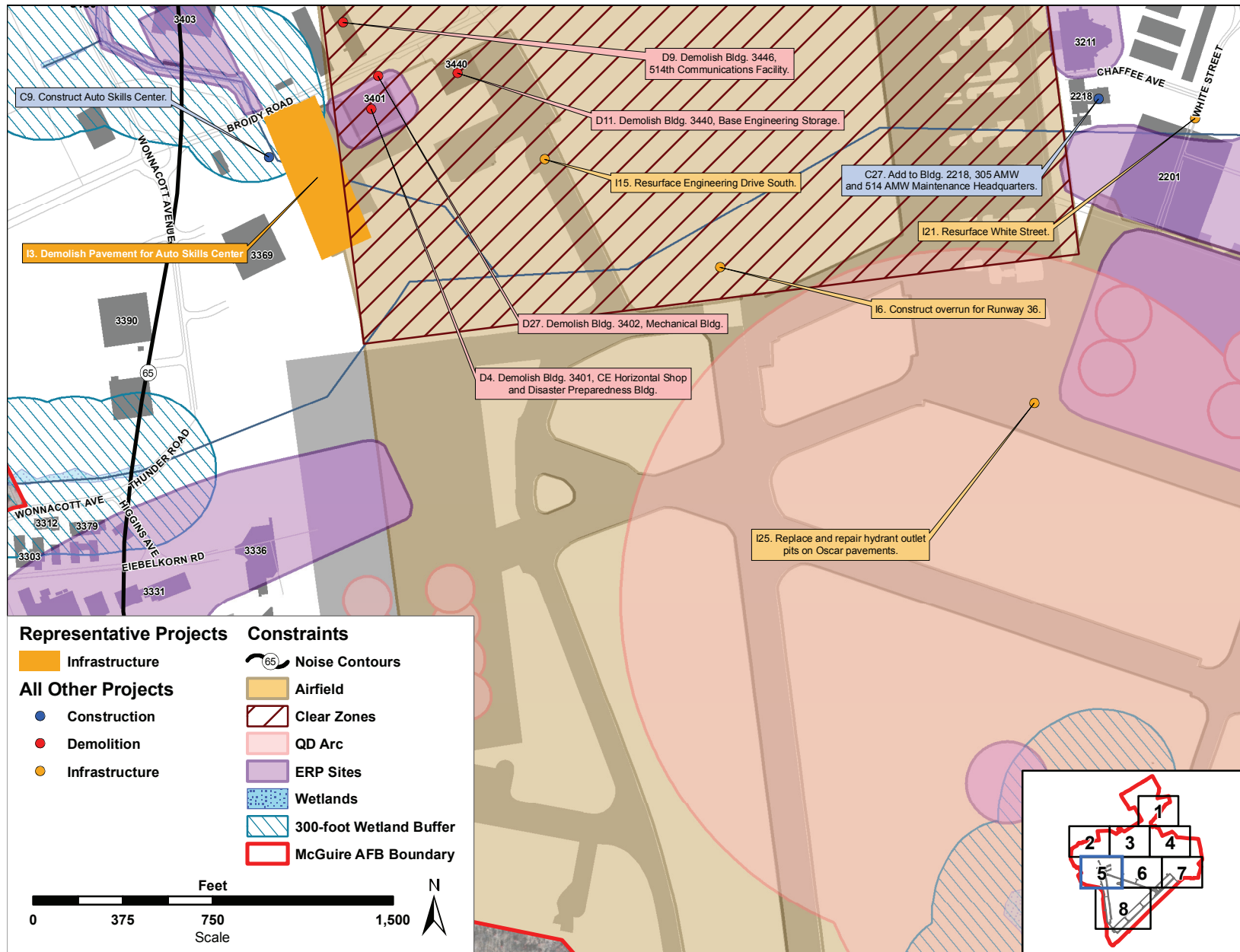


Figure 4-8. Proposed Project Locations Relative to Known Constraints, Map 5 of 8

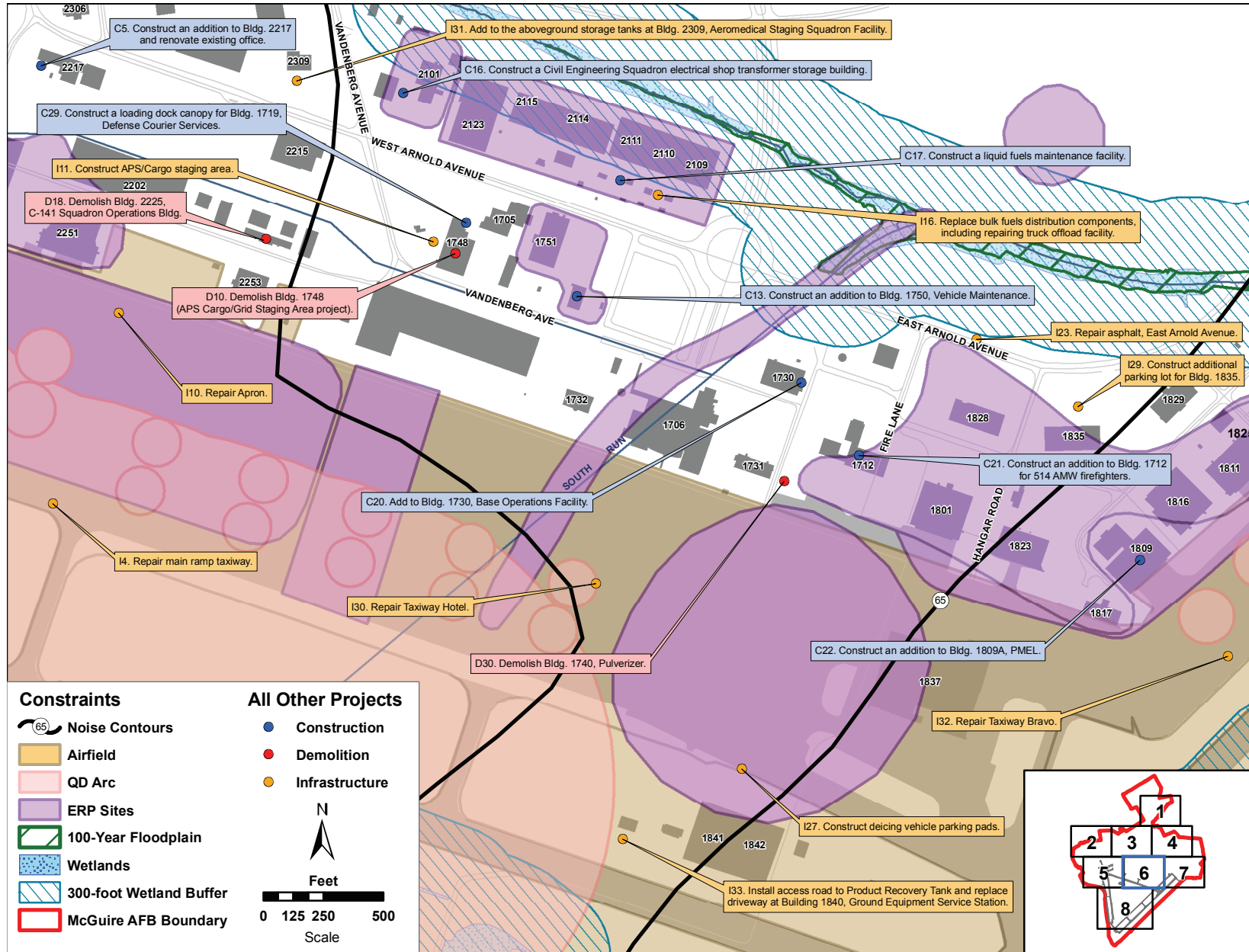


Figure 4-9. Proposed Project Locations Relative to Known Constraints, Map 6 of 8

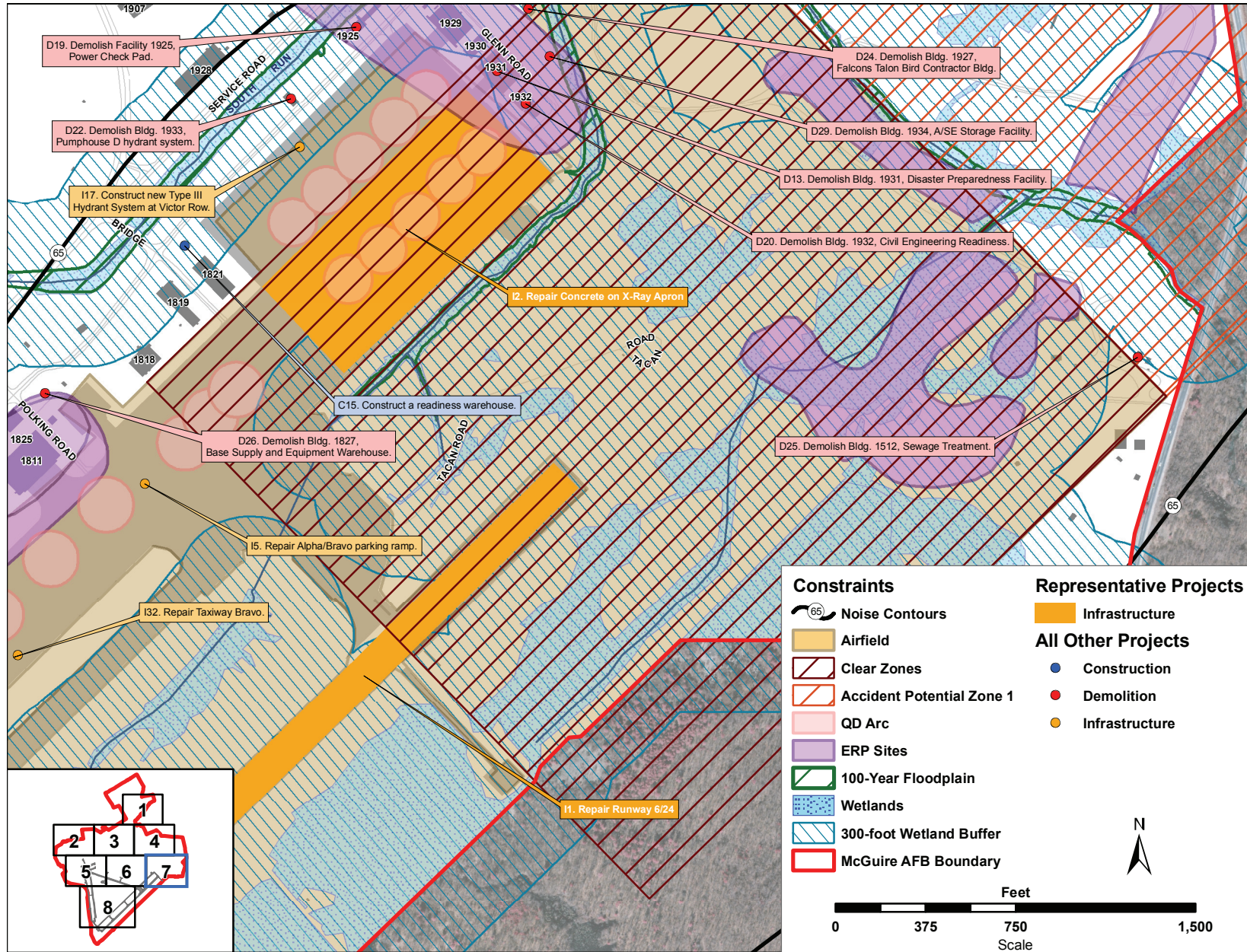


Figure 4-10. Proposed Project Locations Relative to Known Constraints, Map 7 of 8

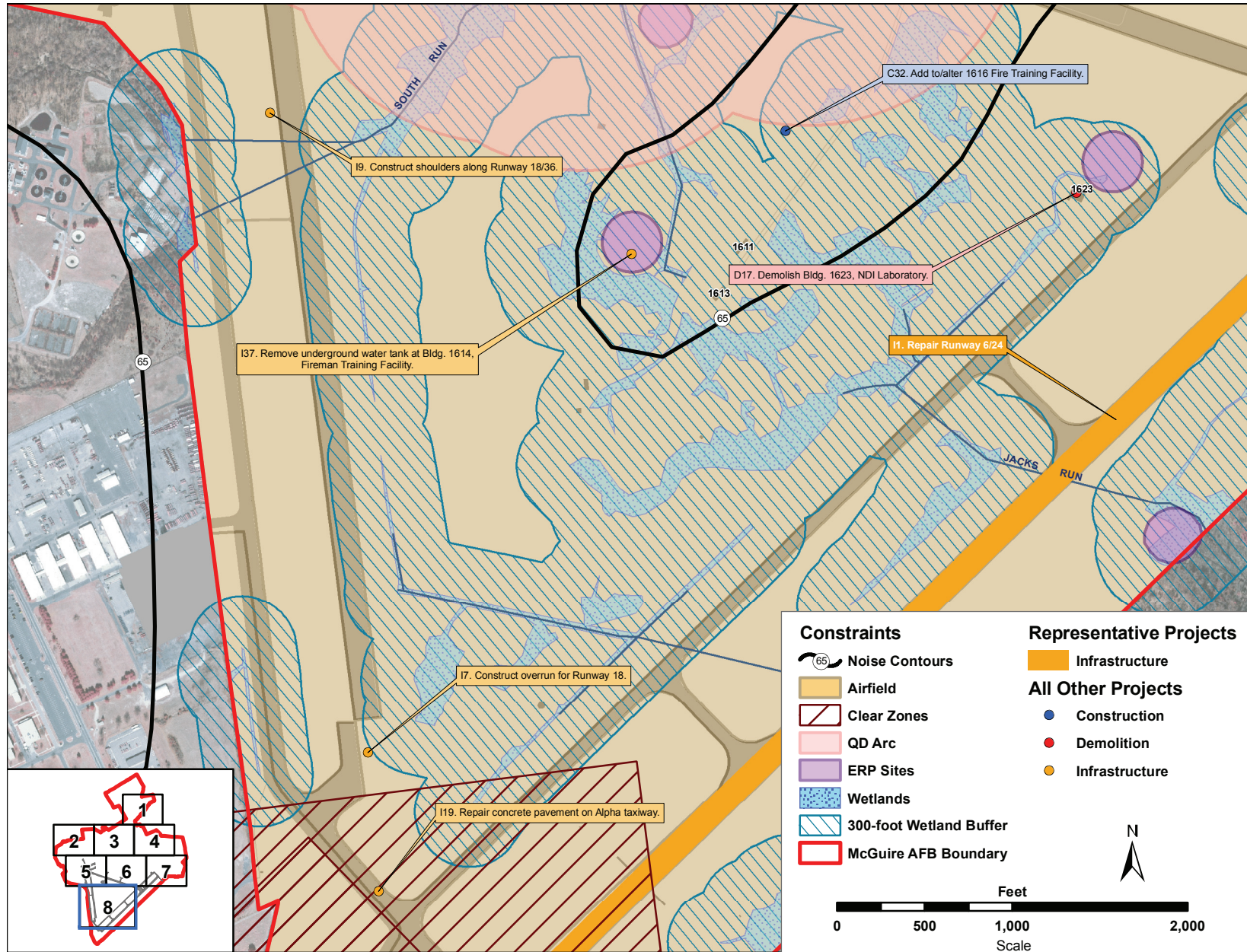


Figure 4-11. Proposed Project Locations Relative to Known Constraints, Map 8 of 8

Noise. Implementation of all proposed projects would be expected to result in short-term minor adverse effects on the noise environment from the various pieces of equipment used during demolition, construction, or infrastructure upgrade activities. The projects identified in **Appendix A** would be implemented at different times and different locations over the next 5 years. It is possible that several projects would occur simultaneously but would not be expected to result in adverse effects beyond those described in **Sections 4.3, 4.4.1, 4.4.2, and 4.4.3.**

Land Use. Implementation of all proposed projects identified in **Appendix A** would be expected to result in overall beneficial effects on land use. Land use and all proposed project locations are shown in **Figure 4-12.** Proposed demolition projects on McGuire AFB would remove old and outdated facilities and make land available in previously disturbed areas for proposed construction projects. Some projects identified in **Table 4-12** would remove facilities from clear zones, eliminating those land use incompatibilities.

Some proposed projects identified in **Table 4-12** have the potential to result in incompatible land use because new construction would occur within the 65 dBA noise zone. Refer to the discussion associated with Project C1 in **Section 4.4.2.1** regarding construction when noise levels are greater than 65 dBA. Noise level reduction can be achieved through incorporation of noise attenuation measures into the design and construction of the structure.

Air Quality. No projects were identified that would result in modifications to existing air permits or increase in long-term air emissions. No project would violate the NAAQS or any other air quality rule or regulation. **Table 4-13** summarizes the estimated air emissions associated with construction activities by calendar year and for the entire Proposed Action. As shown in **Table 4-13**, implementation of the Proposed Action would not exceed *de minimis* thresholds, nor would it produce criteria pollutant emissions exceeding 10 percent of the regional emissions inventory.

Table 4-13. Expected Criteria Pollutant Emissions Resulting from Implementation of All Proposed Construction, Demolition, and Infrastructure Projects at McGuire AFB

	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)
All 2008 Projects	13.376	1.044	5.541	0.535	50.124	8.206
All 2009 Projects	9.444	1.009	3.971	0.457	37.128	6.066
All 2010 Projects	10.282	0.782	4.334	0.473	61.271	9.721
All 2011 Projects	7.957	0.641	3.373	0.427	22.871	3.860
All 2012+ Projects	5.669	0.756	2.446	0.381	5.366	1.127
Sum of Proposed Projects	46.727	4.231	19.665	2.273	176.760	28.979
MPIAQCR <i>de minimis</i> threshold	100	50	NA	100	NA	100
Project Percentage of Regional Emissions Inventory (MPIAQCR)	0.0177%	0.0017%	0.0013%	0.0014%	0.1608%	0.0703%

Sources: emissions calculated using USEPA 2007c and USEPA 2006c, region emissions estimated using USEPA 2006a, see Appendix A for list of all proposed projects

Note: NA = not applicable

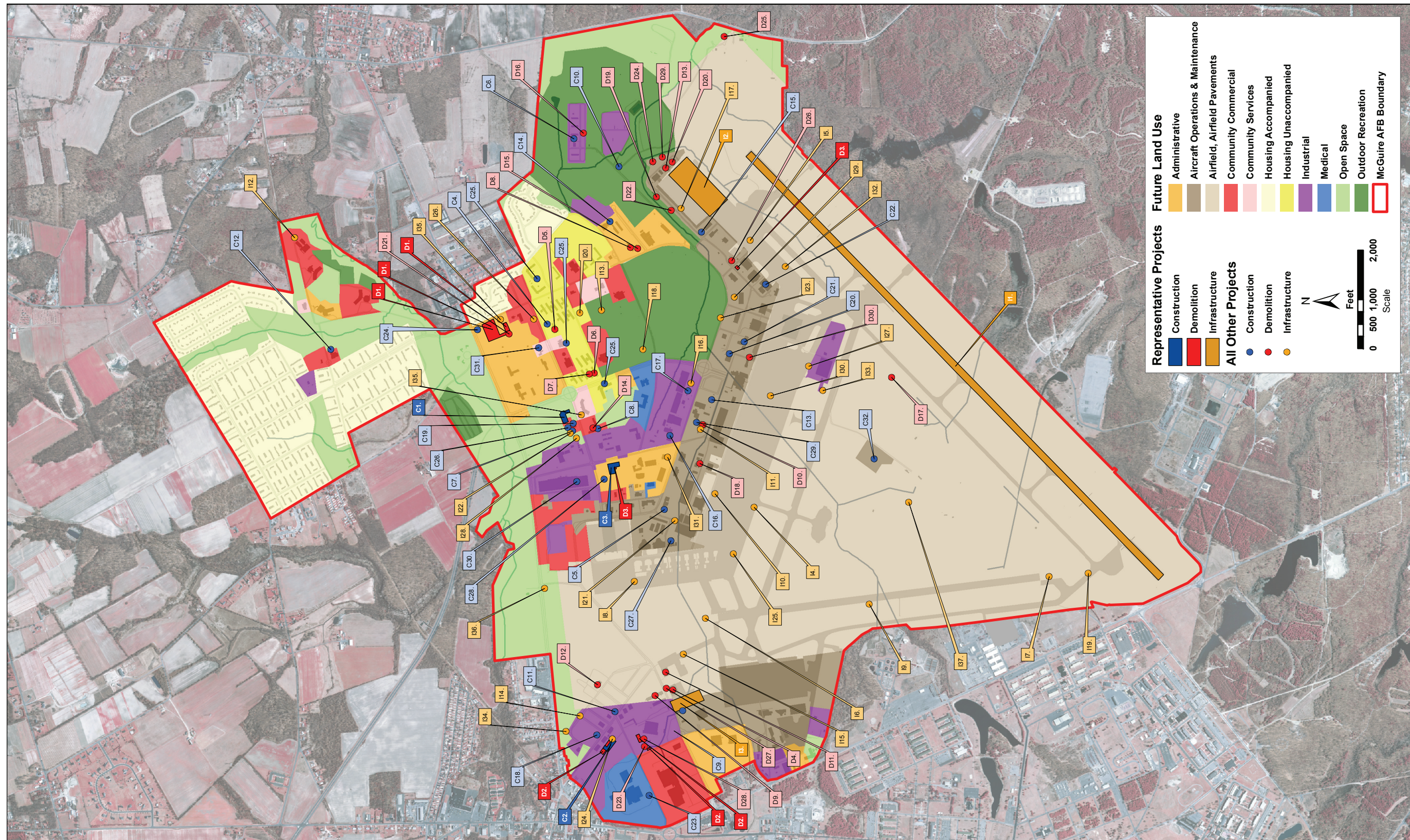


Figure 4-12. McGuire AFB Future Land Use and Proposed Projects

Safety. Table 4-12 identifies several projects with potential safety concerns. Projects that are near or within ERP sites increase the potential for construction workers to encounter contamination. A health and safety officer should be present during groundbreaking activities for these projects. If contamination is encountered, it would be handled, stored, transported, and disposed of in accordance with applicable Federal, state, and local regulation.

Some proposed projects are identified as being within or very near to QD arcs. Munitions transport would not occur during construction activities to minimize construction workers' exposure to explosive safety hazards. When groundbreaking activities occur in areas where munitions are stored or handled, the EOD team should be on-site in the event that UXO is encountered so that it can be disposed of safely. McGuire AFB proposes to demolish the existing munitions storage facilities (Project D16) and construct new munitions storage igloos (Project C6). This combination of projects would result in long-term beneficial effects by increasing the amount of munitions that can be stored without increasing QD arcs.

Geological Resources. Projects identified in Table 4-12 as affecting a farmland soil series might need to be coordinated with the NRCS to determine if prime or unique farmland would be affected. As identified in Table 4-12, an ESCP should be prepared for projects that would disturb more than 5,000 ft². Projects of this size have more potential to result in adverse effects as a result of soil erosion and sedimentation, but the ESCP would minimize these potentially adverse effects. Refer to Section 4.3.5. Negligible effects on geological resources would be expected with implementation of BMPs.

Water Resources. As identified in Table 4-12, an ESCP should be prepared for projects that would disturb more than 5,000 ft². Projects that would disturb more than 1 acre are also identified in Table 4-12 as those requiring an NJPDES permit and would also need an ESCP. Projects requiring an ESCP or NJPDES permit would have more potential to result in adverse effects as a result of soil erosion and sedimentation into surface water bodies, but the ESCP would minimize adverse effects. Refer to Section 4.3.6. Negligible effects on water resources would be expected with implementation of BMPs.

The change in the amount of impervious surfaces associated with each proposed project is identified in Tables A-1, A-2, and A-3. The overall increase in impervious surfaces associated with the Proposed Action is approximately 101,600 ft² (2.3 acres). Currently, the total area of impervious surfaces on McGuire AFB, to include buildings, roads, sidewalks, parking lots, and airfield pavement, is approximately 1,110 acres, or 31 percent of the installation. Full implementation of the Proposed Action would result in an increase of 0.2 percent of impervious surfaces over 5 years. Development activities at McGuire AFB are coordinated as required with regulatory agencies to ensure that potentially adverse effects, primarily associated with increased storm water runoff, are avoided, minimized, or mitigated appropriately.

Project C12 is near the 100-year floodplain. The design associated with this project would avoid the 100-year floodplain. If it is determined that the 100-year floodplain could not be avoided, then separate NEPA analysis would be prepared for this project.

Biological Resources. Projects proposed within 300 feet of wetlands could have long-term and short-term, minor, indirect, adverse effects on such wetlands from storm water runoff and erosion and sedimentation. In addition to short-term, adverse effects, demolition projects in wetland transition areas could result in long-term, beneficial effects because of the potential decrease in impervious surfaces in the vicinity of the wetland. Storm water management and erosion and sediment control BMPs would be implemented to minimize and avoid these effects. Adverse effects on wetlands and wetlands transition areas would be minimized to the maximum extent practicable. No construction activities would occur in wetlands. Projects potentially within wetland transition areas would be coordinated with regulatory

agencies to determine if wetlands could be affected and if mitigation measures would be required. Refer to **Section 4.3.7**.

Table 4-14 summarizes the anticipated changes in the amount of impervious surfaces within 300 feet of wetlands as a result of full implementation of the Proposed Action. Pavement resurfacing or repair projects that are proposed in wetland transition areas are included in **Table 4-14**, but would not be expected to result in adverse effects on wetlands. Some of the proposed construction and infrastructure projects are mission-essential and cannot reasonably be relocated to other areas of the installation because of the existing configuration and layout of McGuire AFB. Project C6 would provide new munitions storage facilities and must be sited within the existing munitions storage area; therefore, the existing munitions storage facilities would be demolished (Project D16) and the new facilities would be constructed within a comparable footprint (anticipated increase of approximately 6,780 ft²). Project I1 would include the demolition of pavement along Runway 06/24 as analyzed in **Section 4.4.3.1**, which would remove 143,000 ft² of impervious surfaces within 300 feet of wetlands; however, Project I9 would provide shoulders along Runway 18/36, adding approximately 89,000 ft² of impervious surfaces within 300 feet of wetlands. Full implementation of the Proposed Action would increase impervious surfaces within wetland transition areas by approximately 30,000 ft² (0.7 acres), as shown in **Table 4-14**. Development activities within 300 feet of wetlands would be coordinated and permitted prior to implementation as determined necessary to ensure that potentially adverse effects are avoided, minimized, or mitigated appropriately. It is possible that the actual construction footprint within wetland transition areas would be smaller than what is analyzed once the project design is finalized, particularly if structures are redesigned to be multiple stories or if a project is relocated slightly to be outside the transition areas. If any of the projects proposed as a component of this analysis is changed so that a wetland is directly impacted, that project would be considered outside the scope of this IDEA and would require separate environmental analysis.

Projects that would remove more than 1,500 ft² of vegetation could require an Application for Development with the NJPC (see letter from NJPC in **Appendix C**). Vegetation clearing would be minimized to the extent practicable, and revegetation and landscaping would be implemented to reduce the potential for long-term effects. Projects involving vegetation clearing also have the potential to result in direct and indirect, adverse effects on wildlife.

Any project potentially affecting a state-listed species will be coordinated with NJDEP, in accordance with the guidelines set forth in the installation's INRMP.

Cultural Resources. Projects identified in **Table 4-12** as having potentially adverse effects on architectural resources would involve structures that have not yet been evaluated for eligibility for the NRHP. Demolition, construction, or infrastructure projects might also have the potential to alter the viewshed or introduce noise and vibrations; therefore, structures surrounding proposed projects should also be evaluated for NRHP eligibility to ensure no indirect adverse effects would occur. Prior to initiating a project with the potential to affect architectural resources, that structure will be evaluated and the activity coordinated with the SHPO as required to ensure that no adverse effects would occur. Refer to **Section 4.3.8**.

Socioeconomic Resources and Environmental Justice. All proposed projects would be expected to result in direct and indirect short-term minor beneficial effects as a result of construction costs. No long-term effects would be expected.

Infrastructure. Implementation of all proposed projects would be expected to result in long-term beneficial effects on infrastructure systems by providing the required airfield, road, and utilities upgrades to support existing and future missions.

Table 4-14. Proposed Projects and Change in Impervious Surfaces Near Wetlands

Proposed Project Number and Title	Change in Impervious Surfaces within 300-foot wetland buffer (ft²)
<i>D2. Demolish Bldgs. 3450, 3412, and 3455</i>	-33,819
<i>D13. Demolish Bldg. 1931</i>	-18,394
<i>D16. Demolish Bldgs. 1913, 1914, 1915, 1916, 1917, 1918, and 1939</i>	-12,670
<i>D17. Demolish Bldg. 1623</i>	-6,077
<i>D19. Demolish Facility 1925</i>	-3,990
<i>D20. Demolish Bldg. 1932</i>	-4,306
<i>D22. Demolish Bldg. 1933</i>	-1,800
<i>D23. Demolish Bldg. 3449</i>	-1,728
<i>D24. Demolish Bldg. 1927</i>	-1,622
<i>D28. Demolish Bldg. 3424</i>	-400
<i>D29. Demolish Bldg. 1934</i>	-400
Total Change as a Result of Demolition (ft²)	-85,206
<i>C2. Construct GRDC, Spiral 2A</i>	+13,315
<i>C6. Construct munitions storage facilities</i>	+19,450
<i>C9. Construct an Auto Skills Center</i>	+7,998
<i>C10. Construct a Golf Course Maintenance and Pesticide Storage/Mixing Facility</i>	+7,500
<i>C12. Construct a School Age Program facility</i>	+4,962
<i>C15. Construct a readiness warehouse</i>	+4,000
<i>C18. Construct an overhang from Building 3515</i>	0
<i>C24. Construct an AFRC recruiting facility</i>	+19,160
<i>C32. Add to/alter Building 1616</i>	+13,000
Total Change as a Result of Construction (ft²)	+89,385
<i>I1. Repair Runway 06/24</i>	-143,057
<i>I2. Repair X-ray apron</i>	0
<i>I3. Demolish pavement for Auto Skills Center</i>	-47,840
<i>I7. Construct overrun for Runway 36</i>	+26,817
<i>I9. Construct shoulders along Runway 18/36</i>	+88,754
<i>I12. Repair parking at Challenger School</i>	+99,000
<i>I17. Construct new Type III Hydrant System at Victor Row</i>	+2,000
<i>I23. Repair asphalt, East Arnold Avenue</i>	0
<i>I24. Repair asphalt at Bldg. 3455</i>	0
<i>I37. Remove underground water tank at Bldg. 1614</i>	0
Total Change as a Result of Infrastructure (ft²)	+25,674
Total Change in Impervious Surfaces within 300 feet of Wetlands (ft²)	+29,853

Note: The area within wetland transition areas for these projects was estimated using GIS data.

However, demolition, construction, and infrastructure projects would result in adverse effects as a result of increased solid waste generation. As indicated in **Table 4-15**, approximately 145,300 tons would be generated over the next 5 years. Clean demolition and construction debris (e.g., concrete, asphalt) would be ground, recycled, and used for fill and road work rather than disposed of in a landfill.

Hazardous Materials and Waste. Most buildings planned for demolition as part of the IDEA were constructed before 1972 and would be expected to contain ACM and LBP. Adherence to all Federal, state, and local regulations in addition to McGuire AFB management plans would result in negligible effects during demolition.

Table 4-15. Anticipated Generation of Construction and Demolition Debris as a Result of All Proposed Projects

Proposed Project	Project Size (ft ²)	Multiplier (pounds/ft ²)	Total Waste Generated	
			Pounds	U.S. Tons
Proposed IDEA Demolition ^a	508,350	155	78,794,250	39,397
Proposed IDEA Construction ^a	636,460	4.38	2,787,695	1,394
Proposed IDEA Pavement Repair and Demolition ^b	3,201,814	65	208,117,910	104,059
Proposed IDEA Pavement Construction ^c	899,703	1	899,703	450
Total				145,300

Sources: ^a USEPA 1998, ^b calculated using standard asphalt density, ^c USACE 1976

Many of the proposed projects, as identified in **Table 4-12**, are in or adjacent to ERP sites, so soil and groundwater contamination could be present. When there is the potential for construction workers to encounter contamination, a health and safety officer must be present during groundbreaking activities and a Health and Safety Plan should be prepared. If contamination is encountered, it would be handled, stored, transported, and disposed of in accordance with applicable Federal, state, and local regulations; AFIs; and close coordination with 305 CES/CEV. Short-term, minor, adverse effects could occur in the event that contamination is encountered. Project D16 is within an environmental cleanup site; remediation of 10 acres of soil would result in long-term beneficial effects following removal of contaminated soil. Pavement resurfacing or repair projects that are proposed in or adjacent to ERP sites are noted in **Table 4-12** but would not be expected to result in adverse effects.

Some proposed projects would involve fuel or other hazardous materials storage facilities during demolition or after their construction. Appropriate secondary containerization of storage tanks and adherence to the Hazardous Materials Management Plan; Hazardous Waste Management Plan; Spill Prevention Control and Countermeasures Plan; and all other Federal, state, and local laws and regulations would minimize the potential for adverse effects.

5. Cumulative Effects

Cumulative effects on environmental resources result from incremental effects of proposed actions, when combined with other past, present, and reasonably foreseeable future projects in the area. Cumulative effects can result from individually minor, but collectively substantial, actions undertaken over time by various agencies (Federal, state, and local) or individuals. Informed decisionmaking is served by consideration of cumulative effects resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future.

This cumulative effects analysis summarizes expected environmental effects from the combined impacts of past, current, and reasonably foreseeable future projects at McGuire AFB.

5.1 Projects Identified With the Potential for Cumulative Effects

The geographic ROI is an important consideration when discussing cumulative effects. For the purposes of this analysis, the ROI was determined to be the combined military installations of McGuire AFB, Fort Dix Army Reserve Military Reservation, Lakehurst NAES, and the adjacent communities.

An effort was undertaken to identify other projects for evaluation in the context of the cumulative effects analysis. This was further developed through review of public documents, information gained from the IICEP process, and other coordination with various applicable agencies. All projects identified for potential cumulative effects are summarized in **Table 5-1**. Proposed BRAC actions are described in more detail below.

BRAC 2005 Actions

McGuire AFB was identified as the recipient of several Navy, Marine, and Army Reserve units as part of the BRAC closure of Willow Grove Naval Air Station Joint Reserve Base, Pennsylvania. Changes to air operations and the construction of several facilities would be required to meet the intent of BRAC. This initiative has resulted in several of the planned construction projects being located at Fort Dix. The projects planned for McGuire AFB are the construction of a 131,000 ft² Navy Reserve Hangar to support two Fleet Logistics Support Squadrons and the rehabilitation of Hangar 1811 to support the 244th Aviation Brigade and Company A/2-228th Aviation of the Army Reserve. A C-130 flight simulator would be included in the footprint of the Navy Hangar. Proposed BRAC actions at Fort Dix are as follows:

- Construct a Marine Air Group Headquarters and Helicopter Operations Facility (141,500 ft²)
- Construct a Marine Wing Support Squadron Joint Use Reserve Training Facility (77,000 ft²)
- Construct an Aviation Supply Division and Aircraft Intermediate Maintenance Department Facility (124,000 ft²)
- Renovate the Naval Operations Support Center.

These six BRAC projects at McGuire AFB and Fort Dix are currently discussed in a NEPA document addressing the BRAC action prepared by HQ AMC entitled *Environmental Assessment Addressing BRAC Requirements at Joint Base McGuire-Dix-Lakehurst*. The long-range planning program for Fort Dix calls for multiple large and small projects over the next several years.

Table 5-1. Summary of Proposed and Current Projects in the Area of the Proposed Action Considered for Potential Cumulative Effects

Brief Description of Project	Status and Schedule
McGuire AFB	
Construct a hangar to support aircraft for the Navy Logistic Support Squadrons (BRAC) ^a	Under design, construction planned in 2008
Renovate Hangar 1811 for Army Reserve Aviation Units (BRAC) ^a	Under design, renovation planned in 2009
Construct a C-130 flight simulator in the same location as the Navy Reserve Hangar (BRAC) ^a	Under design, construction planned in 2009
Fort Dix	
Construct hangars, administrative space, and ramps for the Marine Air Group (BRAC) ^a	Under design, construction planned in 2008
Construct armories for the Marine Corps reserve units at Fort Dix	Under design, construction planned in 2008
Construct a maintenance facility for Navy aircraft and Marine helicopters (BRAC) ^a	Under design, construction planned in 2009
Renovate the Naval Operations Support Center for the Readiness Center for Naval Reserve and other miscellaneous units (BRAC) ^a	Renovation planned in 2009
Construct an Army Reserve Center for the 77th, 78th, and 99th headquarters (BRAC) ^b	Project initiated in 2007 and planned for completion in 2011
Construct a physical fitness facility (BRAC) ^b	Project initiated in 2007 and planned for completion in 2011
Demolish the buildings in the 4400 area (BRAC)	An EA for this project is in draft stage
Construct a Combined Maintenance Facility ^b	Planned for fiscal year 2008
Construct a remote enhanced targeting systems range ^b	Planned for fiscal year 2008
Renovate six barracks ^b	Planned for fiscal years 2009–2011
NAES Lakehurst	
Establish a permanent landing zone for primary C-17 aircraft training on the East Coast ^c	Planned to begin in 2007
Construct a consolidated logistics and training facility in close proximity to training sites ^b	Planned for 2007
Establish a permanent Eagle Flag and Contingency Skills Training Campus ^d	Planning stages
Relocate and consolidate rotary-wing aircraft to a single location closer to training sites ^c	Planned for 2007–2008

Table 5-1. Summary of Proposed and Current Projects in the Area of the Proposed Action Considered for Potential Cumulative Effects (continued)

Brief Description of Project	Status and Schedule
Burlington and Ocean Counties	
Construct a 505-unit “Golden Triangle” senior residential community adjacent to Route 70 and southeast of NAES Lakehurst ^c	Began in November 2005, future development planned
Construct two commercial properties called the Manchester Township Shopping Center ^c	Planning stages

Sources:

^a AMC 2007a^b Fort Dix 2006^c NJANG 2006^d AMC 2007b

Part of the BRAC Commission’s recommendations was to create Joint Base McGuire-Dix-Lakehurst by transferring installation management functions to McGuire AFB. This particular aspect of the BRAC action will likely affect installation development planning in the future by making available additional land for siting facilities. However, as discussed in **Section 2.2.1**, this level of installation development planning is not yet ripe for analysis, though it is likely to become viable in the future and might require additional NEPA analysis.

Fort Dix was also the focus of an additional BRAC action discussed and analyzed under a separate NEPA document prepared by the U.S. Army entitled *Environmental Assessment for BRAC 05 Realignment at Fort Dix New Jersey* (Fort Dix 2006). This EA analyzed the construction of new physical fitness facilities, construction of a new Army Reserve Center to house the headquarters of the 99th and 77th Regional Readiness Commands and the 78th Reserve Division, renovation of numerous barracks, construction of a new weapons range, and construction of a new Combined Support Maintenance Facility.

5.2 Cumulative Effects Analysis

Table 5-2 summarizes potential cumulative effects on resources from the Proposed Action when combined with other past, present, and future activities.

Table 5-2. Cumulative Effects on Resources

Resource	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
Noise	McGuire AFB and NAES Lakehurst helicopter and aircraft activities are dominant noise source.	McGuire AFB and NAES Lakehurst helicopters and aircraft activities are dominant noise source.	Short-term noise impacts from construction and demolition.	Expansion of McGuire and Lakehurst air operations could result in increased noise.	Aircraft activities will remain the dominant noise source. Effect not significant.

Table 5-2. Cumulative Effects on Resources (continued)

Resource	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
Land Use	Past development practices have extensively modified land use.	Military installation, commercial, residential, light industrial, and agricultural land uses.	No change in overall land use.	No changes to current zoning or deviations of Military Development Plans anticipated.	Proposed Action would not significantly induce further development of Joint Base McGuire-Dix-Lakehurst. Effect not significant.
Air Quality	AQCRs are classified as being in non-attainment for ozone and fine particulate matter.	Emissions from aircraft, vehicles, and stationary sources.	Potential dust generation during construction and demolition activities and emissions due to asphalt paving activities.	Additional construction projects and an increase in aircraft and helicopter operations.	Minor long-term effects on air quality. Cumulative effects however remain below emissions budget established for the Joint Base under the SIP.
Water Resources	Surface water quality moderately impacted by development.	Pollution from industrial and municipal sources is generally low.	Potential sedimentation from construction activities and an increase in percentage of impervious surface area.	Continued development of area would result in sedimentation from construction activities, and increase in impervious surfaces.	Increased impervious area would have minor impacts on storm water discharges and water quality. Proposed Action would not induce further degradation of water quality. Effect not significant.
Biological Resources	Degraded habitat of sensitive and common wildlife species.	Presence and operation of facilities at Joint Base impact wildlife and their habitat.	Minor disturbance of vegetation by construction. Indirect minor adverse effects on wetlands.	Development of area would impact vegetation communities and wildlife habitat. Some proposed BRAC projects could indirectly affect wetlands.	Permanent loss of vegetation and habitat. Indirect minor adverse effects on wetlands. Effect not significant.

Table 5-2. Cumulative Effects on Resources (continued)

Resource	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
Cultural Resources	Possible destruction of eligible historic properties and archeological sites. Unknown impacts on traditional cultural properties	None.	Possible demolition of NRHP-eligible buildings and impact on traditional cultural properties.	General development of the Joint Base might have effects on eligible properties, archeological sites, and traditional cultural properties.	There is a potential for long-term direct moderate adverse effects on cultural resources.
Socioeconomics and Environmental Justice	Joint Base McGuire-Dix-Lakehurst contributes to local economic community.	Continued support of local economic community.	Minor contribution to local construction industry.	Continued development of area would impact local economy and services.	Minor stimulation of local economic community in context of increased development around Joint Base McGuire-Dix-Lakehurst.
Infrastructure	Infrastructure developed to support Joint Base McGuire-Dix Lakehurst.	Joint Base McGuire-Dix-Lakehurst continues to improve infrastructure system.	Some new development and increased usage of infrastructure.	Road and infrastructure improvements on the Joint Base McGuire-Dix-Lakehurst.	Construction of new facilities and repaving of airfield would have a major effect on infrastructure.
Hazardous Materials and Wastes	36 ERP sites at McGuire AFB have been identified.	Presence and operation of facilities at Joint Base McGuire-Dix-Lakehurst.	Small quantities of materials used and wastes generated during projects. Potential for workers to encounter hazardous materials and wastes within ERP sites.	Development of several maintenance facilities will increase hazardous material use and waste generated but not to levels that cannot be managed by current practices.	Construction and demolition activities would have a minor effect on hazardous materials and wastes. Effect not significant. Potential for long-term minor beneficial effects created by some required cleanup of ERP sites.

5.3 Reasonable and Prudent Measures and Best Management Practices

The Proposed Action would not result in significant adverse effects on the land or the surrounding area. However, BMPs and other minimization measures would be implemented to eliminate or reduce the impacts of adverse effects.

General BMPs that might be included as parts of the Proposed Action are summarized as follows:

- Clearing and grubbing would be timed with construction to minimize the exposure of cleared surfaces. Such activities would not be conducted during periods of wet weather. Construction activities would be staged to allow for the stabilization of disturbed soils.
- Fugitive dust-control techniques such as watering and stockpiling would be used to minimize adverse effects. All such techniques would conform with applicable regulations.
- Soil erosion-control measures, such as soil erosion-control mats, silt fences, straw bales, diversion ditches, riprap channels, water bars, water spreaders, and hardened stream crossings, would be utilized as appropriate.
- Minimize the disturbance of environmental resources and topography by integrating existing vegetation, trees, and topography into site design.
- Where feasible, minimize areas of impervious surface through shared parking, decked or structured parking, increased building height, or other measures as appropriate.
- Provisions would be taken to prevent pollutants from reaching the soil, groundwater, or surface water. During project activities, contractors would be required to perform daily inspections of equipment, maintain appropriate spill-containment materials on-site, and store all fuels and other materials in appropriate containers. Equipment maintenance activities would not be conducted on the construction site.
- Physical barriers and “no trespassing” signs would be placed around the demolition and construction sites to deter children and unauthorized personnel. All construction vehicles and equipment would be locked or otherwise secured when not in use.
- Construction equipment would be used only as necessary during the daylight hours and would be maintained to the manufacturer’s specifications to minimize noise impacts.

Construction impacts are short-term environmental effects resulting from the process of building the Proposed Action. Construction impacts might involve temporary changes in noise levels, air quality, water quality, land use, and community access.

5.4 Unavoidable Adverse Impacts

Unavoidable adverse impacts would result from implementation of the Proposed Action. None of these impacts would be significant.

Hazardous Materials and Waste. The generation of hazardous materials and wastes is an unavoidable condition associated with the Proposed Action. However, the potential for this would not significantly increase over baseline conditions and, therefore, is not considered significant.

Energy. The use of nonrenewable resources is an unavoidable occurrence, although not considered significant. The Proposed Action would require the use of fossil fuels, a nonrenewable natural resource. Energy supplies, although relatively small, would be committed to the Proposed Action or No Action Alternative.

5.5 Compatibility of the Proposed Action and Alternatives with the Objectives of Federal, Regional, State, and Local Land Use Plans, Policies, and Controls

The Proposed Action would be consistent with all applicable land use ordinances.

5.6 Relationship Between the Short-term Use of the Environment and Long-term Productivity

Short-term uses of the biophysical components of human environment include direct construction-related disturbances and direct impacts associated with an increase in population and activity that occurs over a period of less than 5 years. Long-term uses of human environment include those impacts occurring over a period of more than 5 years, including permanent resource loss.

The Proposed Action would not result in an intensification of land use in the surrounding area. Development of the Proposed Action would not represent a significant loss of open space. Therefore, it is anticipated that the Proposed Action would not result in any cumulative land use or aesthetic impacts.

5.7 Irreversible and Irretrievable Commitments of Resources

The irreversible environmental changes that would result from implementation of the Proposed Action involve the consumption of material resources, energy resources, land, biological habitat, and human resources. The use of these resources is considered to be permanent.

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that use of these resources will have on future generations. Irreversible effects primarily result from use or destruction of a specific resource that cannot be replaced within a reasonable timeframe (e.g., energy and minerals).

Material Resources. Material resources used for the Proposed Action and alternatives include building materials (for renovation or construction of facilities), concrete and asphalt (for parking lots and roads), and various material supplies (for infrastructure) and would be irreversibly lost. Most of the materials that would be consumed are not in short supply, would not limit other unrelated construction activities, and would not be considered significant.

Energy Resources. No significant impacts would be expected on energy resources used as a result of the Proposed Action, though any energy resources consumed would be irretrievably lost. These include petroleum-based products (e.g., gasoline and diesel), natural gas, and electricity. During construction, gasoline and diesel would be used for the operation of construction vehicles. During operation, gasoline or diesel would be used for the operation of POVs and GOVs. Natural gas and electricity would be used by operational activities. Consumption of these energy resources would not place a significant demand on their availability in the region.

Biological Habitat. The Proposed Action would result in the loss of some vegetation and wildlife habitat.

Human Resources. The use of human resources for construction and operation is considered an irretrievable loss, only in that it would preclude such personnel from engaging in other work activities. However, the use of human resources for the Proposed Action and alternatives represent employment opportunities, and is considered beneficial.

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APPENDIX A
PROPOSED MCGUIRE AFB INSTALLATION DEVELOPMENT PROJECTS

Appendix A

Projects Proposed for McGuire AFB

Table A-1. Proposed Facilities Demolition Projects

Installation Project Number	Project Identification Number and Title	FY	Land Use	Project Area (ft ²)	Change in Impervious Surface (ft ²)
Representative Demolition Projects					
PTFL 061022	D1. Demolish Building 2911, Shoppette (13,414 ft ²); Building 2913, Exchange Service Station (3,300 ft ²); and Facility 8510, parking (12,222 yd ²).	2007 to 2008	ADM	126,712	– 126,712
PTFL 0030081	D2. Demolish Buildings 3450 (2,436 ft ²), 3412 (10,388 ft ²), and 3455 (20,995 ft ²) (Global Reach Deployment Complex, Spiral 2A project).	2014+	IND	33,819	– 33,819
PTFL 073003	D3. Demolish Buildings 1825 (4,960 ft ²) and 2308 (12,881 ft ²) (Unified Security Forces Operations Facility project).	2009 to 2013	AOM/ COM	17,841	– 17,841
Other Demolition Projects					
PTFL 051053	D4. Demolish Building 3401, CE Horizontal Shop and Disaster Preparedness Building.	2011 to 2015	AF	40,400	– 40,400
PTFL 081009	D5. Demolish Buildings 2604 and 2605, Temporary Gymnasiums.	2008	COM	30,000	– 30,000
PTFL 071052	D6. Demolish Building 2610.	2008 to 2009	HU	28,640	– 14,320
PTFL 071051	D7. Demolish Building 2609.	2008	HU	25,518	– 12,759
PTFL 061024	D8. Demolish Building 1912, Visiting Airmen's Quarters Dormitory.	2009 to 2014	HU	25,323	– 8,441
PTFL 051056	D9. Demolish Building 3446, 514th Communications Facility.	2009	AF	23,677	– 23,677
PTFL 061076	D10. Demolish Building 1748 (APS Cargo/Grid Staging Area project).	2007 to 2008	AOM	22,954	– 22,954

Land Use Category Key: ADM = Administrative, AOM = Aircraft Operations and Maintenance, AF = Airfield, COM = Community Commercial or Community Services, HU = Housing Unaccompanied, IND = Industrial, MED = Medical, OR = Outdoor Recreation, OS = Open Space

Table A-1. Proposed Facilities Demolition Projects (continued)

Installation Project Number	Project Identification Number and Title	FY	Land Use	Project Area (ft²)	Change in Impervious Surface (ft²)
PTFL 031072	D11. Demolish Building 3440, Base Engineering Storage.	2008 to 2015	AF	21,505	- 21,505
PTFL 051045	D12. Demolish Building 3542, 514th Civil Engineering Headquarters.	2011 to 2012	AF	19,559	- 19,559
PTFL 031074	D13. Demolish Building 1931, Disaster Preparedness Facility.	2011 to 2012	AOM	18,394	- 18,394
PTFL 091004	D14. Demolish Buildings 2418 and 2419, Temporary Lodging Facilities.	2009 to 2011	COM	18,000	- 18,000
PTFL 061023	D15. Demolish Building 1911, Education Center.	2012 to 2014	ADM	12,864	- 6,432
PTFL 023003	D16. Demolish Buildings 1913, 1914, 1915, 1916, 1917, 1918, and 1939 and remediate 10 acres (Munitions Storage Area project).	2009 to 2011	IND	12,670	- 12,670
PTFL 051000	D17. Demolish Building 1623, NDI Laboratory.	2009 to 2013	AF	6,077	- 6,077
PTFL 051003	D18. Demolish Building 2225, C-141 Squadron Operations Building.	2009 to 2012	AOM	5,411	- 5,411
PTFL 081005	D19. Demolish Facility 1925, Power Check Pad.	2010 to 2011	AOM	3,990	- 3,990
PTFL 051050	D20. Demolish Building 1932, Civil Engineering Readiness.	2011 to 2012	AOM	4,306	- 4,306
PTFL 051044	D21. Demolish Building 2912, Honor Guard Building.	2009	AOM	1,924	- 1,924
PTFL 051043	D22. Demolish Building 1933, Pump House D hydrant system.	2008 to 2010	AOM	1,800	- 1,800
PTFL 081008	D23. Demolish Building 3449, Biomedical Engineering Storage Facility.	2011 to 2012	IND	1,728	- 1,728
PTFL 051048	D24. Demolish Building 1927, Falcons Talon Bird Contractor Building.	2008 to 2010	AOM	1,622	- 1,622
PTFL 021065	D25. Demolish Building 1512, Sewage Treatment.	2009 to 2010	OS	1,144	- 1,144

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Table A-1. Proposed Facilities Demolition Projects (continued)

Installation Project Number	Project Identification Number and Title	FY	Land Use	Project Area (ft²)	Change in Impervious Surface (ft²)
PTFL 021068	D26. Demolish Building 1827, Base Supply and Equipment Warehouse.	2011 to 2013	AOM	900	- 900
PTFL 051054	D27. Demolish Building 3402, Mechanical Building.	2011 to 2015	AF	615	- 615
PTFL 081006	D28. Demolish Building 3424, Base Hazardous Storage Facility.	2011 to 2012	IND	400	- 400
PTFL 021064	D29. Demolish Building 1934, A/SE Storage Facility.	2009 to 2011	AOM	400	- 400
PTFL 051042	D30. Demolish Building 1740, Pulverizer.	2008 to 2009	AOM	157	- 157
Total Square Feet				508,350	- 457,957

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Table A-2. Proposed Facilities Construction Projects

Installation Project Number	Project Identification Number and Title	FY	Land Use	Project Area (ft²)	Change in Impervious Surface (ft²)
Representative Construction Projects					
PTFL 053001	C1. Construct a unified Headquarters Building for 305 AMW and 514 AMW.	2014+	ADM	59,202	+ 59,202
PTFL 0030081	C2. Construct the Global Reach Deployment Complex (GRDC), Spiral 2A (three stories).	2014+	IND	39,945	+ 13,315
PTFL 073003	C3. Construct a Unified Security Forces Operations facility (37,674 ft ²) and parking (170,000 ft ²).	2009 to 2013	ADM	207,674	+ 207,674
Other Construction Projects					
PTFL 023008	C4. Construct a Precision Measurement Equipment Laboratory (PMEL) (one story).	2014+	COM	28,880	+ 28,880
PTFL 009001	C5. Construct an addition to Building 2217 (8,000 ft ²) and renovate existing office (12,000 ft ²).	2008 to 2010	ADM	20,000	+ 8,000
PTFL 023003	C6. Construct 41 earth-covered igloos, a munitions maintenance administration facility, munitions maintenance shop facility, and inert spares storage facility with concrete pad.	2009 to 2011	IND	19,450	+ 19,450
PTFL 063028	C7. Construct a joint-base family support center.	2014+	COM	18,000	+ 18,000
PTFL 999003	C8. Construct a Civil Engineer Training Facility.	2014+	COM/ ADM	13,606	+ 13,606
PTFL 955002	C9. Construct an Auto Skills Center.	2006 to 2008	AOM/ IND	7,998	+ 7,998
PTFL 045001	C10. Construct a Golf Course Maintenance and Pesticide Storage/Mixing Facility.	2010 to 2012	OR	7,500	+ 7,500
PTFL 999005	C11. Construct a facility for Airlift Control Flight (6,000 ft ²) and vehicle storage (1,400 ft ²).	2008 to 2010	IND	7,400	+ 7,400

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Table A-2. Proposed Facilities Construction Projects (continued)

Installation Project Number	Project Identification Number and Title	FY	Land Use	Project Area (ft²)	Change in Impervious Surface (ft²)
PTFL 015000	C12. Construct a School Age Program facility.	2009 to 2011	COM	4,962	+ 4,962
PTFL 051033	C13. Construct an addition to Building 1750, Vehicle Maintenance.	2009 to 2012	AOM	4,600	+ 4,600
PTFL 971301	C14. Construct a communications warehouse.	2011 to 2012	ADM	4,000	+ 4,000
PTFL 971528	C15. Construct a readiness warehouse.	2008 to 2009	AOM	4,000	+ 4,000
PTFL 011502	C16. Construct a Civil Engineering Squadron Electrical Shop transformer storage building.	2010 to 2011	IND	4,000	+ 4,000
PTFL 042903	C17. Construct a liquid fuels maintenance facility.	2011 to 2012	IND	3,400	+ 3,400
PTFL 079001	C18. Construct an overhang for Building 3515.	2007 to 2008	COM	3,125	0
PTFL 931027A	C19. Add to Building 3011, Family Support Center.	2009	COM	3,000	+ 3,000
PTFL 042003A	C20. Add to Building 1730, Base Operations Facility.	2009 to 2010	AOM	3,000	+ 3,000
PTFL 059000	C21. Construct an addition to Building 1712 (2,750 ft ²) and parking (11,900 ft ²) for 514 AMW firefighters.	2007 to 2008	AOM	14,650	+ 14,650
PTFL 041000A	C22. Construct an addition to Building 1809A, PMEL (one story).	2007 to 2008	AOM	2,400	+ 2,400
PTFL 078001	C23. Construction an ambulance garage.	2007 to 2008	MED	1,800	+ 1,800
PTFL 069001	C24. Construct an AFRC recruiting facility (1,780 ft ²) and parking (17,380 ft ²).	2008 to 2009	ADM	19,160	+ 19,160
PTFL 041024	C25. Construct three covered motorcycle parking shelters at Buildings 2424, 2600, and 2700.	2011 to 2012	HU	1,700	+ 1,700
PTFL 069000	C26. Construct an annex to Building 3011 (1,624 ft ²) and parking (4,685 ft ²) for 514th Family Support Center.	2008 to 2009	COM	6,309	+ 6,309

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Table A-2. Proposed Facilities Construction Projects (continued)

Installation Project Number	Project Identification Number and Title	FY	Land Use	Project Area (ft²)	Change in Impervious Surface (ft²)
PTFL 052000A	C27. Add to Building 2218, 305 AMW and 514 AMW Maintenance Headquarters.	2008 to 2009	AOM	1,600	+ 1,600
PTFL 061032	C28. Add to (1,525 ft ²) and repair (3,363 ft ²) Building 2304, Base Honor Guard Facility.	2009 to 2010	ADM	3,363	+ 1,525
PTFL 061041	C29. Construct a loading dock canopy for Building 1719, Defense Courier Services.	2009	AOM	936	+ 936
PTFL 061062	C30. Construct latrines at Building 3101, Central Deployment Center.	2007 to 2009	IND	700	+ 700
PTFL 951513	C31. Construct an entrance to Building 2907, Post Office.	2011 to 2012	COM	100	+ 100
PTFL 061042	C32. Add to/alter Building 1616, Fire Training Facility.	2009	AOM	120,000	+ 13,000
Total Square Feet				636,460	+ 485,867

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Table A-3. Proposed Infrastructure Projects

Installation Project Number	Project Identification Number and Title	FY	Land Use	Project Area (ft²)	Change in Impervious Surface (ft²)
Representative Infrastructure Projects					
PTFL 031012	I1. Repair Runway 06/24 (222,222 yd ²).	2010 to 2011	AF	2,000,000	- 500,000
PTFL 0712012	I2. Repair concrete on X-ray apron (62,000 yd ²).	2008 to 2009	AF	558,000	0
PTFL 051062	I3. Demolish pavement for Auto Skills Center (36,000 yd ²).	2007 to 2008	AF/AOM	324,000	- 324,000
Other Infrastructure Projects					
PTFL 081004	I4. Repair southern portion of main ramp taxiway.	2009 to 2010	AF	225,000	0
PTFL 0712011	I5. Repair Alpha/Bravo parking ramp.	2007 to 2008	AF	207,000	0
PTFL 941152	I6. Construct overrun for Runway 36.	2011 to 2012	AF	150,000	+ 150,000
PTFL 941149	I7. Construct overrun for Runway 18, with Engineered Material Arresting System.	2011 to 2012	AF	75,000	+ 75,000
PTFL 091002	I8. Repair apron, Romeo, and Compass.	2009 to 2010	AF	149,400	0
PTFL 941148	I9. Construct shoulders along Runway 18/36.	2011 to 2012	AF	400,000	+ 400,000
PTFL 042009	I10. Repair TWCF apron.	2007 to 2008	AF	108,000	0
PTFL 061075	I11. Construct APS/Cargo staging area.	2007 to 2008	AOM	104,600	+ 104,600
PTFL 061056	I12. Repair parking at Challenger School, including demolishing abandoned paved surfaces (15,000 ft ²), constructing a new parking lot (70,730 ft ²), and an overflow lot (43,000 ft ²).	2008 to 2009	COM	128,730	+99,000
PTFL 031071	I13. Demolish Facilities 2512 and 2518, Athletic Softball Fields (each 1 acre).	2010 to 2012	OR	87,100	0
PTFL 061012	I14. Resurface Lancaster Avenue.	2009	AF/IND	68,931	0

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Table A-3. Proposed Infrastructure Projects (continued)

Installation Project Number	Project Identification Number and Title	FY	Land Use	Project Area (ft²)	Change in Impervious Surface (ft²)
PTFL 061013	I15. Resurface Engineering Drive South.	2009	AF	68,000	0
PTFL 047000	I16. Replace bulk fuels distribution components, including repairing truck offload facility, and demolish Building 2106 and separator, fill stands, associated piping, and underground offload piping around Buildings 2104 and 2105.	2011 to 2012	IND	53,020	-540
PTFL 061400	I17. Construct new Type III Hydrant System at Victor Row.	2011 to 2013	AF	48,000	+ 2,000
PTFL 031070	I18. Demolish Facility 2519, Athletic Softball Field (1 acre).	2011 to 2012	OR	43,600	0
PTFL 081003	I19. Repair concrete pavement on Alpha taxiway.	2007	AF	29,700	0
PTFL 031500	I20. Construct four tennis courts.	2011 to 2012	HU/ OR	28,800	+ 28,800
PTFL 071018	I21. Resurface White Street.	2008 to 2010	AOM	27,000	0
PTFL 031226	I22. Repave Family Support Center parking lot.	2009	COM	26,316	0
PTFL 041252	I23. Repair asphalt, East Arnold Avenue.	2009	AOM/ OR	23,400	0
PTFL 0612001	I24. Repair asphalt at Building 3455, Reserve Medical Training.	2007 to 2008	IND	17,496	0
PTFL 051404	I25. Replace and repair hydrant outlet pits on Oscar pavement as necessary and remove of contaminated soil.	2008 to 2010	AF	12,000	0
PTFL 931102	I26. Construct sidewalk at Tuskegee Avenue.	2011 to 2012	COM/ ADM	9,000	+ 9,000
PTFL 0410581	I27. Construct deicing vehicle parking pads, Phase 2.	2007 to 2009	IND	9,000	+ 9,000
PTFL 071020	I28. Construct road for access to vehicle storage fueling station.	2011	IND	8,253	+ 8,253

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Table A-3. Proposed Infrastructure Projects (continued)

Installation Project Number	Project Identification Number and Title	FY	Land Use	Project Area (ft²)	Change in Impervious Surface (ft²)
PTFL 041021	I29. Construct an additional parking lot for Building 1835.	2010	ADM	8,010	+ 8,010
PTFL 071064	I30. Repair Taxiway Hotel.	2007 to 2008	AF	4,860	0
PTFL 019002	I31. Add to the aboveground storage tanks at Building 2309, Aeromedical Staging Squadron Facility.	2007 to 2008	COM	3,240	+ 3,240
PTFL 071065	I32. Repair Taxiway Bravo.	2007 to 2008	AF	2,655	0
PTFL 061401	I33. Install access road to Product Recovery Tank and replace driveway at Building 1840, Ground Equipment Service Station.	2008	IND	1,800	+ 1,800
PTFL 041013	I34. Demolish pavements in the vicinity of Building 3573.	2010	OS	1,500	- 1,500
PTFL 0712002	I35. Repair asphalt at Buildings 2414 and 2911.	2007	COM/ ADM	36,000	0
PTFL 071008	I36. Replace Well A.	2011 to 2012	OS	10,000	+ 1,000
PTFL 051052	I37. Remove underground water tank at Building 1614, Fireman Training Facility.	2008 to 2009	AF	10,836	0
Total Square Feet				5,068,247	+ 73,663

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APPENDIX B
APPLICABLE LAWS, REGULATIONS, POLICIES, AND PLANNING CRITERIA

Appendix B

Applicable Laws, Regulations, Policies, and Planning Criteria

When considering the affected environment, the various physical, biological, economic, and social environmental factors must be considered. In addition to the National Environmental Policy Act (NEPA), there are other environmental laws as well as Executive Orders (EOs) to be considered when preparing environmental analyses. These laws are summarized below.

NOTE: This is not a complete list of all applicable laws, regulations, policies, and planning criteria potentially applicable to documents, however, it does provide a general summary for use as a reference.

Airspace

Airspace management in the USAF is guided by Air Force Instruction (AFI) 13-201, *Air Force Airspace Management*. This AFI provides guidance and procedures for developing and processing special use airspace (SUA). It covers aeronautical matters governing the efficient planning, acquisition, use, and management of airspace required to support USAF flight operations. It applies to activities that have operational or administrative responsibility for using airspace and establishes practices to decrease disturbances from flight operations that might cause adverse public reaction and provides flying unit commanders with general guidance for dealing with local problems.

Noise

The Air Installation Compatible Use Zone (AICUZ) Program, (AFI 32-7063), provides guidance to air bases and local communities in planning land uses compatible with airfield operations. The AICUZ program describes existing aircraft noise and flight safety zones on and near U.S. Air Force (USAF) installations.

Land Use

Land use planning in the USAF is guided by *Land Use Planning Bulletin, Base Comprehensive Planning* (HQ USAF/LEEVX, August 1, 1986). This document provides for the use of 12 basic land use types found on a USAF installation. In addition, land use guidelines established by the U.S. Department of Housing and Urban Development (HUD) and based on findings of the Federal Interagency Committee on Noise (FICON) are used to recommend acceptable levels of noise exposure for land use.

Air Quality

The Clean Air Act (CAA) of 1970, and Amendments of 1977 and 1990, recognizes that increases in air pollution result in danger to public health and welfare. To protect and enhance the quality of the Nation's air resources, the CAA authorizes the U.S. Environmental Protection Agency (USEPA) to set six National Ambient Air Quality Standards (NAAQSs) which regulate carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and particulate matter pollution emissions. The CAA seeks to reduce or eliminate the creation of pollutants at their source, and designates this responsibility to state and local governments. States are directed to utilize financial and technical assistance as well as leadership from the Federal government to develop implementation plans to achieve NAAQS. Geographic areas are officially designated by the USEPA as being in attainment or nonattainment to pollutants in relation to their compliance with NAAQS. Geographic regions established for air quality planning purposes are designated as Air Quality Control Regions (AQCR). Pollutant concentration levels are measured at

designated monitoring stations within the AQCR. An area with insufficient monitoring data is designated as unclassifiable. Section 309 of the CAA authorizes USEPA to review and comment on impact statements prepared by other agencies.

An agency should consider what effect an action might have on NAAQS due to short-term increases in air pollution during construction as well as long-term increases resulting from changes in traffic patterns. For actions in attainment areas, a Federal agency could also be subject to USEPA's Prevention of Significant Deterioration (PSD) regulations. These regulations apply to new major stationary sources and modifications to such sources. Although few agency facilities will actually emit pollutants, increases in pollution can result from a change in traffic patterns or volume. Section 118 of the CAA waives Federal immunity from complying with the CAA and states all Federal agencies will comply with all Federal- and state-approved requirements.

The General Conformity Rule requires that any Federal action meet the requirements of a SIP or Federal Implementation Plan. More specifically, CAA conformity is ensured when a Federal action does not cause a new violation of the NAAQS, contribute to an increase in the frequency or severity of violations of NAAQS, or delay the timely attainment of any NAAQS, interim progress milestones, or other milestones toward achieving compliance with the NAAQS.

The General Conformity Rule applies only to actions in nonattainment or maintenance areas and considers both direct and indirect emissions. The rule applies only to Federal actions that are considered "regionally significant" or where the total emissions from the action meet or exceed the *de minimis* thresholds presented in 40 CFR 93.153. An action is regionally significant when the total nonattainment pollutant emissions exceed 10 percent of the AQCR's total emissions inventory for that nonattainment pollutant. If a Federal action does not meet or exceed the *de minimis* thresholds and is not considered regionally significant, then a full Conformity Determination is not required.

Safety

AFI 91-202, *USAF Mishap Prevention Program*, implements Air Force Policy Directive (AFPD) 91-2, *Safety Programs*. It establishes mishap prevention program requirements (including the Bird/Wildlife Aircraft Strike Hazard [BASH] Program), assigns responsibilities for program elements, and contains program management information. This instruction applies to all USAF personnel.

AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program*, implements AFPD 91-3, *Occupational Safety and Health*, by outlining the AFOSH Program. The purpose of the AFOSH Program is to minimize loss of USAF resources and to protect USAF personnel from occupational deaths, injuries, or illnesses by managing risks. In conjunction with the USAF Mishap Prevention Program, these standards ensure all USAF workplaces meet Federal safety and health requirements. This instruction applies to all USAF activities.

Geological Resources

Recognizing that millions of acres per year of prime farmland are lost to development, Congress passed the Farmland Protection Policy Act to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland (7 CFR Part 658). Prime farmland are soils that have a combination of soil and landscape properties that make them highly suitable for cropland, such as high inherent fertility, good water-holding capacity, deep or thick effective rooting zones, and are not subject to periodic flooding. Under the Farmland Protection Policy Act, agencies are encouraged to conserve prime or unique farmlands when alternatives are practicable. Some activities that are not subject to the Farmland Protection Policy Act include Federal permitting and licensing, projects on land already

in urban development or used for water storage, construction for national defense purposes, or construction of new minor secondary structures such as a garage or storage shed.

Water Resources

The Clean Water Act (CWA) of 1977 is an amendment to the Federal Water Pollution Control Act of 1972, is administered by USEPA, and sets the basic structure for regulating discharges of pollutants into U.S. waters. The CWA requires USEPA to establish water quality standards for specified contaminants in surface waters and forbids the discharge of pollutants from a point source into navigable waters without a National Pollutant Discharge Elimination System (NPDES) permit. NPDES permits are issued by USEPA or the appropriate state if it has assumed responsibility. Section 404 of the CWA establishes a Federal program to regulate the discharge of dredge and fill material into waters of the United States. Section 404 permits are issued by the U.S. Army Corps of Engineers (USACE). Waters of the United States include interstate and intrastate lakes, rivers, streams, and wetlands that are used for commerce, recreation, industry, sources of fish, and other purposes. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Each agency should consider the impact on water quality from actions such as the discharge of dredge or fill material into U.S. waters from construction, or the discharge of pollutants as a result of facility occupation.

Section 303(d) of the CWA requires states and USEPA to identify waters not meeting state water-quality standards and to develop Total Maximum Daily Loads (TMDLs). A TMDL is the maximum amount of a pollutant that a waterbody can receive and still be in compliance with state water-quality standards. After determining TMDLs for impaired waters, states are required to identify all point and nonpoint sources of pollution in a watershed that are contributing to the impairment and to develop an implementation plan that will allocate reductions to each source to meet the state standards. The TMDL program is currently the Nation's most comprehensive attempt to restore and improve water quality. The TMDL program does not explicitly require the protection of riparian areas. However, implementation of the TMDL plans typically calls for restoration of riparian areas as one of the required management measures for achieving reductions in nonpoint source pollutant loadings.

The Coastal Zone Management Act (CZMA) of 1972 declares a national policy to preserve, protect, and develop, and, where possible, restore or enhance the resources of the Nation's coastal zone. The coastal zone refers to the coastal waters and the adjacent shorelines including islands, transitional and intertidal areas, salt marshes, wetlands, and beaches, and includes the Great Lakes. The CZMA encourages states to exercise their full authority over the coastal zone, through the development of land and water use programs in cooperation with Federal and local governments. States may apply for grants to help develop and implement management programs to achieve wise use of the land and water resources of the coastal zone. Development projects affecting land or water use or natural resources of a coastal zone, must ensure the project is, to the maximum extent practicable, consistent with the state's coastal zone management program.

The Safe Drinking Water Act (SDWA) of 1974 establishes a Federal program to monitor and increase the safety of all commercially and publicly supplied drinking water. Congress amended the SDWA in 1986, mandating dramatic changes in nationwide safeguards for drinking water and establishing new Federal enforcement responsibility on the part of USEPA. The 1986 amendments to the SDWA require USEPA to establish Maximum Contaminant Levels (MCLs), Maximum Contaminant Level Goals (MCLGs), and Best Available Technology (BAT) treatment techniques for organic, inorganic, radioactive, and microbial contaminants; and turbidity. MCLGs are maximum concentrations below which no negative human health effects are known to exist. The 1996 amendments set current Federal MCLs, MCLGs, and BATs for organic, inorganic, microbiological, and radiological contaminants in public drinking water supplies.

The Wild and Scenic Rivers Act of 1968 provides for a wild and scenic river system by recognizing the remarkable values of specific rivers of the Nation. These selected rivers and their immediate environment are preserved in a free-flowing condition, without dams or other construction. The policy not only protects the water quality of the selected rivers but also provides for the enjoyment of present and future generations. Any river in a free-flowing condition is eligible for inclusion, and can be authorized as such by an Act of Congress, an act of state legislature, or by the Secretary of the Interior upon the recommendation of the governor of the state(s) through which the river flows.

EO 11988, *Floodplain Management* (May 24, 1977), directs agencies to consider alternatives to avoid adverse effects and incompatible development in floodplains. An agency may locate a facility in a floodplain if the head of the agency finds there is no practicable alternative. If it is found there is no practicable alternative, the agency must minimize potential harm to the floodplain, and circulate a notice explaining why the action is to be located in the floodplain prior to taking action. Finally, new construction in a floodplain must apply accepted floodproofing and flood protection to include elevating structures above the base flood level rather than filling in land.

Biological Resources

The Endangered Species Act (ESA) of 1973 establishes a Federal program to conserve, protect, and restore threatened and endangered plants and animals and their habitats. The ESA specifically charges Federal agencies with the responsibility of using their authority to conserve threatened and endangered species. All Federal agencies must ensure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction of critical habitat for these species, unless the agency has been granted an exemption. The Secretary of the Interior, using the best available scientific data, determines which species are officially endangered or threatened, and the U.S. Fish and Wildlife Service (USFWS) maintains the list. A list of Federal endangered species can be obtained from the Endangered Species Division, USFWS (703-358-2171). States might also have their own lists of threatened and endangered species which can be obtained by calling the appropriate State Fish and Wildlife office. Some species, such as the bald eagle, also have laws specifically for their protection (e.g., Bald Eagle Protection Act).

The Migratory Bird Treaty Act (MBTA) of 1918, as amended, implements treaties and conventions between the United States, Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Unless otherwise permitted by regulations, the MBTA makes it unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver, or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not. The MBTA also makes it unlawful to ship, transport or carry from one state, territory, or district to another, or through a foreign country, any bird, part, nest, or egg that was captured, killed, taken, shipped, transported, or carried contrary to the laws from where it was obtained; and import from Canada any bird, part, nest, or egg obtained contrary to the laws of the province from which it was obtained. The U.S. Department of the Interior has authority to arrest, with or without a warrant, a person violating the MBTA.

EO 11514, *Protection and Enhancement of Environmental Quality* (March 5, 1970), states that the President, with assistance from the Council on Environmental Quality (CEQ), will lead a national effort to provide leadership in protecting and enhancing the environment for the purpose of sustaining and enriching human life. Federal agencies are directed to meet national environmental goals through their policies, programs, and plans. Agencies should also continually monitor and evaluate their activities to protect and enhance the quality of the environment. Consistent with NEPA, agencies are directed to share information about existing or potential environmental problems with all interested parties, including the public, in order to obtain their views.

EO 11990, *Protection of Wetlands* (May 24, 1977), directs agencies to consider alternatives to avoid adverse effects and incompatible development in wetlands. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland, and the proposed construction incorporates all possible measures to limit harm to the wetland. Agencies should use economic and environmental data, agency mission statements, and any other pertinent information when deciding whether or not to build in wetlands. EO 11990 directs each agency to provide for early public review of plans for construction in wetlands.

EO 13186, *Conservation of Migratory Birds* (January 10, 2001), creates a more comprehensive strategy for the conservation of migratory birds by the Federal government. EO 13186 provides a specific framework for the Federal government's compliance with its treaty obligations to Canada, Mexico, Russia, and Japan. EO 13186 provides broad guidelines on conservation responsibilities and requires the development of more detailed guidance in a Memorandum of Understanding (MOU). EO 13186 will be coordinated and implemented by the USFWS. The MOU will outline how Federal agencies will promote conservation of migratory birds. EO 13186 requires the support of various conservation planning efforts already in progress; incorporation of bird conservation considerations into agency planning, including NEPA analyses; and reporting annually on the level of take of migratory birds.

Cultural Resources

The American Indian Religious Freedom Act of 1978 and Amendments of 1994 recognize that freedom of religion for all people is an inherent right, and traditional American Indian religions are an indispensable and irreplaceable part of Indian life. It also recognized the lack of Federal policy on this issue and made it the policy of the United States to protect and preserve the inherent right of religious freedom for Native Americans. The 1994 Amendments provide clear legal protection for the religious use of peyote cactus as a religious sacrament. Federal agencies are responsible for evaluating their actions and policies to determine if changes should be made to protect and preserve the religious cultural rights and practices of Native Americans. These evaluations must be made in consultation with native traditional religious leaders.

The Archeological Resource Protection Act (ARPA) of 1979 protects archeological resources on public and American Indian lands. It provides felony-level penalties for the unauthorized excavation, removal, damage, alteration, or defacement of any archeological resource, defined as material remains of past human life or activities which are at least 100 years old. Before archeological resources are excavated or removed from public lands, the Federal land manager must issue a permit detailing the time, scope, location, and specific purpose of the proposed work. ARPA also fosters the exchange of information about archeological resources between governmental agencies, the professional archeological community, and private individuals. ARPA is implemented by regulations found in 43 CFR Part 7.

The National Historic Preservation Act (NHPA) of 1966 sets forth national policy to identify and preserve properties of state, local, and national significance. The NHPA establishes the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Officers (SHPOs), and the National Register of Historic Places (NRHP). ACHP advises the President, Congress, and Federal agencies on historic preservation issues. Section 106 of the NHPA directs Federal agencies to take into account effects of their undertakings (actions and authorizations) on properties included in or eligible for the NRHP. Section 110 sets inventory, nomination, protection, and preservation responsibilities for federally owned cultural properties. Section 106 of the act is implemented by regulations of the ACHP, 36 CFR Part 800. Agencies should coordinate studies and documents prepared under Section 106 with NEPA where appropriate. However, NEPA and NHPA are separate statutes and compliance with one does not constitute compliance with the other. For example, actions which qualify for a categorical exclusion under NEPA might still require Section 106 review under NHPA. It is the responsibility of the agency

official to identify properties in the area of potential effects, and whether they are included or eligible for inclusion in the NRHP. Section 110 of the NHPA requires Federal agencies to identify, evaluate, and nominate historic property under agency control to the NRHP.

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 establishes rights of American Indian tribes to claim ownership of certain “cultural items,” defined as Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony, held or controlled by Federal agencies. Cultural items discovered on Federal or tribal lands are, in order of primacy, the property of lineal descendants, if these can be determined, and then the tribe owning the land where the items were discovered or the tribe with the closest cultural affiliation with the items. Discoveries of cultural items on Federal or tribal land must be reported to the appropriate American Indian tribe and the Federal agency with jurisdiction over the land. If the discovery is made as a result of a land use, activity in the area must stop and the items must be protected pending the outcome of consultation with the affiliated tribe.

EO 11593, *Protection and Enhancement of the Cultural Environment* (May 13, 1971), directs the Federal government to provide leadership in the preservation, restoration, and maintenance of the historic and cultural environment. Federal agencies are required to locate and evaluate all Federal sites under their jurisdiction or control which might qualify for listing on the NRHP. Agencies must allow the ACHP to comment on the alteration, demolition, sale, or transfer of property which is likely to meet the criteria for listing as determined by the Secretary of the Interior in consultation with the SHPO. Agencies must also initiate procedures to maintain federally owned sites listed on the NRHP.

EO 13007, *Indian Sacred Sites* (May 24, 1996), provides that agencies managing Federal lands, to the extent practicable, permitted by law, and not inconsistent with agency functions, shall accommodate American Indian religious practitioners’ access to and ceremonial use of American Indian sacred sites, shall avoid adversely affecting the physical integrity of such sites, and shall maintain the confidentiality of such sites. Federal agencies are responsible for informing tribes of proposed actions that could restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites.

EO 13287, *Preserve America* (March 3, 2003), orders Federal agencies to take a leadership role in protection, enhancement, and contemporary use of historic properties owned by the Federal government, and promote intergovernmental cooperation and partnerships for preservation and use of historic properties. EO 13287 established new accountability for agencies with respect to inventories and stewardship.

Socioeconomics and Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), directs Federal agencies to make achieving environmental justice part of their mission. Agencies must identify and address the adverse human health or environmental effects that its activities have on minority and low-income populations, and develop agencywide environmental justice strategies. The strategy must list “programs, policies, planning and public participation processes, enforcement, and/or rulemakings related to human health or the environment that should be revised to promote enforcement of all health and environmental statutes in areas with minority populations and low-income populations, ensure greater public participation, improve research and data collection relating to the health of and environment of minority populations and low-income populations, and identify differential patterns of consumption of natural resources among minority populations and low-income populations.” A copy of the strategy and progress reports must be provided to the Federal Working Group on Environmental Justice. Responsibility for compliance with EO 12898 is with each Federal agency.

Hazardous Materials and Waste

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 authorizes USEPA to respond to spills and other releases of hazardous substances to the environment, and authorizes the National Oil and Hazardous Substances Pollution Contingency Plan. CERCLA also provides a Federal “Superfund” to respond to emergencies immediately. Although the “Superfund” provides funds for cleanup of sites where potentially responsible parties cannot be identified, USEPA is authorized to recover funds through damages collected from responsible parties. This funding process places the economic burden for cleanup on polluters.

The Pollution Prevention Act (PPA) of 1990 encourages manufacturers to avoid the generation of pollution by modifying equipment and processes, redesigning products, substituting raw materials, and making improvements in management techniques, training, and inventory control. Consistent with pollution prevention principles, EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (January 24, 2007 [revoking EO 13148]) sets a goal for all Federal agencies that promotes environmental practices, including acquisition of biobased, environmentally preferable, energy-efficient, water-efficient, and recycled-content products, and use of paper of at least 30 percent post-consumer fiber content. In addition, EO 13423 sets a goal that requires Federal agencies to ensure that they reduce the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed of, increase diversion of solid waste as appropriate, and maintain cost effective waste prevention and recycling programs in their facilities. Additionally, in *Federal Register* Volume 58 Number 18 (January 29, 1993), CEQ provides guidance to Federal agencies on how to “incorporate pollution prevention principles, techniques, and mechanisms into their planning and decision making processes and to evaluate and report those efforts, as appropriate, in documents pursuant to NEPA.”

The Resource Conservation and Recovery Act (RCRA) of 1976 is an amendment to the Solid Waste Disposal Act. RCRA authorizes USEPA to provide for “cradle-to-grave” management of hazardous waste and sets a framework for the management of nonhazardous municipal solid waste. Under RCRA, hazardous waste is controlled from generation to disposal through tracking and permitting systems, and restrictions and controls on the placement of waste on or into the land. Under RCRA, a waste is defined as hazardous if it is ignitable, corrosive, reactive, toxic, or listed by USEPA as being hazardous. With the Hazardous and Solid Waste Amendments (HSWA) of 1984, Congress targeted stricter standards for waste disposal and encouraged pollution prevention by prohibiting the land disposal of particular wastes. The HSWA amendments strengthen control of both hazardous and nonhazardous waste and emphasize the prevention of pollution of groundwater.

The Superfund Amendments and Reauthorization Act (SARA) of 1986 mandates strong clean-up standards and authorizes USEPA to use a variety of incentives to encourage settlements. Title III of SARA authorizes the Emergency Planning and Community Right to Know Act (EPCRA), which requires facility operators with “hazardous substances” or “extremely hazardous substances” to prepare comprehensive emergency plans and to report accidental releases. If a Federal agency acquires a contaminated site, it can be held liable for cleanup as the property owner/operator. A Federal agency can also incur liability if it leases a property, as the courts have found lessees liable as “owners.” However, if the agency exercises due diligence by conducting a Phase I Environmental Site Assessment, it can claim the “innocent purchaser” defense under CERCLA. According to Title 42 United States Code (U.S.C.) 9601(35), the current owner/operator must show it undertook “all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice” before buying the property to use this defense.

The Toxic Substance Control Act (TSCA) of 1976 consists of four titles. Title I established requirements and authorities to identify and control toxic chemical hazards to human health and the environment.

TSCA authorized USEPA to gather information on chemical risks, require companies to test chemicals for toxic effects, and regulate chemicals with unreasonable risk. TSCA also singled out polychlorinated biphenyls (PCBs) for regulation, and, as a result, PCBs are being phased out. PCBs are persistent when released into the environment and accumulate in the tissues of living organisms. They have been shown to cause adverse health effects on laboratory animals and could cause adverse health effects in humans. TSCA and its regulations govern the manufacture, processing, distribution, use, marking, storage, disposal, clean-up, and release reporting requirements for numerous chemicals like PCBs. TSCA Title II provides statutory framework for “Asbestos Hazard Emergency Response,” which applies only to schools. TSCA Title III, “Indoor Radon Abatement,” states indoor air in buildings of the United States should be as free of radon as the outside ambient air. Federal agencies are required to conduct studies on the extent of radon contamination in buildings they own. TSCA Title IV, “Lead Exposure Reduction,” directs Federal agencies to “conduct a comprehensive program to promote safe, effective, and affordable monitoring, detection, and abatement of lead-based paint and other lead exposure hazards.” Further, any Federal agency having jurisdiction over a property or facility must comply with all Federal, state, interstate, and local requirements concerning lead-based paint.

APPENDIX C
INTERAGENCY COORDINATION AND PUBLIC INVOLVEMENT

**Environmental Assessment of Installation Development at
McGuire Air Force Base, New Jersey**

Interagency and Intergovernmental Coordination for Environmental Planning List

Federal Agency Contacts

Mr. Clifford Day
Supervisor
USFWS, New Jersey Ecological Services Field
Office
927 N. Main Street, Building D
Pleasantville, NJ 08232

Mr. Robert Hargrove
Environmental Review Coordinator
USEPA Region 2
290 Broadway, 25th Floor
New York, NY 10007

Mr. Ronnie Lee Taylor,
State Soil Scientist
NRCS New Jersey State Office
220 Davidson Ave, 4th Floor
Somerset, NJ 08873

Mr. Mike Thabault
Assistant Regional Director, Ecological Services
USFWS Region 5
300 Westgate Center Drive
Hadley, MA 01035-9589

State and Local Agency Contacts

Mr. Kenneth Koschek
Supervising Environmental Specialist, Office of
Permit Coordination and Environmental Review
New Jersey Department of Environmental
Protection
P.O. Box 418
Trenton, NJ 08625-0418

Mr. Bradley M. Campbell
State Historic Preservation Officer
New Jersey Department of Environmental
Protection
401 East State Street
P.O. Box 402
Trenton, NJ 08625

Endangered and Nongame Species Program
New Jersey Division of Fish and Wildlife,
Department of Environmental Protection
P.O. Box 400
Trenton, NJ 08625-0400

Mr. Ernie Deman
New Jersey Pinelands Commission
P.O. Box 7
New Lisbon, NJ 08064

Robert A. Kull, P.P., AICP
Coordinator, Regional Planning
Burlington County
50 Rancocas Road
P.O. Box 6000
Mount Holly, NJ 08060-6000

Mary Pat Robbie
Director, Resource Conservation
Burlington County
49 Rancocas Road
Mount Holly, NJ 08060

Tribal Contacts

Mark Gould, Tribal Chairperson
Nanticoke-Lenni-Lenape
Indians of New Jersey
18 E. Commerce Street
P.O. Box 544
Bridgeton, NJ 08302

Ramapough Mountain Indians
189 Stag Hill Road
Mahwah, NJ 07430

Roy Crazy Horse, Chief
Powhattan-Renape Nation
Rankokus Indian Reservation
P.O. Box 225
Rancocas, NJ 08073



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND



MEMORANDUM FOR SEE DISTRIBUTION

MAY 15 2007

FROM: HQ AMC/A7P
507 Symington Drive
Scott AFB, IL 62225-5022

SUBJECT: Description of Proposed Action and Alternatives (DOPAA) for an Installation Development Environmental Assessment (IDEA) at McGuire Air Force Base (AFB), New Jersey

The 305th Air Mobility Wing (305 AMW) at McGuire AFB, New Jersey, and Headquarters Air Mobility Command (AMC) are preparing the IDEA as a comprehensive document to improve base planning and streamline the National Environmental Policy Act (NEPA) compliance process. The Proposed Action addressed in this Environmental Assessment (EA) is to implement installation development actions as established in the community of all wing-approved plans for McGuire AFB over the next five years. This comprehensive approach better enables McGuire AFB to meet installation development requirements and to ensure readiness for future national defense missions. The projects analyzed in this IDEA fall under three general categories: facilities demolition projects, facilities construction projects (to include new construction, renovations, alterations, and repairs), and infrastructure projects. Following this 30-day review, you will have the opportunity to review the full IDEA prior to publication and signature.

In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation and solicit comments on the attached DOPAA for this IDEA. Comments may include any issues or concerns related to the IDEA. Please provide any comments or information no later than 30 days from the date of this letter by mail to Mr. Matthew Bell, 305 CES/CEV, 2403 Vandenberg Avenue, McGuire AFB, New Jersey 08641.

Also enclosed is a copy of the distribution list of other federal, state, and local agencies to be contacted regarding this IDEA. If you feel there are any additional agencies that should review and comment on the proposal, please feel free to share this letter and attached materials with them.

If members of your staff have any questions or comments, please feel free to call or email the AMC project point-of-contact, Mr. Doug Allbright, HQ AMC/A7PC, at (618) 229-0846, or e-mail to doug.allbright@scott.af.mil.

Efren V. M. Garcia
EFREN V. M. GARCIA, Colonel, USAF
Chief, Plans and Programs Division
Directorate of Installations & Mission Support

- Attachments:
1. DOPAA for IDEA at McGuire AFB
 2. Distributions List

AMC--Global Reach For America

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State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Environmental Regulation
Office of Permit Coordination and Environmental Review
401 East State Street
P.O. Box 423
Trenton, New Jersey 08625-0423
Phone: (609) 292-3600 Fax: (609) 777-1330

JON S. CORZINE
Governor

LISA P. JACKSON
Commissioner

May 22, 2007

Mr. Matthews Bell
305 CES/CEV/
2403 Vandenberg Avenue
McGuire AFB, NJ 08641

**RE: DOPAA for an IDEA at McGuire AFB, NJ
Scoping Comments**

Dear Mr. Bell

The Office of Permit Coordination and Environmental Review of the New Jersey Department of Environmental Protection (NJDEP) has completed its review of the Description of Proposed Action and Alternatives (DOPAA) for the Installation Development Environmental Assessment (IDEA) at McGuire Air Force Base (AFB) in New Jersey (NJ). The Office of Permit Coordination and Environmental Review coordinates the departmental review of scoping documents, Environmental Assessments (EA), and Environmental Impact Statements (EIS) prepared pursuant to the requirements of the National Environmental Policy Act (NEPA). We have no comments on the DOPAA. Please forward six copies of the draft EA or EIS for the proposed action, once it is completed, directly to the Office of Permit Coordination and Environmental Review to insure a timely departmental review of the document.

Please update your Interagency and Intergovernmental Coordination for Environmental Planning List by deleting State and Local Agency Contact Lawrence Schmidt, and replacing his information with the following:

Kenneth C. Koschek
Supervising Environmental Specialist
Office of Permit Coordination & Environmental Review
NJ Department of Environmental Protection
PO Box 418
Trenton, NJ 08625-0418

Telephone - 609-292-2662
Fax - 609-777-1330
Email - ken.koschek@dep.state.nj.us

Thank you for giving the NJDEP the opportunity to review the DOPAA.

Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth C. Koschek". The signature is written in a cursive style with some loops and flourishes.

Kenneth C. Koschek
Supervising Environmental Specialist
Office of Permit Coordination
and Environmental Review

The following Notice of Availability was published in the *Burlington County Times* on October 24, 2007, announcing a public review period of the Draft EA and FONSI until November 23, 2007. Copies of the Draft EA and FONSI were placed in the Burlington County Library. Copies were also mailed to the recipients identified on page C-1. All comments that were received are included in this appendix on the following pages.

**Notice of Availability
Draft Finding of No Significant Impact (FONSI) for the
Draft Environmental Assessment (EA) of
Installation Development at McGuire AFB, New Jersey**

McGuire Air Force Base, New Jersey and the United States Air Force Air Mobility Command are proposing to issue a FONSI based on the findings of an EA addressing installation development at McGuire AFB. The analysis considered potential effects of the Proposed Action on 11 resource areas: noise, land use, air quality, safety, geological resources, water resources, biological resources, cultural resources, socioeconomic resources and environmental justice, infrastructure, and hazardous materials and waste management. The results, as found in the EA, show that the future proposed installation development projects would not have a significant impact on the environment, indicating that a FONSI would be appropriate. An Environmental Impact Statement should not be necessary to implement the Proposed Action.

Copies of the Draft FONSI and the EA are available for review until November 23, 2007, at the Burlington County Library, 5 Pioneer Boulevard, Westampton, NJ 08060. Written comments should be addressed to Christine Sullivan, 305th Air Mobility Wing Public Affairs Office, 2901 Falcon Lane, Suite 235, McGuire AFB, NJ 08641. Ms. Sullivan can be contacted by phone at 609-754-2104, or by email at christine.sullivan2@mcguire.af.mil.

The following privacy advisory was published as part of the Cover Sheet of the Draft EA:

PRIVACY ADVISORY

Your comments on this document are welcome. Letters or other written comments provided to the proponent concerning this document may be published in the EA. Comments will normally be addressed in the EA and made available to the public. Any personal information provided will be used only to identify your desire to make a statement during the public comment period or to fulfill requests for copies of the EA or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the EA. However, only the names of the individuals making comments and specific comments will be disclosed; personal home addresses and phone numbers will not be published in the EA.

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State of New Jersey

THE PINELANDS COMMISSION

PO Box 7

NEW LISBON NJ 08064

(609) 894-7300

November 1, 2007

JON S. CORZINE
Governor

JOHN C. STOKES
Executive Director

Michael Moran
Engineering-Environmental Management, Inc.
2751 Prosperity Avenue – Suite 200
Fairfax, VA 22031

Please Always Refer To
This Application Number

Re: Application # 1992-0785.034
McGuire Air Force Base

Dear Mr. Moran:

Thank you for the Draft Environmental Assessment of Installation Development at McGuire Air Force Base, New Jersey (EA). It appears that the EA includes numerous distinct development projects.

As you may be aware all development in the Pinelands Area, except for development covered under subchapter N.J.A.C. 7:50-4.1, requires the completion of an application with the Commission. Due to the large number of development projects included in the EA, the Commission staff is unable to issue a letter regarding the information necessary to complete an application for each development project. I have enclosed a copy of the Pinelands Application Form for your use for the submittal of the necessary applications.

Please include your application number on any submitted information. Within 30 days of receipt, the Commission will review and respond in writing to any submitted information. No further review of the application will occur until the information requested in this letter is submitted.

If you have any questions, please contact the Regulatory Programs staff.

Sincerely,


Ernest M. Deman
Environmental Specialist

Enclosure: Application Form
c: Christine Sullivan



<http://www.nj.gov/pinelands/>
E-mail: info@njpines.state.nj.us

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NEW JERSEY PINELANDS COMMISSION
INSTRUCTIONS FOR COMPLETING AN APPLICATION FOR DEVELOPMENT

- ITEM 1:** The person or corporation submitting the application is the applicant.
- ITEM 2:** The names of all owners of all parcels for which an application is being submitted must be listed. All owners must sign the application form or give separate written consent to the filing of the application.
- ITEM 3:** You may wish to have an agent (family member, realtor, attorney, consultant) act on your behalf regarding the application.
- ITEM 4:** Identify all public roads immediately adjacent to the property. If you are uncertain about the block and lot numbers contact the municipality in which the parcel is located.
- ITEM 5:** Identify the existing use(s) of the parcel for which the application is being submitted. If there are no structures on the property, check "vacant." If the parcel has any structures on it, check "improved" and describe the type and number of structures and their use. For commercial/industrial uses please note the square footage of existing buildings. If farmed, check vacant and note farming in provided space.
- ITEM 6:** Briefly and completely describe the proposed use of the parcel or type of development proposed. Please note the number of proposed residential units and/or lots. For commercial/industrial uses, please note the square footage of proposed building(s) or additions(s) and their use. Utilize page 4 of this application form or attach additional sheets if necessary.
- ITEM 7:** Please check the type of application which you are submitting.
- Residential development
 - Commercial/Industrial development
 - Resource extraction is the removal of soil or other minerals for commercial purposes
 - Forestry is the harvest of trees for commercial purposes or for qualifying your wood lot under the Farmland Assessment Act
 - A Letter of Interpretation is issued in response to a formal request for an interpretation of a Pinelands Commission regulation. There is a different application form for a Letter of Interpretation for a determination of the number of Pinelands Development Credits that may be assigned to a parcel. Please contact the Commission for a Pinelands Development Credit application form
 - An application for a Waiver of Strict Compliance is needed when the proposed development clearly would violate one or more of the requirements of the Pinelands Comprehensive Management Plan
 - A public development application is development proposed by a public agency or governmental body
 - Recreational Vehicle Events (enduros, road rallies, etc.)
 - Other types of development include: change of use, home occupations, demolition of structure 50 years old or older, and other unspecified types of development
- ITEM 8:** Determine whether an application fee is required and the amount.
- ITEM 9:** Identify the source of existing/proposed drinking water and the type of existing/proposed waste water treatment.
- ITEM 10:** If you are aware of an application which has previously been filed with the Pinelands Commission for this parcel, please note the application number.
- ITEM 11:** For all applications for a Waiver of Strict Compliance, for all Letters of Interpretations, and for all applications in municipalities whose land use ordinances have not been certified (approved) by the Pinelands Commission, you must provide written notice or a copy of the completed application form to the municipal clerk, the municipal environmental commission (if any), and the county clerk in which your development is located. As of June 16, 2006, only the South Toms River Borough's land use ordinances has not been certified (approved) by the Commission. Please note on the application form the date that you provided notice to these offices. You may provide this notice by regular mail.
- ITEM 12:** Most applications to the Commission typically require additional information besides that provided on the application form. Examples of such information include a site plan, soil boring and wetlands mapping. The Commission staff will advise you by return mail of any further information which you will be required to submit to complete your application.

June 19, 2006

The applicant and all property owner(s) must sign the application or provide separate written authorization bearing their signature. The applicant's signature must be notarized by a Notary Public or signed by an attorney licensed to practice in New Jersey. Applications not properly signed and notarized will be returned.

Completed application forms should be mailed to:

**New Jersey Pinelands Commission
PO Box 7
New Lisbon, NJ 08064**

Upon receipt of a new application, the Commission will notify the applicant and agent (if any) by return mail of receipt of application. Only the listed applicant and agent will receive copies of Commission letters.

Please allow 30 days for the Pinelands Commission to review any information submitted. Within 30 days of receipt of any information, the Commission will determine whether the application is complete or if additional information is required to complete the application.

If a development application is located in a municipality whose land use ordinances have been certified (approved, see item 11), the Commission will respond in writing within 30 days. If a development application is located in a municipality whose land use ordinances have not been certified (approved, see item 11), the Commission will respond within 30 days if a development application is incomplete and within 90 days if the application is complete.

For assistance with completing the application form, our Applicant Services Representatives are available to answer any questions that you may have. Please feel free to contact them at (609) 894-7300.

June 19, 2006



New Jersey Pinelands Commission
APPLICATION FOR DEVELOPMENT
(PLEASE TYPE OR PRINT CLEARLY)

1. Applicant's Name _____
Mailing Address _____
_____ State _____ Zip _____
Home Telephone () _____ Work Telephone () _____

2. Name of Property Owner _____
Mailing Address _____
_____ State _____ Zip _____

3. I wish to authorize an agent to act on my behalf regarding this application. Yes _____ No _____
If yes, agents name _____ Telephone Number () _____
Mailing Address _____
_____ State _____ Zip _____

4. Location of Property: Street/Road _____

Block No. _____	Lot No. _____	Total Acreage of Lots _____
Block No. _____	Lot No. _____	
Block No. _____	Lot No. _____	If additional block/lots, list on page 4 and check here _____
Block No. _____	Lot No. _____	

Municipality _____ County _____

Municipal Zoning District (if known) _____

5. Existing use of parcel (x):

- Vacant (no structures)
- Improved (describe below)

6. Proposed use of parcel(s)

7. Type of Application

COLUMN 1 - NO FEE REQUIRED

- Residential - one dwelling unit on an existing lot of record as of April 5, 2004 provided the applicant has not filed more than one such application in the last 12 month period.
- A two lot subdivision resulting in only one vacant lot and the development of only one new dwelling unit
- The demolition and reconstruction of one single family dwelling
- Waiver of Strict Compliance for one dwelling unit
- Development by a public agency (municipal, county, etc.)
- Letter of Interpretation for Pinelands Development Credits (PDC)

COLUMN 2 - FEE REQUIRED

- Residential - an application for the development of one dwelling unit on an existing lot of record as of April 5, 2004 in the Pinelands Area if the applicant has already filed one such application within the last 12 month period
- Residential - more than one dwelling unit or lot
- Waiver of Strict Compliance -other than one dwelling unit
- Commercial, Industrial, Institutional, Office or other non-residential development
Construction Cost _____
Please submit the requisite documentation to verify this amount. Please refer to fee questionnaire for information.
- Off Road Vehicle Event (enduros, road rallies)
Length of Route _____
- Resource Extraction Operation (mining)
_____ Acres to be mined
- Forestry Operation
_____ Acres involved in forestry activities
- Letter of Interpretation other than for Pinelands Development Credits (PDC)
- Exemption Letter
- Golf Course
_____ Acres devoted to Golf Course facility
- Linear Development (roads, railroads, water and sewer lines, electric, telephone and other transmission lines, etc.)
_____ Acres to be disturbed

COLUMN 2 - FEE REQUIRED (CONTINUED)

- Change of Use with no additional development
 - Home occupation
 - Mixed Residential and Non-residential development (please refer to Fee Questionnaire)
 - Review of a survey or study prior to the submission of a development application.
 - Tax-exempt religious association or corporation or a qualified tax exempt non-profit organization
 - Other, please identify
-

8. Calculation of fee for the types of applications listed in #7, Column 2. Please refer to the Commission's Fee Questionnaire for additional assistance in determining the appropriate fee.
(No application review fee shall exceed \$50,000)

A. Residential Development - the fee shall be calculated as follows:

1. The fee for more than one single family dwelling in the Pinelands Area within a twelve month period is \$125 per dwelling unit.
2. 2 or more additional dwelling units or lots:
 - a. 2 - 50 units or lots - \$ 125 per dwelling unit or lot for the first 50 units or lots;
 - b. 51 - 150 units - \$6250 plus \$100 per dwelling unit or lot for units/lots 51 through 150; and
 - c. Over 150 units - \$16,250 plus \$75 per dwelling unit or lot for all units/lots in excess of 150.

B. Commercial, institutional or industrial development shall be the amount calculated according to the following, based on construction costs, or a minimum of \$200 or whichever is greater:

<u>Construction Costs</u>	<u>Fees</u>
\$0 - \$500,000	1% of construction costs
\$500,001 - \$1 million	\$5,000 + 3/4% of construction costs above \$500,000
greater than \$1 million	\$8,750 + 1/2% of construction costs above \$1 million

Except as provided below:

1. Off road vehicles events (Enduros, Road rallies) -\$5 per mile of the proposed route with a \$250 minimum.
 2. Forestry application or renewal application involving 10 or more acres, \$5 per acre that is subject to the forestry activities.
 3. Golf courses - \$100 per acre devoted to the golf course facility.
 4. Linear development - \$100 per acre to be disturbed or a minimum of \$250.
 5. Resource extraction permit application or permit renewal - \$500 plus \$10 per acre to be mined within each permit period.
 6. Change of use with no additional development - \$200.
 7. Home occupation - \$200
 8. Subdivision or resubdivision only (no associated development such as building, dwelling or other improvement) same formula as 8(A)3 above based on the number of lots that will exist following the subdivision.
- C. Mixed residential and non-residential development - the sum of the residential and non-residential development fees as calculated according to the above fee schedules.
- D. Non-PDC Letter of Interpretation or Amended Non-PDC Letter of Interpretation - \$200.
- E. The fee for development by a tax-exempt religious association or corporation or a qualified tax exempt non-profit organization shall be \$500 or the amount calculated in accordance with the above schedule, whichever is less. Information must be provided demonstrating that the applicant qualifies for such status.
- F. The fee for the review of any study or survey prior to the submission of a development application shall be 1/3 of the estimated application fee calculated in accordance with 8A and 8B above.

If applicable, have you filed any other applications within the past 12 months for the development of a single family dwelling in the Pinelands Area on an existing lot of record as of April 5, 2004?

- Yes No

Please indicate whether an application review fee is required for your submission:

- Fee Not Required
 Fee Required Amount Enclosed _____

If a fee is required, please print or type your calculations in the below box:

Please submit your fee with your application package. Checks, money orders or cashier checks should be made payable to the NJ Pinelands Commission.

All applications that require application review fees must include the complete fee. An application cannot be reviewed until the fee has been paid in full. If any checks are returned due to insufficient funds, the review of the application will stop. If any such checks are returned, a certified bank check or money order that includes any bank charges incurred by the Pinelands Commission will be required to resume the review of the application.

9. A. Source of existing/proposed water supply

- | | | | |
|----------|--|----------|--|
| Existing | <input type="checkbox"/> Well | Proposed | <input type="checkbox"/> Well |
| | <input type="checkbox"/> Public System | | <input type="checkbox"/> Public System |

B. Source of existing/proposed wastewater treatment

- | | | | |
|----------|---|----------|---|
| Existing | <input type="checkbox"/> On-Site Septic | Proposed | <input type="checkbox"/> On-Site Septic |
| | <input type="checkbox"/> Public Sewer | | <input type="checkbox"/> Public Sewer |

10. To your knowledge, has an application previously been filed with the Pinelands Commission for this parcel?

- Yes No If yes, application number (if known) _____

11. For all applications for a Waiver of Strict Compliance, all applications for a Letter of Interpretation, and for all applications in municipalities whose land use ordinances have not been certified* (approved) by the Pinelands Commission (see instructions, item 10), written notice or a copy of this application form must be provided to the municipal clerk, the municipal environmental commission (if any) and the county clerk in which your proposed development is located.

*As of June 16, 2006, only South Toms River Borough's land use ordinances have not been certified (approved) by the Pinelands Commission.

- Yes, I am filing one of the three types of applications discussed in Number 11 above and I complied with this requirement on _____ (date)

12. I have attached supplemental information to this application:

Yes No

Please note that all supplements must be listed on page 4 or an attached sheet, and any list or attachments must be firmly secured to the application form.

I acknowledge that most applications to the Commission require information in addition to that which I provide on this application form. I will attempt to provide additional information as may be necessary to complete this application. I hereby authorize the staff of the Pinelands Commission to conduct such on-site inspections of the parcel as are necessary to review this application and ensure compliance with the requirements of the Pinelands Comprehensive Management Plan. I am aware that false swearing is a crime in this State and is subject to prosecution.

I also acknowledge that if my application involves extraordinary or complex issue(s) which necessitate the retention of consultants with expertise in such matters, I will be advised of that need and the amount of money that must be placed in escrow to retain the consultants and that review of my application will not proceed until I provide the required escrow amount.

I hereby certify that the information furnished on this application form and all supplemental materials is true.

Sworn and subscribed to before me

this _____ day of _____, 20____

Notary Public
(As to the signature of the applicant)

Signature of Applicant(s)

I hereby acknowledge and consent to the filing of this application.

Signature of Property Owner(s)



In Reply Refer to:

08-FA0056

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Jersey Field Office
Ecological Services
927 North Main Street, Building D
Pleasantville, New Jersey 08232
Tel: 609/646 9310
Fax: 609/646 0352
<http://www.fws.gov/northeast/njfieldoffice>



NOV 20 2007

Ms. Christine Sullivan
305th Air Mobility Wing Public Affairs Office
2901 Falcon Lane, Suite 235
McGuire Air Force Base, New Jersey 08641

Dear Ms. Sullivan:

The U.S. Fish and Wildlife Service (Service), New Jersey Field Office (NJFO) has reviewed the *Draft Environmental Assessment of Installation Development at McGuire Air Force Base, New Jersey* (Draft EA). The 305th Air Mobility Wing at McGuire Air Force Base and Headquarters Air Mobility Command propose to streamline the National Environmental Policy Act (NEPA) compliance process for demolition, construction, and infrastructure projects at McGuire Air Force Base. The Service's NJFO provides the following comments for the protection of federally listed threatened and endangered species and other fish and wildlife resources.

AUTHORITY

The following comments on the proposed action are provided pursuant to Section 7 of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*), to ensure the protection of federally listed endangered and threatened species and pursuant to NEPA (83 Stat. 852; 42 U.S.C. 4321 *et seq.*). These comments do not preclude review and comment on any future or supplemental documents pursuant to NEPA, or comments to the New Jersey Department of Environmental Protection if any future activities require authorization pursuant to the State's Freshwater Wetlands Protection Act (N.J.S.A. 13:9-1 *et seq.*).

FEDERALLY LISTED SPECIES

The Service notes that an active habitat of the federally listed (threatened) bog turtle (*Clemmys muhlenbergii*) occurs along the eastern-most boundary of McGuire Air Force Base. Bog turtles inhabit open, wet meadows and bogs with standing or slow-moving, shallow water over a mucky substrate (Bourg, 1992). Bog turtles also occur in emergent and shrub/scrub wetlands and spring-fed fans. The Service may recommend surveys for the presence of bog turtles for any projects proposed in the vicinity of this active habitat, to be conducted by a recognized, qualified

bog turtle surveyor according to Service survey guidelines (see enclosures). Surveyors must avoid stepping on the tops of hummocks because this can destroy turtle nests and eggs. Both positive and negative results of any surveys must be forwarded to this office to determine if further review is necessary. The survey method used and the qualifications of the surveyor should be included along with project specifications and details. The Service must be contacted for additional coordination to ensure that any project activities proposed near the installation's eastern boundary will not adversely affect the bog turtle.

Except for the bog turtle, no other federally listed or proposed threatened or endangered flora or fauna are known to occur at McGuire Air Force Base. If additional information on federally listed endangered or threatened species becomes available, this determination may be reconsidered.

SERVICE REVIEW

Proposed Action

The proposed action is to streamline NEPA analysis for a number of construction, demolition, or infrastructure projects at McGuire Air Force Base related to installation development, unless proposed within sensitive or constrained areas. On page 2-5 of the subject report, threatened and endangered species and associated habitats are listed as one of the major installation constraints. Please be advised that there is no critical habitat officially designated pursuant to the ESA by the Service in New Jersey. Procedurally, the lead federal agency has the responsibility under Section 7(c) of the ESA to prepare a Biological Assessment (BA) if the proposal may affect a federally listed species (whether designated critical habitat is present or not). The Service would then provide a Biological Opinion for our findings on the effects of the project proposal on species that are federally listed as threatened or endangered.

Overall, the Service concurs that federally and State-listed species and their habitats should be protected at McGuire Air Force Base and should be considered as major installation constraints as proposed. The Service also supports the proposal to consider wetlands, floodplains, and environmental restoration sites as "constraint" areas to development. The Service would request individual review of any project proposals within such environmentally sensitive areas.

Alternatives Considered

Along with the Proposed Action, four alternatives have been evaluated by the Air Force in the Draft EA:

Alternative 1 – site facilities on Department of Defense (DOD) owned lands surrounding McGuire Air Force Base.

Alternative 2 – acquire privately-owned land surrounding McGuire Air Force Base.

Alternative 3 – lease additional facilities in the surrounding community.

Alternative 4 – No Action. Alternative 4 would not fulfill the stated purpose and need.

Service Comments

The Service concurs with the Proposed Action to streamline NEPA review, with implementation of the major installation constraints. The Service recommends against implementing Alternatives 1, 2, or 3 with any categorical streamlined procedure due to lack of analysis regarding major constraints on other DOD land, or on acquired or leased land in the surrounding community. If projects are proposed according to Alternatives 1, 2, or 3, the Service requests to review proposed projects individually. Regarding Alternative 4 (no action), the Service would not object to reviewing proposed projects individually within McGuire Air Force Base; however, we feel that the proposed action to categorically eliminate detailed review of routine projects of negligible environmental impact would be more efficient and cost effective.

Thank you for the opportunity to comment on the Draft EA. Please contact Carlo Papolizio of my staff at (609) 383-3938, extension 32, if you have any questions or require further assistance.

Sincerely,



John C. Staples
Assistant Supervisor

Enclosure

GUIDELINES FOR BOG TURTLE SURVEYS¹

(revised April 2006)

RATIONALE

A bog turtle survey (when conducted according to these guidelines) is an attempt to determine presence or probable absence of the species; it does not provide sufficient data to determine population size or structure. Following these guidelines will standardize survey procedures. It will help maximize the potential for detection of bog turtles at previously undocumented sites at a minimum acceptable level of effort. Although the detection of bog turtles confirms their presence, failure to detect them does not absolutely confirm their absence (likewise, bog turtles do not occur in all appropriate habitats and many seemingly suitable sites are devoid of the species). Surveys as extensive as outlined below are usually sufficient to detect bog turtles; however, there have been instances in which additional effort was necessary to detect bog turtles, especially when habitat was less than optimum, survey conditions were less than ideal, or turtle densities were low.

PRIOR TO CONDUCTING ANY SURVEYS

If a project is proposed to occur in a county of known bog turtle occurrence (see attachment 1), contact the U.S. Fish and Wildlife Service (Service) and/or the appropriate State wildlife agency (see attachment 2). They will determine whether or not any known bog turtle sites occur in or near the project area, and will determine the need for surveys.

- If a wetland in or near the project area is *known* to support bog turtles, measures must be taken to avoid impacts to the species. The Service and State wildlife agency will work with federal, state and local regulatory agencies, permit applicants, and project proponents to ensure that adverse effects to bog turtles are avoided or minimized.
- If wetlands in or adjacent to the project area are *not* known bog turtle habitat, conduct a bog turtle habitat survey (Phase 1 survey) if:
 1. The wetland(s) have an emergent and/or scrub-shrub wetland component, or are forested with suitable soils and hydrology (see below), *and*
 2. Direct and indirect adverse effects to the wetland(s) cannot be avoided.

See *Bog Turtle Conservation Zones*² for guidance regarding activities that may affect bog turtles and their habitat. In addition, consult with the Fish and Wildlife Service and/or appropriate State wildlife agency to definitively determine whether or not a Phase 1 survey will be necessary.

¹ These guidelines are a modification of those found in the final "Bog Turtle (*Clemmys muhlenbergii*), Northern Population, Recovery Plan" (dated May 15, 2001). Several minor revisions were made to facilitate survey efforts and increase searcher effectiveness. As additional information becomes available regarding survey techniques and effectiveness, these survey guidelines may be updated and revised. Contact the Fish and Wildlife Service or one of the state agencies listed in Attachment I for the most recent version of these guidelines.

² See Appendix A of the "Bog Turtle (*Clemmys muhlenbergii*), Northern Population, Recovery Plan" (dated May 15, 2001).

Zone 2

The boundary of this zone extends at least 300 feet from the edge of Zone 1 and includes upland areas adjacent to Zone 1. Activities in this zone could indirectly destroy or degrade wetland habitat over the short or long-term, thereby adversely affecting bog turtles. In addition, activities in this zone have the potential to cut off travel corridors between wetlands occupied or likely to be occupied by bog turtles, thereby isolating or dividing populations and increasing the risk of turtles being killed while attempting to disperse. Some of the indirect effects to wetlands resulting from activities in the adjacent uplands include: changes in hydrology (e.g., from roads, detention basins, irrigation, increases in impervious surfaces, sand and gravel mining); degradation of water quality (e.g., due to herbicides, pesticides, oil and salt from various sources including roads, agricultural fields, parking lots and residential developments); acceleration of succession (e.g., from fertilizer runoff); and introduction of exotic plants (e.g., due to soil disturbance and roads). This zone acts as a filter and buffer, preventing or minimizing the effects of land-use activities on bog turtles and their habitat. This zone is also likely to include at least a portion of the groundwater recharge/supply area for the wetland.

Activities that should be avoided in this zone due to their potential for adverse effects to bog turtles and their habitat include:

- development (e.g., roads, sewer lines, utility lines, storm water or sedimentation basins, residences, driveways, parking lots, and other structures)
- mining
- herbicide application²
- pesticide or fertilizer application
- farming (with the exception of light to moderate grazing - see below)
- certain types of stream-bank stabilization techniques (e.g., rip-rapping)
- delineation of lot lines (e.g., for development, even if the proposed building or structure will not be in the wetland)

Careful evaluation of proposed activities on a case-by-case basis will reveal the manner in which, and degree to which activities in this zone would affect bog turtles and their habitat. Assuming impacts within Zone 1 have been avoided, evaluation of proposed activities within Zone 2 will often require an assessment of anticipated impacts on wetland hydrology, water quality, and habitat continuity.

Activities that are likely to be compatible with bog turtle conservation, but that should be evaluated on a case-by-case basis within this zone include:

- light to moderate grazing
- non-motorized recreational use (e.g., hiking, hunting, fishing)
- mowing or cutting of vegetation

² Except when conducted as part of a bog turtle habitat management plan approved by the Fish and Wildlife Service or State wildlife agency.

however, that one or more of these criteria may be absent from portions of a wetland or wetland complex supporting bog turtles. Absence of one or more criteria does not preclude bog turtle use of these areas to meet important life functions, including foraging, shelter and dispersal.

- If these criteria (suitable soils, vegetation and hydrology) are present in the *wetland*, then the *wetland* is considered to be potential bog turtle habitat, regardless of whether or not that portion of the wetland occurring within the project boundaries contains all three criteria. If the *wetland* is determined to be potential habitat and the project will directly or indirectly impact *any portion* of the wetland (see *Bog Turtle Conservation Zones*), then either:
 - Completely avoid all direct and indirect effects to the wetland, in consultation with the Service and appropriate State wildlife agency, OR
 - Conduct a Phase 2 survey to determine the presence of bog turtles.
- The Service and appropriate State wildlife agency (see list) should be sent a copy of survey results for review and comment including: a USGS topographic map indicating location of site; project design map, including location of wetlands and stream and delineation of wetland type (PEM, PSS, PFO, POW) and "designated survey areas"³; color photographs of the site; surveyor's name; date of visit; opinion on potential/not potential habitat; a description of the hydrology, soils, and vegetation. A phase 1 report template and field form are available from the States and Service.

BOG TURTLE SURVEY (= Phase 2 survey)

If the wetland(s) are identified as potential bog turtle habitat (see Phase 1 survey), and direct and indirect adverse effects cannot be avoided, conduct a bog turtle survey in accordance with the specifications below. Note that this is *not* a survey to estimate population size or structure; a long-term mark/recapture study would be required for that.

Prior to conducting the survey, contact the appropriate State agency (see attached list) to determine whether or not a scientific collector's permit valid for the location and period of the survey will be required.

The Phase 2 survey will focus on the areas of the wetland that meet the soils, hydrology and vegetation criteria, as defined under the Phase 1 survey guidelines. Those areas that meet the criteria are referred to as "designated survey areas" for Phase 2 and Phase 3 survey purposes.

1. Surveys should only be performed during the period from April 15-June 15. For the Lake Plain Recovery Unit (see Recovery Plan), surveys should only be performed during the period from May 1 to June 30. This coincides with the period of greatest annual turtle activity (spring emergence and breeding) and before vegetation gets too dense to accurately survey. While turtles may be found outside of these dates, a result of no turtles would be considered inconclusive. Surveys beyond June also have a higher likelihood of disruption or destruction of nests or newly hatched young.

³ "Designated survey areas" are those areas of the wetland that meet the soils, hydrology and vegetation criteria for potential bog turtle habitat. These areas may occur within the emergent, scrub-shrub or forested parts of the wetland.

2. Ambient air temperature at the surface in the shade should be $\geq 55^{\circ}$ F.
3. Surveys should be done during the day, at least one hour after sunrise and no later than one hour before sunset.
4. Surveys may be done when it is sunny or cloudy. In addition, surveys may be conducted during and after light rain, provided air temperatures are $\geq 65^{\circ}$ F.
5. At least one surveyor must be a recognized qualified bog turtle surveyor⁴, and the others should have some previous experience successfully conducting bog turtle surveys or herpetological surveys in wetlands. To maintain survey effort consistency and increase the probability of encountering turtles, the same surveyors should be used for each wetland.
6. A minimum of four (4) surveys per wetland site are needed to adequately assess the site for presence of bog turtles. At least two of these surveys must be performed in May. From April 15 to April 30, surveys should be separated by six or more days. From May 1 to June 15, surveys should be separated by three or more days. The shorter period between surveys during May and June is needed to ensure that surveys are carried out during the optimum window of time (*i.e.*, before wetland vegetation becomes too thick).

Note that bog turtles are more likely to be encountered by spreading the surveys out over a longer period. For example, erroneous survey results could be obtained if surveys were conducted on four successive days in late April due to possible late spring emergence, or during periods of extreme weather because turtles may be buried in mud and difficult to find.

Because this is solely a presence/absence survey, survey efforts at a particular wetland may cease once a bog turtle has been found.

7. Survey time should be at least four (4) to six (6) person-hours per acre of designated survey area per visit. Additional survey time may be warranted in wetlands that are difficult to survey or that have high quality potential habitat. The designated survey area includes all areas of the wetland where soft, mucky-like soils are present, regardless of vegetative cover type. This includes emergent, scrub-shrub, and forested areas of the wetland.

If the cover is too thick to effectively survey using Phase 2 survey techniques alone (*e.g.*, dominated by multiflora rose, reed canary grass, *Phragmites*), contact the Service and State wildlife agency for guidance on Phase 3 survey techniques (trapping) to supplement the Phase 2 effort. In addition, Phase 3 (trapping) surveys may also be warranted if the site is in the Lake Plain-Prairie Peninsula Recovery Unit. Check with the Service or State wildlife agency for further guidance.

⁴ Searching for bog turtles and recognizing their habitat is a skill that can take many months or years of field work to develop. This level of expertise is necessary when conducting searches in order to ensure that surveys are effective and turtles are not harmed during the survey (*e.g.*, by stepping on nests). Many individuals that have been recognized as qualified to conduct bog turtle surveys obtained their experience through graduate degree research or employment by a state wildlife agency. Others have spent many years actively surveying for bog turtles as amateur herpetologists or consultants.

8. Walk quietly through the wetland. Bog turtles will bask on herbaceous vegetation and bare ground, or be half-buried in shallow water or rivulets. Walking noisily through the wetland will often cause the turtles to submerge before they can be observed. Be sure to search areas where turtles may not be visible, including under mats of dead vegetation, shallow pools, underground springs, open mud areas, vole runways and under tussocks. Do not step on the tops of tussocks or hummocks because turtle nests, eggs and nesting microhabitat may be destroyed. Both random opportunistic searching and transect surveys should be used at each wetland.

The following survey sequence is recommended to optimize detection of bog turtles:

- Semi-rapid walk through the designated survey area using visual encounter techniques.
 - If no bog turtles are found during visual survey, while walking through site identify highest quality habitat patches. Within these highest quality patches, begin looking under live and dead vegetation using muddling and probing techniques.
 - If still no bog turtles are found, the rest of the designated survey area should be surveyed using visual encounter surveys, muddling and probing techniques.
9. Photo-documentation of each bog turtle located will be required; a macro lens is highly recommended. The photos should be in color and of sufficient detail and clarity to identify the bog turtle to species and individual. Therefore, photographs of the carapace, plastron, and face/neck markings should be taken of each individual turtle. Do not harass the turtle in an attempt to get photos of the face/neck markings; if gently placed on the ground, most turtles will slowly extend their necks if not harassed. If shell notching is conducted, do the photo-documentation after the notching is done.
 10. The following information should be collected for each bog turtle: sex, carapace length-straight line and maximum length, carapace width, weight, and details about scars/injuries. Maximum plastron length information should also be collected to differentiate juveniles from adults as well as to obtain additional information on recruitment, growth, and demography.
 11. Each bog turtle should be marked (*e.g.*, notched, PIT tagged) in a manner consistent with the requirements of the appropriate State agency and/or Service. Contact the appropriate State wildlife agency prior to conducting the survey to determine what type of marking system, if any, should be used.
 12. All bog turtles must be returned to the point of capture as soon as possible on the same day as capture. They should only be held long enough to identify, measure, weigh, and photograph them, during which time their exposure to high temperatures must be avoided. No bog turtles may be removed from the wetland without permission from the Service and appropriate State agency.
 13. The Fish and Wildlife Service and appropriate State agency should be sent a copy of survey results for review and concurrence, including the following: dates of site visits; time spent

per designated survey area per wetland per visit; names of surveyors; a site map including wetlands and delineations of designated survey areas; a table indicating the size of each wetland, the designated survey area within each wetland, and the survey effort per visit; a description of the wetlands within the project area (e.g., acreage, vegetation, soils, hydrology); an explanation of which wetlands or portions of wetlands were or were not surveyed, and why; survey methodology; weather per visit at beginning and end of survey (air temperature, wind, and precipitation); presence or absence of bog turtles, including number of turtles found and date, and information and measurements specified in item 10 above; and other reptile and amphibian species found and date.

ADDITIONAL SURVEYS / STUDIES

Proper implementation of the Phase 2 survey protocol is usually adequate to determine species presence or probable absence, especially in small wetlands lacking invasive plant species. Additional surveys, however, may be necessary to determine whether or not bog turtles are using a particular wetland, especially if the Phase 2 survey results are negative but the quality and quantity of habitat are good and in a watershed of known occurrence. In this case, additional surveys (Phase 2 and/or Phase 3 (trapping) surveys), possibly extending into the following field season, may be recommended by the Service or appropriate State agency.

If bog turtles are documented to occur at a site, additional surveys/studies may be necessary to characterize the population (e.g., number, density, population structure, recruitment), identify nesting and hibernating areas, and/or identify and assess adverse impacts to the species and its habitat, particularly if project activities are proposed to occur in, or within 300 feet of, wetlands occupied by the species.

CONTACT AGENCIES - BY STATE

(April 2006)

STATE	FISH AND WILDLIFE SERVICE	STATE AGENCY
Connecticut	U.S. Fish and Wildlife Service New England Field Office 22 Bridge Street, Unit #1 Concord, NH 03301	Department of Environmental Protection Env. & Geographic Information Center 79 Elm Street, Store Floor, Hartford, CT 06106 <i>(info about presence of bog turtles in or near a project area)</i> Department of Environmental Protection Wildlife Division, Sixth Floor 79 Elm Street, Store Floor, Hartford, CT 06106 <i>(to get a Scientific Collectors Permit or determine what type of marking system to use)</i>
Delaware	U.S. Fish and Wildlife Service Chesapeake Bay Field Office 177 Admiral Cochrane Drive Annapolis, MD 21401	Nongame & Endangered Species Program Delaware Division of Fish and Wildlife 4876 Hay Point Landing Road Smyrna, DE 19977
Maryland	U.S. Fish and Wildlife Service Chesapeake Bay Field Office 177 Admiral Cochrane Drive Annapolis, MD 21401	Maryland Department of Natural Resources Wildlife & Heritage Division PO Box 68, Main Street Wye Mills, MD 21679
Massachusetts	U.S. Fish and Wildlife Service New England Field Office 22 Bridge Street, Unit #1 Concord, NH 03301	Division of Fisheries and Wildlife Dept. Fisheries, Wildlife and Env Law Enforcement Rt. 135 Westboro, MA 01581
New Jersey	U.S. Fish and Wildlife Service New Jersey Field Office 927 North Main Street, Bldg. D-1 Pleasantville, NJ 08232	New Jersey Division of Fish and Wildlife Endangered and Nongame Species Program 143 Van Syckels Road Hampton, NJ 08827
New York	U.S. Fish and Wildlife Service 3817 Luker Road Cortland, NY 13045	New York Natural Heritage Program Department of Environmental Conservation 700 Troy-Schenectady Road Latham, NY 12110-2400 <i>(info about presence of bog turtles in or near a project area)</i> NY Department of Environmental Conservation Special Licenses Unit 50 Wolf Road, Albany, NY 12233 <i>(for endangered species permit applications)</i>
Pennsylvania	U.S. Fish and Wildlife Service Pennsylvania Field Office 315 South Allen Street, Suite 322 State College, PA 16801	Natural Diversity Section Pennsylvania Fish and Boat Commission 450 Robinson Lane Belleville, PA 16823

BOG TURTLE COUNTIES OF OCCURRENCE OR LIKELY OCCURRENCE¹
(April 2006)

STATE	COUNTY	
Connecticut	Fairfield	Litchfield
Delaware	New Castle	
Maryland	Baltimore Carroll	Cecil Harford
Massachusetts	Berkshire	
New Jersey	Burlington Gloucester Hunterdon Middlesex Monmouth Morris	Ocean Salem Somerset Sussex Union Warren
New York	Albany Columbia Dutchess Genesee Orange Oswego Putnam	Seneca Sullivan Ulster Wayne Westchester
Pennsylvania	Adams Berks Bucks Chester Cumberland Delaware Franklin	Lancaster Lebanon Lehigh Monroe Montgomery Northampton Schuylkill York

¹ This list is valid for one year from the date indicated. It may, however, be revised more frequently if new counties of occurrence are documented. Updates to this list are available from the Service upon request.

RECOGNIZED QUALIFIED BOG TURTLE SURVEYORS

The following list includes individuals experienced in field herpetology that the U.S. Fish and Wildlife Service, New Jersey Field Office, and the New Jersey Endangered and Nongame Species Program currently recognize as qualified to identify bog turtle habitat and survey for the presence of bog turtles. This list may not include all individuals qualified to survey for this species. This list will be updated periodically. Inclusion of names on this list does not constitute endorsement by the Service or any other U.S. Government agency or State agency.

Scott Angus

Kevin S. Keat

Bill Romaine

William H. Smejkal

Harry Strano, III

Amy S. Greene Environmental
Consultants Inc.

4 Walter E. Foran Blvd., Suite 209

Flemington, New Jersey 08822

Work: (908) 788-9676

Mr. Angus' email:

sangus@amygreene.com

Dr. Rudolf Arndt

The Richard Stockton College

Jimmy Leeds Road

Pomona, New Jersey 08240

Home: (609) 965-9089

Work: (609) 652-4432

Tessa Mai Bickhart

Michael Torocco

Herpetological Associates, Inc.

110 Brandywine Avenue

Downingtown, PA 19335

Work: (610) 518-7690

Andy Brookens

Teresa Morrison McElhenny

Skelly & Loy, Inc.

2601 North Front Street

Harrisburg, PA 17110-1185

Work: (717) 232-0593

Ian Caldwell

Bryon DuBois

Matthew Malhame

Albert J. Newman

Trident Environmental Consultants

1856 Route 9

Toms River, New Jersey 08755

Work: (732) 818-8699

Fax: (732) 818-3744

Raymond A. Farrell

Matthew P. McCort

David Schneider

Robert Zappalorti

Herpetological Associates, Inc.

575 Toms River Road

Jackson, New Jersey 08527

Work: (732) 833-8600

Tim Hoen

1376 Rock Ridge Road

Jarrettsville, Maryland 21084

Home: (410) 557-6879

Michael Kovacs

David Moskowitz

Laura Newgard

EcolSciences, Inc.

75 Fleetwood Drive, Suite 250

Rockaway, New Jersey 07866

Work: (973) 366-9500

Joseph M. McLaughlin

JCM ECI

100 Lake Drive, Suite 3

Newark, Delaware 19702

Work: (302) 737-9335

Cell: (302) 250-5678

Joe McSharry

4304 Parkwood Avenue

Baltimore, Maryland 21206

Home: (410) 483-3132

Jessica Morrow

A.D. Marble & Company, Inc.

10999 Red Run Boulevard

Suite 117

Owings Mills, MD 21117

Work: (410) 902-1421

Deborah Poppel

ENSR

2005 Cabot Blvd. West

Langhorne, Pennsylvania 19047

Work: (215) 757-4900 ext.232

email: dpoppel@ensr.com

Richard P. Radis

69 Ogden Avenue

Rockaway, NJ 07866

Home: (973) 586-0845

Michael Rehman

Princeton Hydro, LLC

P.O. Box 720

Ringoes, New Jersey 08551

Work: (908) 237-5660

Fax: (908) 237-5666

Gian L. Rocco

322 Amblewood Way

State College, Pennsylvania 16803

Home: (814) 237-2313

email: gxr124@psu.edu

Janis Seegar

12265 Harford Road

Glen Arm, Maryland 21057

Home: (410) 592-6122

Work: (410) 436-4912

(Aberdeen Proving Ground)

Charles Strunk

Andrea M. Teti

Andrea M. Teti, Inc.

150 Commissioner's Pike

Woodstown, New Jersey 08098

Cell: (609) 457-1370

E-mail: AMT_Inc@comcast.net

Anthony Wisniewski

Reptile House - Baltimore Zoo

Druid Hill Park

Baltimore, Maryland 21217

Work: (410) 396-0441

Work: (410) 462-4398

Revised May 2007

APPENDIX D
EXAMPLE OF AIR QUALITY EMISSIONS CALCULATIONS

Summary	Summarizes total emissions by calendar year.
Combustion	Estimates emissions from non-road equipment exhaust as well as painting.
Fugitive	Estimates fine particulate emissions from earthmoving, vehicle traffic, and windblown dust
Grading	Estimates the number of days of site preparation, to be used for estimating heavy equipment exhaust and earthmoving dust emissions
AQCR Tier Report	Summarizes total emissions for the Metropolitan Philadelphia Interstate AQCR Tier Reports for 2001, to be used to compare project to regional emissions.

CY2008	Emissions from Proposed Action					
	NO _x (ton)	VOC (ton)	CO (ton)	SO ₂ (ton)	PM ₁₀ (ton)	PM _{2.5} (ton)
Construction Combustion	2.3548	0.1397	0.9308	0.0471	0.1424	0.138
Construction Fugitive Dust	0.0000	0.0000	0.0000	0.0000	3.6354	0.544
TOTAL CY2008	2.3548	0.1397	0.9308	0.0471	3.7778	0.682

Since future year budgets were not readily available, actual 2001 air emissions inventories for the counties were used as an approximation of the regional inventory. Because the Proposed Action is several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan Philadelphia Interstate AQCR

Year	Point and Area Sources Combined					
	NO _x (tpy)	VOC (tpy)	CO (tpy)	SO ₂ (tpy)	PM ₁₀ (tpy)	PM _{2.5} (tpy)
2001	264,405	244,697	1,536,794	166,740	109,894	41,250

Source: USEPA-AirData NET Tier Report (<http://www.epa.gov/air/data/geosel.html>). Site visited on 3 April 2007.

Determination Significance (Significance Threshold = 10%)

	Point and Area Sources Combined					
	NO _x (tpy)	VOC (tpy)	CO (tpy)	SO ₂ (tpy)	PM ₁₀ (tpy)	PM _{2.5} (tpy)
Minimum - 2001	264,405	244,697	1,536,794	166,740	109,894	41,250
CY2008 Emissions	2.3548	0.1397	0.9308	0.0471	3.7778	0.6819
Proposed Action %	0.0009%	0.00006%	0.0001%	0.00003%	0.0034%	0.0017%

Combustion Emissions for CY 2008

Combustion Emissions of VOC, NO_x, SO₂, CO, PM_{2.5}, and PM₁₀ Due to Construction

Includes:

100% of Demolish Building 2911, Shoppetee; Building 2913, Exchange Service Station; and Facility 8510, Parking	126,712 ft ²	2.91	acres
---	-------------------------	------	-------

Total Building Construction Area:	0 ft ²	(None)
Total Demolished Area:	126,712 ft ²	
Total Paved Area:	0 ft ²	(None)
Total Disturbed Area:	126,712 ft ²	
Construction Duration:	1.0 year(s)	
Annual Construction Activity:	230 days/yr	

Emission Factors Used for Construction Equipment

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emissions Model, Version 2005.0.0

Emission factors are taken from the NONROAD model and were provided to e²M by Larry Landman of the Air Quality and Modeling Center (Landman.Larry@epamail.epa.gov) on 12/14/07. Factors provided are for the weighted average US fleet for CY2007.

Assumptions regarding the type and number of equipment are from SMAQMD Table 3-1 unless otherwise noted.

Grading

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Bulldozer	1	13.60	0.96	5.50	1.02	0.89	0.87
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97
Total per 10 acres of activity	3	41.64	2.58	15.71	0.83	2.55	2.47

Paving

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Paver	1	3.83	0.37	2.06	0.28	0.35	0.34
Roller	1	4.82	0.44	2.51	0.37	0.43	0.42
Truck	2	36.71	1.79	14.01	3.27	1.99	1.93
Total per 10 acres of activity	4	45.37	2.61	18.58	0.91	2.78	2.69

Demolition

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Loader	1	13.45	0.99	5.58	0.95	0.93	0.90
Haul Truck	1	18.36	0.89	7.00	1.64	1.00	0.97
Total per 10 acres of activity	2	31.81	1.89	12.58	0.64	1.92	1.87

Building Construction

Equipment ^d	No. Req ^d . ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Stationary							
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22
Mobile (non-road)							
Truck	1	18.36	0.89	7.00	1.64	1.00	0.97
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54
Crane	1	9.57	0.66	2.39	0.65	0.50	0.49
Total per 10 acres of activity	6	39.40	3.13	17.38	3.12	2.83	2.74

Note: Footnotes for tables are on following page

Architectural Coatings

Equipment	No. Reqd. ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Air Compressor	1	3.57	0.37	1.57	0.25	0.31	0.30
Total per 10 acres of activity	1	3.57	0.37	1.57	0.07	0.31	0.30

- a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
- b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purposes of this worksheet ROG = VOC. The NONROAD model contains emissions factors for total HC and for VOC. The factors used here are the VOC factors.
- c) The NONROAD emission factors assume that the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Actions will all be fueled by highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO2 emissions by more than a factor of two.
- d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)					
		NO _x	VOC	CO	SO ₂ **	PM ₁₀	PM _{2.5}
Grading Equipment	1	41.641	2.577	15.710	0.833	2.546	2.469
Paving Equipment	1	45.367	2.606	18.578	0.907	2.776	2.693
Demolition Equipment	1	31.808	1.886	12.584	0.636	1.923	1.865
Building Construction	1	39.396	3.130	17.382	3.116	2.829	2.744
Air Compressor for Architectural Coating	1	3.574	0.373	1.565	0.071	0.309	0.300
Architectural Coating**			0.000				

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.
 **Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994
 Example: SMAQMD Emission Factor for Grading Equipment NOx = (Total Grading NOx per 10 acre)*(Equipment Multiplier)

Summary of Input Parameters

	Total Area (ft ²)	Total Area (acres)	Total Days	
Grading:	126,712	2.91	2	(from "CY2008 Grading" worksheet)
Paving:	0	0.00	0	
Demolition:	126,712	2.91	145	
Building Construction:	0	0.00	0	
Architectural Coating	0	0.00	0	(per SMAQMD "Air Quality of Thresholds of Significance", 1

NOTE: The 'Total Days' estimate for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19th Edition, for 'Asphaltic Concrete Pavement, Lots and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Cement Concrete Pavement', however the estimate for asphalt is used because it is more conservative. The 'Total 'Days' estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference. This is calculated by averaging the demolition estimates from 'Building Demolition - Small Buildings, Concrete', assuming a height of 30 feet for a two-story building; from 'Building Footings and Foundations Demolition - 6" Thick, Plain Concrete'; and from 'Demolish, Remove Pavement and Curb - Concrete to 6" thick, rod reinforced'. Paving is double-weighted since projects typically involve more paving demolition. The 'Total Days' estimate for building construction is assumed to be 230 days, unless project-specific data is known.

Total Project Emissions by Activity (lbs)

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}
Grading Equipment	83.28	5.15	31.42	1.67	5.09	4.94
Paving	-	-	-	-	-	-
Demolition	4,626.26	274.24	1,830.25	92.53	279.72	271.33
Building Construction	-	-	-	-	-	-
Architectural Coatings	-	-	-	-	-	-
Total Emissions (lbs):	4,709.55	279.39	1,861.67	94.19	284.81	276.27

Results: Total Project Annual Emission Rates

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}
Total Project Emissions (lbs)	4,709.55	279.39	1,861.67	94.19	284.81	276.27
Total Project Emissions (tons)	2.3548	0.1397	0.9308	0.0471	0.1424	0.1381

Fugitive Dust Emissions for CY 2008

Calculation of PM₁₀ Emissions Due to Site Preparation (Uncontrolled).

User Input Parameters / Assumptions

Acres graded per year:	2.91 acres/yr	(From "CY2008 Combustion" worksheet)
Grading days/yr:	1.62 days/yr	(From "CY2008 Grading worksheet)
Exposed days/yr:	90 assumed days/yr	graded area is exposed
Grading Hours/day:	8 hr/day	
Soil piles area fraction:	0.10	(assumed fraction of site area covered by soil piles)
Soil percent silt, s:	8.5 %	(mean silt content; expected range: 0.56 to 23, AP-42 Table 13.2.2-1)
Soil percent moisture, M:	85 %	(http://www.cpc.noaa.gov/products/soilmst/w.shtml)
Annual rainfall days, p:	120 days/yr	rainfall exceeds 0.01 inch/day (AP-42 Fig 13.2.2-1)
Wind speed > 12 mph %, I:	34 %	Wind rose for Philadelphia, '88-'92 (http://www.epa.gov/ttn/naaqs/ozone/areas/windr/13739.gif)
Fraction of TSP, J:	0.5	per California Environmental Quality Act (CEQA) Air Quality Handbook, SCAQMD, 1993, p. A9-99
Mean vehicle speed, S:	5 mi/hr	(On-site)
Dozer path width:	8 ft	
Qty construction vehicles:	3.00 vehicles	(From "CY2008 Grading worksheet)
On-site VMT/vehicle/day:	5 mi/veh/day	(Excluding bulldozer VMT during grading)
PM ₁₀ Adjustment Factor k	1.5 lb/VMT	(AP-42 Table 13.2.2-2 12/03 for PM ₁₀ for unpaved roads)
PM ₁₀ Adjustment Factor a	0.9 (dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM ₁₀ for unpaved roads)
PM ₁₀ Adjustment Factor b	0.45 (dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM ₁₀ for unpaved roads)
Mean Vehicle Weight W	40 tons	assumed for aggregate trucks
PM _{2.5} fraction of PM ₁₀	14 %	(AP-42 Section 11.9, 7/98, Table 11.9 for Bulldozing overburden)
PM _{2.5} fraction of PM ₁₀	5 %	(AP-42 Section 11.9, 7/98, Table 11.9 for Grading)
PM _{2.5} fraction of PM ₁₀	10 %	(AP-42 Table 13.2.2-2 12/03 'k' factor for PM _{2.5} for vehicle traffic on unpaved roads)
PM _{2.5} fraction of PM ₁₀	15 %	(AP-42 Section 13.2.5, 11/06, page 13.2.6-3 for wind-generated emissions)

TSP - Total Suspended Particulate
 VMT - Vehicle Miles Traveled

Emissions Due to Soil Disturbance Activities

Operation Parameters (Calculated from User Inputs)

Grading duration per acre	4.5 hr/acre	
Bulldozer mileage per acre	1 VMT/acre	(Miles traveled by bulldozer during grading)
Construction VMT per day	15 VMT/day	
Construction VMT per acre	8.4 VMT/acre	(Travel on unpaved surfaces within site)

Equations Used (Corrected for PM₁₀)

Operation	Empirical Equation	Units	AP-42 Section (5th Edition)
Bulldozing	$0.75(s^{1.5})/(M^{1.4})$	lbs/hr	Table 11.9-1, Overburden
Grading	$(0.60)(0.051)s^{2.0}$	lbs/VMT	Table 11.9-1,
Vehicle Traffic (unpaved roads)	$[(k(s/12)^a (W/3)^b)] [(365-P)/365]$	lbs/VMT	Section 13.2.2

Source: Compilation of Air Pollutant Emission Factors, Vol. I, USEPA AP-42, Section 11.9 dated 10/98 and Section 13.2 dated 12/03

Calculation of PM₁₀ Emission Factors for Each Operation

Operation	Emission Factor (mass/ unit)	Operation Parameter	Emission Factor (lbs/ acre)
Bulldozing	0.04 lbs/hr	4.5 hr/acre	0.20 lbs/acre
Grading	0.77 lbs/VMT	1 VMT/acre	0.80 lbs/acre
Vehicle Traffic (unpaved roads)	2.37 lbs/VMT	8.4 VMT/acre	19.90 lbs/acre

Emissions Due to Wind Erosion of Soil Piles and Exposed Graded Surface

Reference: California Environmental Quality Act (CEQA) Air Quality Handbook, SCAQMD, 1993.

Soil Piles EF = $1.7(s/1.5)[(365 - p)/235](I/15)(J) = (s)(365 - p)(I)(J)/(3110.2941)$, p. A9-99.

Soil Piles EF = 11.4 lbs/day/acre covered by soil piles

Consider soil piles area fraction so that EF applies to graded area

Soil piles area fraction: 0.10 (Fraction of site area covered by soil piles)
 Soil Piles EF = 1.14 lbs/day/acres graded

Graded Surface EF = 26.4 lbs/day/acre (recommended in CEQA Manual, p. A9-93).

Calculation of Annual Emissions

Source	Emission Factor	Graded Acres/yr	Exposed days/yr	PM ₁₀ Emissions lbs/yr	PM ₁₀ Emissions tons/yr	PM _{2.5} Emissions tons/yr
Bulldozing	0.20 lbs/acre	2.91	NA	1	0.000	0.0000
Grading	0.80 lbs/acre	2.91	NA	2	0.001	0.000
Vehicle Traffic	19.90 lbs/acre	2.91	NA	58	0.029	0.003
Erosion of Soil Piles	1.14 lbs/acre/day	2.91	90	298	0.149	0.022
Erosion of Graded Surface	26.40 lbs/acre/day	2.91	90	6,912	3.456	0.518
TOTAL				7,271	3.64	0.544

Soil Disturbance EF: 20.90 lbs/acre
 Wind Erosion EF: 27.54 lbs/acre/day

Back calculate to get EF: 1,538.40 lbs/acre/grading day

Grading Schedule for CY 2008

Estimate of time required to grade a specified area.

Input Parameters

Construction area: 2.91 acres/yr (from "CY2008 Combustion" Worksheet)
 Qty Equipment: 3.00 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.

Terrain is mostly flat.
 An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
 200 hp bulldozers are used for site clearing.
 300 hp bulldozers are used for stripping, excavation, and backfill.
 Vibratory drum rollers are used for compacting.
 Stripping, Excavation, Backfill and Compaction require an average of two passes each.
 Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8	acre/day	8	0.13	2.91	0.36
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	2.91	1.42
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	1.45	1.47
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	1.45	0.60
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	2,300	cu. yd/day	2.85	0.35	2.91	1.02
TOTAL								4.87

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 4.87
 Qty Equipment: 3.00
 Grading days/yr: 1.62

Metropolitan Philadelphia Interstate Air Quality Control Region (Pennsylvania-New Jersey-Delaware)

Row #	State	County	Area Source Emissions						Point Source Emissions					
			CO	NOx	PM10	PM2.5	SO2	VOC	CO	NOx	PM10	PM2.5	SO2	VOC
1	DE	New Castle Co	55,466	22,027	8,202	2,924	8,597	20,182	20,379	12,613	2,460	2,136	52,902	3,909
2	PA	Bucks Co	149,953	15,116	13,445	4,194	6,454	21,008	398	1,736	155	112	416	2,019
3	PA	Chester Co	112,443	12,983	16,152	4,589	4,709	15,334	9,504	3,926	529	415	6,682	2,365
4	PA	Delaware Co	116,197	19,933	6,862	2,754	6,013	17,102	6,828	13,326	1,248	990	18,869	1,970
5	PA	Montgomery Co	199,217	19,254	15,032	4,883	7,842	30,679	671	1,938	600	483	879	1,870
6	PA	Philadelphia Co	278,382	49,408	11,759	4,044	9,659	47,550	1,686	5,604	1,114	928	7,202	2,898
7	NJ	Burlington Co	123,715	13,618	7,748	2,517	2,004	17,283	757	1,495	492	450	326	850
8	NJ	Camden Co	137,646	16,009	5,771	2,345	3,933	20,372	677	1,016	355	270	188	532
9	NJ	Gloucester Co	77,987	16,077	5,323	1,929	2,499	12,454	1,086	5,772	569	343	6,655	2,629
10	NJ	Mercer Co	118,211	14,061	7,717	2,756	2,894	15,154	707	13,037	880	788	13,532	310
11	NJ	Salem Co	24,376	2,881	2,987	923	586	7,697	508	2,575	494	477	3,899	530
Grand Total			1,493,593	201,367	100,998	33,858	55,190	224,815	43,201	63,038	8,896	7,392	111,550	19,882

SOURCE:

<http://www.epa.gov/air/data/geosel.html>

USEPA - AirData NET Tier Report

*Net Air pollution sources (area and point) in tons per year (2001)

Site visited on 3 April 2007.

Metropolitan Philadelphia Interstate AQCR (40 CFR 81.15): Delaware (New Castle Co.), Pennsylvania (Bucks Co., Chester Co., Delaware Co., Montgomery Co., and Philadelphia Co.), and New Jersey (Burlington Co., Camden Co., Gloucester Co., Mercer Co., and Salem Co.).

Summary	Summarizes total emissions by calendar year.
Combustion	Estimates emissions from non-road equipment exhaust as well as painting.
Fugitive	Estimates fine particulate emissions from earthmoving, vehicle traffic, and windblown dust
Grading	Estimates the number of days of site preparation, to be used for estimating heavy equipment exhaust and earthmoving dust emissions
AQCR Tier Report	Summarizes total emissions for the Metropolitan Philadelphia Interstate AQCR Tier Reports for 2001, to be used to compare project to regional emissions.

Emissions from Proposed Action

	NO_x (ton)	VOC (ton)	CO (ton)	SO₂ (ton)	PM₁₀ (ton)	PM_{2.5} (ton)
CY2010						
Construction Combustion	4.5871	0.5632	2.0225	0.3595	0.3297	0.320
Construction Fugitive Dust	0.0000	0.0000	0.0000	0.0000	1.6985	0.254
TOTAL CY2010	4.5871	0.5632	2.0225	0.3595	2.0282	0.574

Since future year budgets were not readily available, actual 2001 air emissions inventories for the counties were used as an approximation of the regional inventory. Because the Proposed Action is several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan Philadelphia Interstate AQCR

Year	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)
2001	264,405	244,697	1,536,794	166,740	109,894	41,250

Source: USEPA-AirData NET Tier Report (<http://www.epa.gov/air/data/geosel.html>). Site visited on 3 April 2007.

Determination Significance (Significance Threshold = 10%)

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)
Minimum - 2001	264,405	244,697	1,536,794	166,740	109,894	41,250
CY2010 Emissions	4.5871	0.5632	2.0225	0.3595	2.0282	0.5739
Proposed Action %	0.0017%	0.0002%	0.0001%	0.00022%	0.0018%	0.0014%

Combustion Emissions for CY 2010

Combustion Emissions of VOC, NO_x, SO₂, CO, PM_{2.5}, and PM₁₀ Due to Construction

Includes:

100% of Construct Unified Headquarters Building for 305 AMW and 514 AMW	59,202 ft ²	1.36	acres
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Total Building Construction Area:	59,202 ft ²	
Total Demolished Area:	0 ft ²	(None)
Total Paved Area:	0 ft ²	(None)
Total Disturbed Area:	59,202 ft ²	
Construction Duration:	1.0 year(s)	
Annual Construction Activity:	230 days/yr	

Emission Factors Used for Construction Equipment

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emissions Model, Version 2005.0.0

Emission factors are taken from the NONROAD model and were provided to e²M by Larry Landman of the Air Quality and Modeling Center (Landman.Larry@epamail.epa.gov) on 12/14/07. Factors provided are for the weighted average US fleet for CY2007.

Assumptions regarding the type and number of equipment are from SMAQMD Table 3-1 unless otherwise noted.

Grading

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Bulldozer	1	13.60	0.96	5.50	1.02	0.89	0.87
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97
Total per 10 acres of activity	3	41.64	2.58	15.71	0.83	2.55	2.47

Paving

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Paver	1	3.83	0.37	2.06	0.28	0.35	0.34
Roller	1	4.82	0.44	2.51	0.37	0.43	0.42
Truck	2	36.71	1.79	14.01	3.27	1.99	1.93
Total per 10 acres of activity	4	45.37	2.61	18.58	0.91	2.78	2.69

Demolition

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Loader	1	13.45	0.99	5.58	0.95	0.93	0.90
Haul Truck	1	18.36	0.89	7.00	1.64	1.00	0.97
Total per 10 acres of activity	2	31.81	1.89	12.58	0.64	1.92	1.87

Building Construction

Equipment ^d	No. Req ^d . ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Stationary							
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22
Mobile (non-road)							
Truck	1	18.36	0.89	7.00	1.64	1.00	0.97
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54
Crane	1	9.57	0.66	2.39	0.65	0.50	0.49
Total per 10 acres of activity	6	39.40	3.13	17.38	3.12	2.83	2.74

Note: Footnotes for tables are on following page

Architectural Coatings

Equipment	No. Reqd. ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Air Compressor	1	3.57	0.37	1.57	0.25	0.31	0.30
Total per 10 acres of activity	1	3.57	0.37	1.57	0.07	0.31	0.30

- a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
- b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purposes of this worksheet ROG = VOC. The NONROAD model contains emissions factors for total HC and for VOC. The factors used here are the VOC factors.
- c) The NONROAD emission factors assume that the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Actions will all be fueled by highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO2 emissions by more than a factor of two.
- d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)					
		NO _x	VOC	CO	SO ₂ **	PM ₁₀	PM _{2.5}
Grading Equipment	1	41.641	2.577	15.710	0.833	2.546	2.469
Paving Equipment	1	45.367	2.606	18.578	0.907	2.776	2.693
Demolition Equipment	1	31.808	1.886	12.584	0.636	1.923	1.865
Building Construction	1	39.396	3.130	17.382	3.116	2.829	2.744
Air Compressor for Architectural Coating	1	3.574	0.373	1.565	0.071	0.309	0.300
Architectural Coating**			19.830				

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

**Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NOx = (Total Grading NOx per 10 acre)*(Equipment Multiplier)

Summary of Input Parameters

	Total Area (ft ²)	Total Area (acres)	Total Days	
Grading:	59,202	1.36	1	(from "CY2010 Grading" worksheet)
Paving:	0	0.00	0	
Demolition:	0	0.00	0	
Building Construction:	59,202	1.36	230	
Architectural Coating	59,202	1.36	20	(per SMAQMD "Air Quality of Thresholds of Significance", 1994)

NOTE: The 'Total Days' estimate for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19th Edition, for 'Asphaltic Concrete Pavement, Lots and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Cement Concrete Pavement', however the estimate for asphalt is used because it is more conservative. The 'Total Days' estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference. This is calculated by averaging the demolition estimates from 'Building Demolition - Small Buildings, Concrete', assuming a height of 30 feet for a two-story building; from 'Building Footings and Foundations Demolition - 6" Thick, Plain Concrete'; and from 'Demolish, Remove Pavement and Curb - Concrete to 6" thick, rod reinforced'. Paving is double-weighted since projects typically involve more paving demolition. The 'Total Days' estimate for building construction is assumed to be 230 days, unless project-specific data is known.

Total Project Emissions by Activity (lbs)

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}
Grading Equipment	41.64	2.58	15.71	0.83	2.55	2.47
Paving	-	-	-	-	-	-
Demolition	-	-	-	-	-	-
Building Construction	9,061.15	719.86	3,997.93	716.76	650.68	631.16
Architectural Coatings	71.48	404.07	31.31	1.43	6.19	6.00
Total Emissions (lbs):	9,174.28	1,126.50	4,044.95	719.02	659.41	639.63

Results: Total Project Annual Emission Rates

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}
Total Project Emissions (lbs)	9,174.28	1,126.50	4,044.95	719.02	659.41	639.63
Total Project Emissions (tons)	4.5871	0.5632	2.0225	0.3595	0.3297	0.3198

Fugitive Dust Emissions for CY 2010

Calculation of PM₁₀ Emissions Due to Site Preparation (Uncontrolled).

User Input Parameters / Assumptions

Acres graded per year:	1.36 acres/yr	(From "CY2010 Combustion" worksheet)
Grading days/yr:	0.76 days/yr	(From "CY2010 Grading worksheet)
Exposed days/yr:	90 assumed days/yr	graded area is exposed
Grading Hours/day:	8 hr/day	
Soil piles area fraction:	0.10	(assumed fraction of site area covered by soil piles)
Soil percent silt, s:	8.5 %	(mean silt content; expected range: 0.56 to 23, AP-42 Table 13.2.2-1)
Soil percent moisture, M:	85 %	(http://www.cpc.noaa.gov/products/soilmst/w.shtml)
Annual rainfall days, p:	120 days/yr	rainfall exceeds 0.01 inch/day (AP-42 Fig 13.2.2-1)
Wind speed > 12 mph %, I:	34 %	Wind rose for Philadelphia, '88-'92 (http://www.epa.gov/ttn/naaqs/ozone/areas/windr/13739.gif)
Fraction of TSP, J:	0.5	per California Environmental Quality Act (CEQA) Air Quality Handbook, SCAQMD, 1993, p. A9-99
Mean vehicle speed, S:	5 mi/hr	(On-site)
Dozer path width:	8 ft	
Qty construction vehicles:	3.00 vehicles	(From "CY2010 Grading worksheet)
On-site VMT/vehicle/day:	5 mi/veh/day	(Excluding bulldozer VMT during grading)
PM ₁₀ Adjustment Factor k	1.5 lb/VMT	(AP-42 Table 13.2.2-2 12/03 for PM ₁₀ for unpaved roads)
PM ₁₀ Adjustment Factor a	0.9 (dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM ₁₀ for unpaved roads)
PM ₁₀ Adjustment Factor b	0.45 (dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM ₁₀ for unpaved roads)
Mean Vehicle Weight W	40 tons	assumed for aggregate trucks
PM _{2.5} fraction of PM ₁₀	14 %	(AP-42 Section 11.9, 7/98, Table 11.9 for Bulldozing overburden)
PM _{2.5} fraction of PM ₁₀	5 %	(AP-42 Section 11.9, 7/98, Table 11.9 for Grading)
PM _{2.5} fraction of PM ₁₀	10 %	(AP-42 Table 13.2.2-2 12/03 'k' factor for PM _{2.5} for vehicle traffic on unpaved roads)
PM _{2.5} fraction of PM ₁₀	15 %	(AP-42 Section 13.2.5, 11/06, page 13.2.6-3 for wind-generated emissions)

TSP - Total Suspended Particulate

VMT - Vehicle Miles Traveled

Emissions Due to Soil Disturbance Activities

Operation Parameters (Calculated from User Inputs)

Grading duration per acre	4.5 hr/acre	
Bulldozer mileage per acre	1 VMT/acre	(Miles traveled by bulldozer during grading)
Construction VMT per day	15 VMT/day	
Construction VMT per acre	8.4 VMT/acre	(Travel on unpaved surfaces within site)

Equations Used (Corrected for PM₁₀)

Operation	Empirical Equation	Units	AP-42 Section (5th Edition)
Bulldozing	$0.75(s^{1.5})/(M^{1.4})$	lbs/hr	Table 11.9-1, Overburden
Grading	$(0.60)(0.051)s^{2.0}$	lbs/VMT	Table 11.9-1,
Vehicle Traffic (unpaved roads)	$[(k(s/12)^a (W/3)^b)] [(365-P)/365]$	lbs/VMT	Section 13.2.2

Source: Compilation of Air Pollutant Emission Factors, Vol. I, USEPA AP-42, Section 11.9 dated 10/98 and Section 13.2 dated 12/03

Calculation of PM₁₀ Emission Factors for Each Operation

Operation	Emission Factor (mass/ unit)	Operation Parameter	Emission Factor (lbs/ acre)
Bulldozing	0.04 lbs/hr	4.5 hr/acre	0.20 lbs/acre
Grading	0.77 lbs/VMT	1 VMT/acre	0.80 lbs/acre
Vehicle Traffic (unpaved roads)	2.37 lbs/VMT	8.4 VMT/acre	19.90 lbs/acre

Emissions Due to Wind Erosion of Soil Piles and Exposed Graded Surface

Reference: California Environmental Quality Act (CEQA) Air Quality Handbook, SCAQMD, 1993.

Soil Piles EF = $1.7(s/1.5)[(365 - p)/235](I/15)(J) = (s)(365 - p)(I)(J)/(3110.2941)$, p. A9-99.

Soil Piles EF = 11.4 lbs/day/acre covered by soil piles

Consider soil piles area fraction so that EF applies to graded area

Soil piles area fraction: 0.10 (Fraction of site area covered by soil piles)
 Soil Piles EF = 1.14 lbs/day/acres graded

Graded Surface EF = 26.4 lbs/day/acre (recommended in CEQA Manual, p. A9-93).

Calculation of Annual PM₁₀ Emissions

Source	Emission Factor	Graded Acres/yr	Exposed days/yr	PM ₁₀ Emissions lbs/yr	PM ₁₀ Emissions tons/yr	PM _{2.5} Emissions tons/yr
Bulldozing	0.20 lbs/acre	1.36	NA	0	0.000	0.0000
Grading	0.80 lbs/acre	1.36	NA	1	0.001	0.000
Vehicle Traffic	19.90 lbs/acre	1.36	NA	27	0.014	0.001
Erosion of Soil Piles	1.14 lbs/acre/day	1.36	90	139	0.070	0.010
Erosion of Graded Surface	26.40 lbs/acre/day	1.36	90	3,229	1.615	0.242
TOTAL				3,397	1.70	0.254

Soil Disturbance EF: 20.90 lbs/acre
 Wind Erosion EF: 27.54 lbs/acre/day

Back calculate to get EF: 3,292.69 lbs/acre/grading day

Grading Schedule for CY 2010

Estimate of time required to grade a specified area.

Input Parameters

Construction area: 1.36 acres/yr (from "CY2010 Combustion" Worksheet)
 Qty Equipment: 3.00 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.

Terrain is mostly flat.
 An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
 200 hp bulldozers are used for site clearing.
 300 hp bulldozers are used for stripping, excavation, and backfill.
 Vibratory drum rollers are used for compacting.
 Stripping, Excavation, Backfill and Compaction require an average of two passes each.
 Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8	acre/day	8	0.13	1.36	0.17
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	1.36	0.66
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	0.68	0.69
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	0.68	0.28
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	2,300	cu. yd/day	2.85	0.35	1.36	0.48
TOTAL								2.28

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 2.28
 Qty Equipment: 3.00
 Grading days/yr: 0.76

Metropolitan Philadelphia Interstate Air Quality Control Region (Pennsylvania-New Jersey-Delaware)

Row #	State	County	Area Source Emissions						Point Source Emissions					
			CO	NOx	PM10	PM2.5	SO2	VOC	CO	NOx	PM10	PM2.5	SO2	VOC
1	DE	New Castle Co	55,466	22,027	8,202	2,924	8,597	20,182	20,379	12,613	2,460	2,136	52,902	3,909
2	PA	Bucks Co	149,953	15,116	13,445	4,194	6,454	21,008	398	1,736	155	112	416	2,019
3	PA	Chester Co	112,443	12,983	16,152	4,589	4,709	15,334	9,504	3,926	529	415	6,682	2,365
4	PA	Delaware Co	116,197	19,933	6,862	2,754	6,013	17,102	6,828	13,326	1,248	990	18,869	1,970
5	PA	Montgomery Co	199,217	19,254	15,032	4,883	7,842	30,679	671	1,938	600	483	879	1,870
6	PA	Philadelphia Co	278,382	49,408	11,759	4,044	9,659	47,550	1,686	5,604	1,114	928	7,202	2,898
7	NJ	Burlington Co	123,715	13,618	7,748	2,517	2,004	17,283	757	1,495	492	450	326	850
8	NJ	Camden Co	137,646	16,009	5,771	2,345	3,933	20,372	677	1,016	355	270	188	532
9	NJ	Gloucester Co	77,987	16,077	5,323	1,929	2,499	12,454	1,086	5,772	569	343	6,655	2,629
10	NJ	Mercer Co	118,211	14,061	7,717	2,756	2,894	15,154	707	13,037	880	788	13,532	310
11	NJ	Salem Co	24,376	2,881	2,987	923	586	7,697	508	2,575	494	477	3,899	530
Grand Total			1,493,593	201,367	100,998	33,858	55,190	224,815	43,201	63,038	8,896	7,392	111,550	19,882

SOURCE:

<http://www.epa.gov/air/data/geosel.html>

USEPA - AirData NET Tier Report

*Net Air pollution sources (area and point) in tons per year (2001)

Site visited on 3 April 2007.

Metropolitan Philadelphia Interstate AQCR (40 CFR 81.15): Delaware (New Castle Co.), Pennsylvania (Bucks Co., Chester Co., Delaware Co., Montgomery Co., and Philadelphia Co.), and New Jersey (Burlington Co., Camden Co., Gloucester Co., Mercer Co., and Salem Co.).

Summary	Summarizes total emissions by calendar year.
Combustion	Estimates emissions from non-road equipment exhaust as well as painting.
Fugitive	Estimates fine particulate emissions from earthmoving, vehicle traffic, and windblown dust
Grading	Estimates the number of days of site preparation, to be used for estimating heavy equipment exhaust and earthmoving dust emissions
AQCR Tier Report	Summarizes total emissions for the Metropolitan Philadelphia Interstate AQCR Tier Reports for 2001, to be used to compare project to regional emissions.

CY2011	Emissions from Proposed Action					
	NO _x (ton)	VOC (ton)	CO (ton)	SO ₂ (ton)	PM ₁₀ (ton)	PM _{2.5} (ton)
Construction Combustion	5.5923	0.3240	2.2700	0.1118	0.3422	0.332
Construction Fugitive Dust	0.0000	0.0000	0.0000	0.0000	57.3760	8.582
TOTAL CY2011	5.5923	0.3240	2.2700	0.1118	57.7182	8.914

Since future year budgets were not readily available, actual 2001 air emissions inventories for the counties were used as an approximation of the regional inventory. Because the Proposed Action is several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Metropolitan Philadelphia Interstate AQCR

Year	Point and Area Sources Combined					
	NO _x (tpy)	VOC (tpy)	CO (tpy)	SO ₂ (tpy)	PM ₁₀ (tpy)	PM _{2.5} (tpy)
2001	264,405	244,697	1,536,794	166,740	109,894	41,250

Source: USEPA-AirData NET Tier Report (<http://www.epa.gov/air/data/geosel.html>). Site visited on 3 April 2007.

Determination Significance (Significance Threshold = 10%)

	Point and Area Sources Combined					
	NO _x (tpy)	VOC (tpy)	CO (tpy)	SO ₂ (tpy)	PM ₁₀ (tpy)	PM _{2.5} (tpy)
Minimum - 2001	264,405	244,697	1,536,794	166,740	109,894	41,250
CY2011 Emissions	5.5923	0.3240	2.2700	0.1118	57.7182	8.9136
Proposed Action %	0.0021%	0.0001%	0.0001%	0.0001%	0.0525%	0.0216%

Combustion Emissions for CY 2011

Combustion Emissions of VOC, NO_x, SO₂, CO, PM_{2.5}, and PM₁₀ Due to Construction

Includes:

100% of Repair Runway 06/24	2,000,000 ft ²	45.91	acres
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Total Building Construction Area:	0 ft ²	(None)
Total Demolished Area:	0 ft ²	(None)
Total Paved Area:	2,000,000 ft ²	
Total Disturbed Area:	2,000,000 ft ²	
Construction Duration:	1.0 year(s)	
Annual Construction Activity:	230 days/yr	

Emission Factors Used for Construction Equipment

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emissions Model, Version 2005.0.0

Emission factors are taken from the NONROAD model and were provided to e²M by Larry Landman of the Air Quality and Modeling Center (Landman.Larry@epamail.epa.gov) on 12/14/07. Factors provided are for the weighted average US fleet for CY2007.

Assumptions regarding the type and number of equipment are from SMAQMD Table 3-1 unless otherwise noted.

Grading

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Bulldozer	1	13.60	0.96	5.50	1.02	0.89	0.87
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97
Total per 10 acres of activity	3	41.64	2.58	15.71	0.83	2.55	2.47

Paving

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Paver	1	3.83	0.37	2.06	0.28	0.35	0.34
Roller	1	4.82	0.44	2.51	0.37	0.43	0.42
Truck	2	36.71	1.79	14.01	3.27	1.99	1.93
Total per 10 acres of activity	4	45.37	2.61	18.58	0.91	2.78	2.69

Demolition

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Loader	1	13.45	0.99	5.58	0.95	0.93	0.90
Haul Truck	1	18.36	0.89	7.00	1.64	1.00	0.97
Total per 10 acres of activity	2	31.81	1.89	12.58	0.64	1.92	1.87

Building Construction

Equipment ^d	No. Req ^d . ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Stationary							
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22
Mobile (non-road)							
Truck	1	18.36	0.89	7.00	1.64	1.00	0.97
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54
Crane	1	9.57	0.66	2.39	0.65	0.50	0.49
Total per 10 acres of activity	6	39.40	3.13	17.38	3.12	2.83	2.74

Note: Footnotes for tables are on following page

Architectural Coatings

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Air Compressor	1	3.57	0.37	1.57	0.25	0.31	0.30
Total per 10 acres of activity	1	3.57	0.37	1.57	0.07	0.31	0.30

- a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
- b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purposes of this worksheet ROG = VOC. The NONROAD model contains emissions factors for total HC and for VOC. The factors used here are the VOC factors.
- c) The NONROAD emission factors assume that the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Actions will all be fueled by highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO₂ emissions by more than a factor of two.
- d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)					
		NO _x	VOC	CO	SO ₂ **	PM ₁₀	PM _{2.5}
Grading Equipment	5	208.206	12.885	78.549	4.164	12.728	12.346
Paving Equipment	5	226.836	13.029	92.892	4.537	13.880	13.464
Demolition Equipment	1	31.808	1.886	12.584	0.636	1.923	1.865
Building Construction	1	39.396	3.130	17.382	3.116	2.829	2.744
Air Compressor for Architectural Coating	1	3.574	0.373	1.565	0.071	0.309	0.300
Architectural Coating**			0.000				

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

**Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NO_x = (Total Grading NO_x per 10 acre)*(Equipment Multiplier)

Summary of Input Parameters

	Total Area (ft ²)	Total Area (acres)	Total Days
Grading:	2,000,000	45.91	6
Paving:	2,000,000	45.91	44
Demolition:	0	0.00	0
Building Construction:	0	0.00	0
Architectural Coating	0	0.00	0

(from "CY2011 Grading" worksheet)

(per SMAQMD "Air Quality of Thresholds of Significance", 1994)

NOTE: The 'Total Days' estimate for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19th Edition, for 'Asphaltic Concrete Pavement, Lots and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Cement Concrete Pavement', however the estimate for asphalt is used because it is more conservative. The 'Total Days' estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference. This is calculated by averaging the demolition estimates from 'Building Demolition - Small Buildings, Concrete', assuming a height of 30 feet for a two-story building; from 'Building Footings and Foundations Demolition - 6" Thick, Plain Concrete'; and from 'Demolish, Remove Pavement and Curb - Concrete to 6" thick, rod reinforced'. Paving is double-weighted since projects typically involve more paving demolition. The 'Total Days' estimate for building construction is assumed to be 230 days, unless project-specific data is known.

Total Project Emissions by Activity (lbs)

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}
Grading Equipment	1,249.24	77.31	471.30	24.98	76.37	74.07
Paving	9,935.44	570.65	4,068.68	198.71	607.97	589.73
Demolition	-	-	-	-	-	-
Building Construction	-	-	-	-	-	-
Architectural Coatings	-	-	-	-	-	-
Total Emissions (lbs):	11,184.67	647.96	4,539.97	223.69	684.33	663.80

Results: Total Project Annual Emission Rates

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}
Total Project Emissions (lbs)	11,184.67	647.96	4,539.97	223.69	684.33	663.80
Total Project Emissions (tons)	5.5923	0.3240	2.2700	0.1118	0.3422	0.3319

Fugitive Dust Emissions for CY 2011

Calculation of PM₁₀ Emissions Due to Site Preparation (Uncontrolled).

User Input Parameters / Assumptions

Acres graded per year:	45.91 acres/yr	(From "CY2011 Combustion" worksheet)
Grading days/yr:	5.59 days/yr	(From "CY2011 Grading worksheet)
Exposed days/yr:	90 assumed days/yr	graded area is exposed
Grading Hours/day:	8 hr/day	
Soil piles area fraction:	0.10	(assumed fraction of site area covered by soil piles)
Soil percent silt, s:	8.5 %	(mean silt content; expected range: 0.56 to 23, AP-42 Table 13.2.2-1)
Soil percent moisture, M:	85 %	(http://www.cpc.noaa.gov/products/soilmst/w.shtml)
Annual rainfall days, p:	120 days/yr	rainfall exceeds 0.01 inch/day (AP-42 Fig 13.2.2-1)
Wind speed > 12 mph %, I:	34 %	Wind rose for Philadelphia, '88-'92 (http://www.epa.gov/ttn/naaqs/ozone/areas/windr/13739.gif)
Fraction of TSP, J:	0.5	per California Environmental Quality Act (CEQA) Air Quality Handbook, SCAQMD, 1993, p. A9-99
Mean vehicle speed, S:	5 mi/hr	(On-site)
Dozer path width:	8 ft	
Qty construction vehicles:	13.77 vehicles	(From "CY2011 Grading worksheet)
On-site VMT/vehicle/day:	5 mi/veh/day	(Excluding bulldozer VMT during grading)
PM ₁₀ Adjustment Factor k	1.5 lb/VMT	(AP-42 Table 13.2.2-2 12/03 for PM ₁₀ for unpaved roads)
PM ₁₀ Adjustment Factor a	0.9 (dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM ₁₀ for unpaved roads)
PM ₁₀ Adjustment Factor b	0.45 (dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM ₁₀ for unpaved roads)
Mean Vehicle Weight W	40 tons	assumed for aggregate trucks
PM _{2.5} fraction of PM ₁₀	14 %	(AP-42 Section 11.9, 7/98, Table 11.9 for Bulldozing overburden)
PM _{2.5} fraction of PM ₁₀	5 %	(AP-42 Section 11.9, 7/98, Table 11.9 for Grading)
PM _{2.5} fraction of PM ₁₀	10 %	(AP-42 Table 13.2.2-2 12/03 'k' factor for PM _{2.5} for vehicle traffic on unpaved roads)
PM _{2.5} fraction of PM ₁₀	15 %	(AP-42 Section 13.2.5, 11/06, page 13.2.6-3 for wind-generated emissions)

TSP - Total Suspended Particulate

VMT - Vehicle Miles Traveled

Emissions Due to Soil Disturbance Activities

Operation Parameters (Calculated from User Inputs)

Grading duration per acre	1 hr/acre	
Bulldozer mileage per acre	1 VMT/acre	(Miles traveled by bulldozer during grading)
Construction VMT per day	69 VMT/day	
Construction VMT per acre	8.4 VMT/acre	(Travel on unpaved surfaces within site)

Equations Used (Corrected for PM₁₀)

Operation	Empirical Equation	Units	AP-42 Section (5th Edition)
Bulldozing	$0.75(s^{1.5})/(M^{1.4})$	lbs/hr	Table 11.9-1, Overburden
Grading	$(0.60)(0.051)s^{2.0}$	lbs/VMT	Table 11.9-1,
Vehicle Traffic (unpaved roads)	$[(k(s/12)^a (W/3)^b)] [(365-P)/365]$	lbs/VMT	Section 13.2.2

Source: Compilation of Air Pollutant Emission Factors, Vol. I, USEPA AP-42, Section 11.9 dated 10/98 and Section 13.2 dated 12/03

Calculation of PM₁₀ Emission Factors for Each Operation

Operation	Emission Factor (mass/ unit)	Operation Parameter	Emission Factor (lbs/ acre)
Bulldozing	0.04 lbs/hr	1 hr/acre	0.00 lbs/acre
Grading	0.77 lbs/VMT	1 VMT/acre	0.80 lbs/acre
Vehicle Traffic (unpaved roads)	2.37 lbs/VMT	8.4 VMT/acre	19.90 lbs/acre

Emissions Due to Wind Erosion of Soil Piles and Exposed Graded Surface

Reference: California Environmental Quality Act (CEQA) Air Quality Handbook, SCAQMD, 1993.

Soil Piles EF = $1.7(s/1.5)[(365 - p)/235](I/15)(J) = (s)(365 - p)(I)(J)/(3110.2941)$, p. A9-99.

Soil Piles EF = 11.4 lbs/day/acre covered by soil piles

Consider soil piles area fraction so that EF applies to graded area

Soil piles area fraction: 0.10 (Fraction of site area covered by soil piles)
 Soil Piles EF = 1.14 lbs/day/acres graded

Graded Surface EF = 26.4 lbs/day/acre (recommended in CEQA Manual, p. A9-93).

Calculation of Annual PM₁₀ Emissions

Source	Emission Factor	Graded Acres/yr	Exposed days/yr	PM ₁₀ Emissions lbs/yr	PM ₁₀ Emissions tons/yr	PM _{2.5} Emissions tons/yr
Bulldozing	0.00 lbs/acre	45.91	NA	0	0.000	0.0000
Grading	0.80 lbs/acre	45.91	NA	37	0.018	0.001
Vehicle Traffic	19.90 lbs/acre	45.91	NA	914	0.457	0.046
Erosion of Soil Piles	1.14 lbs/acre/day	45.91	90	4,711	2.355	0.353
Erosion of Graded Surface	26.40 lbs/acre/day	45.91	90	109,091	54.545	8.182
TOTAL				114,752	57.38	8.582

Soil Disturbance EF: 20.70 lbs/acre
 Wind Erosion EF: 27.54 lbs/acre/day

Back calculate to get EF: 447.47 lbs/acre/grading day

Grading Schedule for CY 2011

Estimate of time required to grade a specified area.

Input Parameters

Construction area: 45.91 acres/yr (from "CY2011 Combustion" Worksheet)
 Qty Equipment: 13.77 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.

Terrain is mostly flat.
 An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
 200 hp bulldozers are used for site clearing.
 300 hp bulldozers are used for stripping, excavation, and backfill.
 Vibratory drum rollers are used for compacting.
 Stripping, Excavation, Backfill and Compaction require an average of two passes each.
 Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8	acre/day	8	0.13	45.91	5.74
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	45.91	22.45
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	22.96	23.15
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	22.96	9.50
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	2,300	cu. yd/day	2.85	0.35	45.91	16.10
TOTAL								76.93

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 76.93
 Qty Equipment: 13.77
 Grading days/yr: 5.59

Metropolitan Philadelphia Interstate Air Quality Control Region (Pennsylvania-New Jersey-Delaware)

Row #	State	County	Area Source Emissions						Point Source Emissions					
			CO	NOx	PM10	PM2.5	SO2	VOG	CO	NOx	PM10	PM2.5	SO2	VOG
1	DE	New Castle Co	55,466	22,027	8,202	2,924	8,597	20,182	20,379	12,613	2,460	2,136	52,902	3,909
2	PA	Bucks Co	149,953	15,116	13,445	4,194	6,454	21,008	398	1,736	155	112	416	2,019
3	PA	Chester Co	112,443	12,983	16,152	4,589	4,709	15,334	9,504	3,926	529	415	6,682	2,365
4	PA	Delaware Co	116,197	19,933	6,862	2,754	6,013	17,102	6,828	13,326	1,248	990	18,869	1,970
5	PA	Montgomery Co	199,217	19,254	15,032	4,883	7,842	30,679	671	1,938	600	483	879	1,870
6	PA	Philadelphia Co	278,382	49,408	11,759	4,044	9,659	47,550	1,686	5,604	1,114	928	7,202	2,898
7	NJ	Burlington Co	123,715	13,618	7,748	2,517	2,004	17,283	757	1,495	492	450	326	850
8	NJ	Camden Co	137,646	16,009	5,771	2,345	3,933	20,372	677	1,016	355	270	188	532
9	NJ	Gloucester Co	77,987	16,077	5,323	1,929	2,499	12,454	1,086	5,772	569	343	6,655	2,629
10	NJ	Mercer Co	118,211	14,061	7,717	2,756	2,894	15,154	707	13,037	880	788	13,532	310
11	NJ	Salem Co	24,376	2,881	2,987	923	586	7,697	508	2,575	494	477	3,899	530
Grand Total			1,493,593	201,367	100,998	33,858	55,190	224,815	43,201	63,038	8,896	7,392	111,550	19,882

SOURCE:

<http://www.epa.gov/air/data/geosel.html>

USEPA - AirData NET Tier Report

*Net Air pollution sources (area and point) in tons per year (2001)

Site visited on 3 April 2007.

Metropolitan Philadelphia Interstate AQCR (40 CFR 81.15): Delaware (New Castle Co.), Pennsylvania (Bucks Co., Chester Co., Delaware Co., Montgomery Co., and Philadelphia Co.), and New Jersey (Burlington Co., Camden Co., Gloucester Co., Mercer Co., and Salem Co.).

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