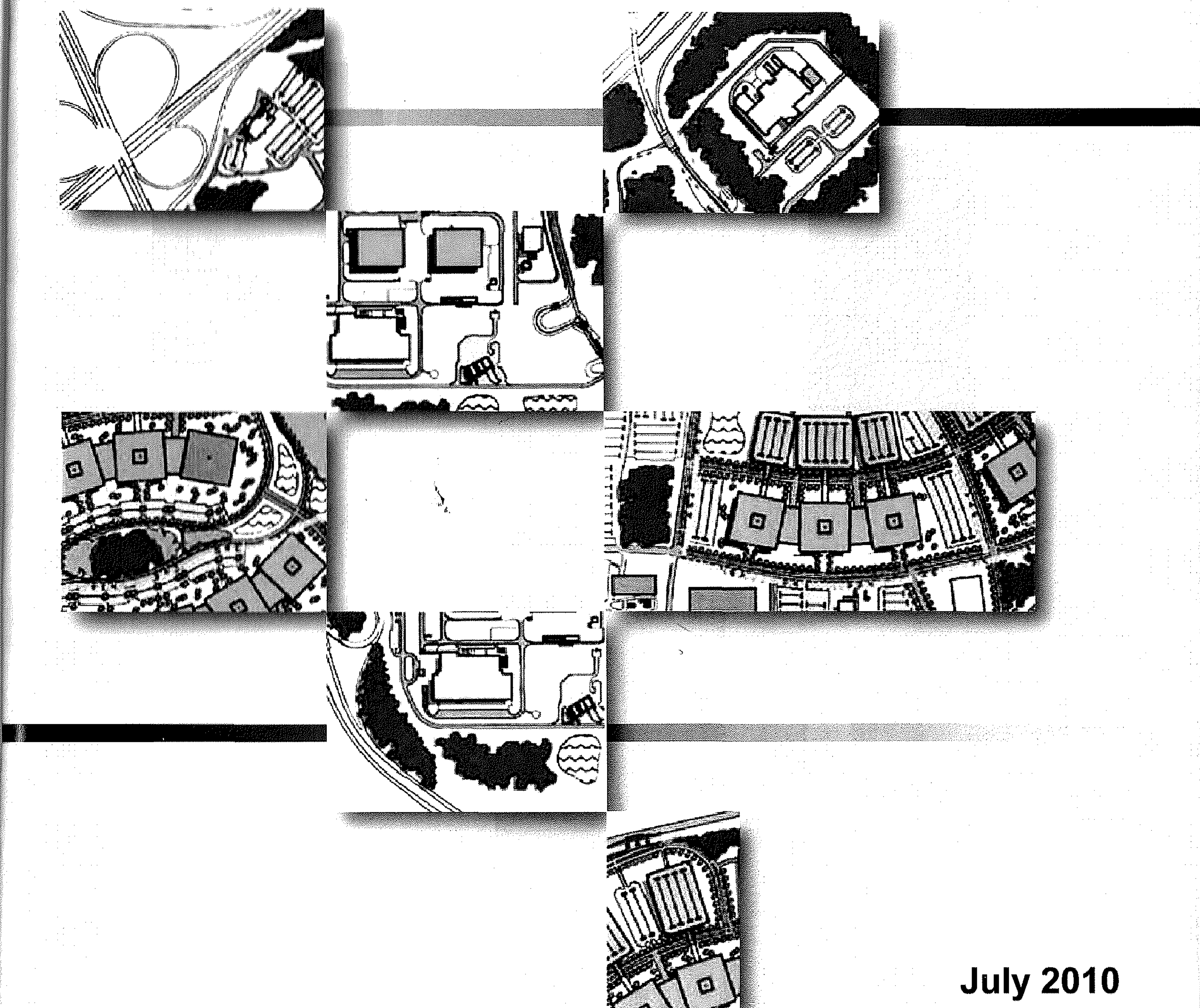
Draft

ENVIRONMENTAL IMPACT STATEMENT

ADDRESSING CAMPUS DEVELOPMENT

AT

FORT GEORGE G. MEADE, MARYLAND



July 2010

DRAFT

ENVIRONMENTAL IMPACT STATEMENT
ADDRESSING CAMPUS DEVELOPMENT

AT

FORT GEORGE G. MEADE, MARYLAND

NATIONAL SECURITY AGENCY
FORT GEORGE G. MEADE, MARYLAND

JULY 2010

Cover Sheet

Draft Environmental Impact Statement
Addressing Campus Development
at Fort George G. Meade, Maryland

Proponent: U.S. Department of Defense (DOD), National Security Agency (NSA)

Affected Location: Fort George G. Meade, Maryland

Report Designation: Draft Environmental Impact Statement (EIS)

Proposed Action: DOD proposes to develop a portion of Fort Meade (referred to as "Site M") as an operational complex and to construct and operate consolidated facilities for Intelligence Community use.

Abstract: DOD has considered development of Site M under three discrete phases identified for implementation over a horizon of approximately 20 years. Implementation of Phase I is being treated in this EIS as the Proposed Action. Phases II and III are being analyzed as alternative development options. Under Phase I, development would occur in the near term (approximately 2012 to 2015) on the eastern half of Site M-1, supporting 1.8 million square feet (ft^2) of facilities for a data center and associated administrative space. NSA would consolidate mission elements, which would enable services and support services across the campus based on function; service the need for a more collaborative environment and optimal adjacencies, including associated infrastructure (e.g., electrical substation and generator plants providing 50 megawatts [MW] of electricity); and provide administrative functions for up to 6,500 personnel. Phase I would also include constructing a steam and chilled water plant, water storage tower, and electrical substations and generator facilities capable of supporting the entire Site M.

Development of Site M takes into account several factors, including mission requirements, the condition of current facilities (both on and off NSA's Exclusive Use Area at Fort Meade), space planning, anti-terrorism/force protection, land availability, utility requirements, base realignment and closure actions, traffic and parking changes, and environmental impacts. Use of multi-level parking facilities will be considered in lieu of surface parking. A key factor driving the site development concept planning is the collocation of mission functions to provide a more efficient and effective work environment for mission-critical functions of the Intelligence Community.

The analysis in this EIS considers various alternatives to the Proposed Action, including the No Action Alternative, electrical generation alternatives, pollution control alternatives, and location alternatives for the various proposed facilities.

For additional information, contact Mr. Jeffrey Williams, Office of Occupational Health, Environmental, and Safety Services, 9800 Savage Road, Suite 6404, Fort Meade, Maryland 27055, or by telephone at 301-688-2970.

Written comments on the Draft EIS should be submitted by mail to "Campus Development EIS," c/o HDR|e^{2}M, 2600 Park Tower Drive, Suite 100, Vienna, Virginia 22180-7342, or by email to *CampusEIS@hdrinc.com.*

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ENVIRONMENTAL IMPACT STATEMENT
ADDRESSING CAMPUS DEVELOPMENT
AT
FORT GEORGE G. MEADE, MARYLAND

PROPONENT:

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EXECUTIVE SUMMARY

Executive Summary

Introduction

This Draft Environmental Impact Statement (EIS) has been prepared to address the proposal by the Department of Defense (DOD) for implementation of campus development initiatives for the National Security Agency (NSA) complex at Fort George G. Meade (Fort Meade), Maryland, and the construction of associated facilities. The National Security Agency/Central Security Service (NSA/CSS) is a cryptologic intelligence agency administered as part of the DOD. It is responsible for the collection and analysis of foreign communications and foreign signals intelligence. For NSA/CSS to continue to lead the Intelligence Community into the next 50 years with state-of-the-art technologies and productivity, its mission elements will require new facilities and infrastructure.

This Environmental Impact Statement (EIS) has been prepared through coordination with Federal and state agencies and will support DOD decisionmaking. The EIS identifies and assesses the potential impacts associated with the Proposed Action and has been prepared to fulfill the requirements of the National Environmental Policy Act (NEPA) of 1969.

Purpose and Need

To meet the NSA's continually evolving requirements, the DOD proposes to develop a portion of Fort Meade (referred to as "Site M") as an operational complex and to construct and operate consolidated facilities for Intelligence Community use. The purpose of the Proposed Action is to provide facilities that fully support the Intelligence Community's mission. The need for the action is to consolidate multiple agencies' efforts to ensure capabilities for current and future mission requirements as directed by Congress and the President.

Scope of the EIS

The scope of the analysis in this EIS consists of evaluation of the range of actions, alternatives, and impacts to be considered in accordance with NEPA. The purpose of the EIS is to inform decisionmakers and the public of the likely environmental consequences of the Proposed Action and alternatives. At Fort Meade, meeting NSA's requirements for facilities consists of developing a portion of the installation and constructing and operating new facilities for use by NSA. These actions are similar in timing and location and would fulfill a common need for providing essential infrastructure.

Interagency and Public Involvement

Agency and public participation in the NEPA process promotes open communication between the proponent (i.e., NSA) and regulatory agencies, the public, and potential stakeholders. All persons and organizations having a potential interest in the proposed project are encouraged to participate in the public involvement process.

DOD initiated the public scoping process for this EIS on July 2, 2009, with the publication of the Notice of Intent (NOI) to prepare an EIS (74 *Federal Register* [FR] 126). The purpose of conducting scoping is to provide members of the public and applicable regulatory agencies with the opportunity to submit formal comments regarding the development of the Proposed Action and possible alternatives and to assist in identifying issues relevant to the EIS. A letter was distributed on July 10, 2009, to 69 potentially interested Federal, state, and local agencies; Native American tribes; and other stakeholder groups or individuals. Announcements were also published in the *Baltimore Sun* and the *Washington Post* on July 12, 2009, notifying the public of the intent to prepare an EIS, identifying the public meeting date, and requesting scoping comments on the project. Subsequently, a scoping meeting was held on July 21, 2009, at the Meade Middle School on Fort Meade to provide a forum for the public and governmental and regulatory agencies to obtain information and to provide scoping comments. Scoping comments were officially accepted through August 17, 2009. All scoping comments have been considered during the preparation of the Draft EIS. Substantive concerns identified during scoping were (1) regional impacts on the regional transportation network systems, (2) regional impacts on fiscal and public revenue, (3) public utility capacity (e.g., water, sewer, and storm water systems) in terms of quality and quantity, (4) public safety and emergency services, and (5) potential historic resources on Site M.

Description of the Proposed Action

The DOD proposes to implement a plan to develop "Site M" at Fort Meade as an operational complex and to construct and operate consolidated facilities for Intelligence Community use. Site M consists of approximately 227 acres in the southwestern quadrant of Rockenbach Road and Cooper Avenue. The area presently serves as portions of Fort Meade's Applewood and Park golf courses (The Courses). For development planning purposes, Site M is divided into two portions. The northern portion, fronting on Rockenbach Road and consisting of approximately 137 acres, is referred to as Site M-1. The southern portion, consisting of approximately 90 acres, is referred to as Site M-2.

Development of Site M takes into account several factors, including mission requirements, the condition of current facilities (both on and off NSA's Exclusive Use Area at Fort Meade), space planning, anti-terrorism/force protection, land availability, utility requirements, base realignment and closure actions, traffic and parking changes, and environmental impacts. A key factor driving the site development concept planning is the collocation of mission functions to provide a more efficient and effective work environment for mission-critical functions of the Intelligence Community.

DOD has considered development of Site M under three discrete phases identified for implementation over a horizon of approximately 20 years. Implementation of Phase I is being treated in this EIS as the Proposed Action. Phases II and III are being analyzed as alternative development options and are discussed below.

Under Phase I, development would occur in the near term (approximately 2012 to 2014) on the eastern half of Site M-1, supporting 1.8 million square feet (ft^2) of facilities for a data center and associated administrative space. NSA would consolidate mission elements, which would enable services and support services across the campus based on function; service the need for a more collaborative environment and optimal adjacencies, including associated infrastructure (e.g., electrical substation and generator plants providing 50 megawatts [MW] of electricity); and provide administrative functions for up to 6,500 personnel. This phase would also include a steam and chilled water plant, water storage tower, and electrical substations and generator facilities capable of supporting the entire operational complex on Site M.

Construction of the proposed facilities and the addition of personnel would require additional campus parking. The use of multi-level parking facilities will be considered in lieu of surface parking. The amount of replacement parking needed would depend on the facility alternatives selected.

Since the development of Site M is in the planning stages, no engineering or design work for replacement parking has been accomplished. Therefore, this EIS does not consider various design factors in detail but makes generalizations about the requirements that would be associated with surface parking and parking garages. The exact space requirements would not be known until the detailed design process begins.

Alternatives Analysis

In addition to the Proposed Action, two additional phases of development have been identified and are options that are addressed here as alternatives (see **Table ES-1**).

Table ES-1. Buildout Comparison for the Proposed Action and Alternatives

Alternative	Area of Building Footprints (ft^2)	Number of Personnel	Occupation Year	Estimated Cost
Proposed Action (Phase I)	1.8 million	6,500	2012-2014	$2.07 billion
Alternative 1 (Phases I and II)	3.0 million	8,000	2020	$3.18 billion
Alternative 2 (Phases I, II, and III)	5.8 million	11,000	2029	$5.23 billion

If all three phases were completed, approximately 11,000 personnel would be located at the proposed facilities at Site M. It is estimated that one-third of the personnel that would staff the new operational complex are already on Fort Meade. The remaining personnel would come from positions at other Intelligence Community locations throughout the Baltimore-Washington metropolitan area.

Alternative 1: Implement Phases I and II

Alternative 1 would include the implementation of the Proposed Action (Phase I) along with Phase II. Under Phase II, development would occur in the mid-term on the eastern half of Site M-1, supporting the construction of an additional 1.2 million ft^2 of operational administrative facilities and also would involve demolition activities. The analysis of Alternative 1 includes Phases I and II combined, for a total built space of 3.0 million ft^2 for 8,000 personnel.

Alternative 2: Implement Phases I, II, and III

Alternative 2 would include the implementation of the Proposed Action (Phase I) along with Phases II and III. This alternative would include the demolition of the golf clubhouse buildings. Under Phase III, development would occur on Site M-2 in the long term, supporting the construction of an additional 2.8 million ft^2 of operational administrative facilities, bringing total built space to 5.8 million ft^2 for 11,000 personnel under all three phases[1].

Alternatives to Electrical Generation and Pollution Control Systems

Electrical Generation Alternatives. DOD proposes to construct emergency generator facilities to ensure a redundant power supply. Alternatives to supply emergency power that were considered to be potentially viable included stationary internal combustion engines, natural gas-fired combustion turbines, and natural gas-fired microturbines. The DOD developed seven evaluation criteria to compare alternative ways of providing emergency power. These criteria are (1) proven and commercially available technology, (2) reliable equipment, (3) rapid start-up, (4) sufficient energy output, (5) meets Federal and state environmental regulations, (6) energy-efficient, and (7) cost-effective. For an emergency power

[1] Approximately 11,000 personnel would be located at the proposed facilities at Site M, if all three phases were completed. It is estimated that one-third of the personnel (approximately 3,630 people) that would staff the new development are already on Fort Meade. The remaining personnel (approximately 7,370 people) would come from positions at other Intelligence Community locations throughout the Baltimore-Washington metropolitan area.

system to be considered reasonable, at a minimum it must meet the first five criteria. Furthermore, any alternative that DOD selects would need to comply with Federal policy for energy efficiency and cost effectiveness in accordance with Executive Order (EO) 13221, *Energy Efficient Standby Power Devices*, and EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*. **Table ES-2** compares stationary internal combustion engines, natural gas-fired combustion turbines, and microturbines to the evaluation criteria outlined above. Based on the information shown in the table only the stationary internal combustion engine generator sets and natural gas-fired combustion turbines alternatives are carried forward for further detailed analysis in this EIS.

Table ES-2. Comparison of Electrical Generation Alternatives

Emergency Power System	Proven and commercially available technology	Reliable equipment	Rapid start-up	Sufficient energy output	Meets environmental regulations	Meets evaluation criteria
Internal combustion engines	Yes	Yes	Yes	Yes	Yes	Yes
Natural gas-fired combustion turbines	Yes	Yes	Yes	Yes	Yes	Yes
Microturbines	Yes	Yes	No	Yes	Yes	No

Pollution Control System Alternatives. The proposed emergency generators could emit pollution and have adverse contributions to already poor air quality in the Fort Meade area. These measures are being addressed proactively to avoid, by design, major impacts on air quality; and to identify the most direct way to comply with strict state and Federal air quality regulations in the region. DOD has identified and considered alternatives to limit air emissions during implementation of the Proposed Action. The DOD developed four evaluation criteria to compare alternative ways of reducing air pollutant emissions: (1) potential to significantly reduce air emissions, (2) proven and commercially available technology, (3) energy efficiency, and (4) cost effectiveness. **Table ES-3** compares each emissions-control alternative to all the evaluation criteria outlined above. As shown in the table for the reasons stated above, only the SCR and Operational Limits alternatives are carried forward for further detailed analysis.

No Action Alternative

DOD has identified a need for action (i.e., consolidate multiple agencies' efforts to ensure capabilities for current and future mission accomplishment) that is required to sustain the mission on Fort Meade's NSA campus, it is understood that taking no action does not meet the project purpose and need. The No Action Alternative is analyzed to provide a baseline of the existing conditions against which potential environmental and socioeconomic impacts of the Proposed Action and alternative actions can be compared. Under the No Action Alternative, DOD would not develop Site M on a phased, multi-year basis and would not construct and operate approximately 1.8 million ft^2 of administrative facilities. NSA/CSS operations, as well as similar or related operations of other Intelligence Community agencies, would continue at their present locations.

Table ES-3. Comparison of Emissions Controls Alternatives

Control Method	Potential to Significantly Reduce Air Emissions	Proven and Commercially Available Technology	Energy Efficiency	Cost Effectiveness	Meets Evaluation Criteria
SCR	Yes	Yes	Yes	No	Yes[1]
SNCR	No	Yes	No	No	No
Operational Limits	Yes	N/A	N/A	N/A	Yes[2]

Notes:

1. Although not a cost-effective control method, SCR is carried forward for analysis in this EIS because it might be required to meet strict permitting requirements in the region.
2. Restrictions on operations through federally enforced limits might be required in addition to other control methods and is carried forward in that context.

Summary of Environmental Impacts

The level of environmental impacts potentials resulting from the Proposed Action and alternatives would primarily be dependent on the alternative ultimately selected (see **Table ES-4**). Environmental impacts would generally be more adverse for Alternatives 1 and 2 than for the Proposed Action due to the increase in building footprint and the number of additional personnel associated with the alternatives. This summary of potential environmental impacts focuses on those impacts that are considered to be more adverse and limits discussions of minor adverse impacts that would be expected from construction activities.

Generally, construction and demolition activities would be expected to result in some amount of ground disturbance. Short-term adverse impacts on soil and water resources as a result of sedimentation, erosion, and storm water runoff are unavoidable. Construction and demolition activities also generate solid waste. These kinds of impacts would be expected regardless of the alternative chosen.

Best Management Practices and Mitigation Measures

The Proposed Action has the potential to result in adverse environmental impacts. The Proposed Action includes best management practices, mitigation measures, and design concepts to avoid adverse impacts to the extent practicable (see **Table ES-5**). Unavoidable impacts would be minimized or compensated for to the extent practicable. In accordance with Council on Environmental Quality regulations, mitigation measures must be considered for adverse environmental impacts. Once a particular impact associated with a proposed action is considered significant, then mitigation measures must be developed where it is feasible to do so.

1 **Table ES-4. Summary of Environmental Impacts from the Proposed Action and Alternatives**

Resource Area	No Action Alternative	Proposed Action (Phase I)	Alternative 1 (Phases I and II)	Alternative 2 (Phases I, II, and III)
Land Use	No impacts on land use would be expected.	Short- to long-term, minor to moderate, adverse impacts to land use would be expected. Short- to long-term, moderate, adverse impacts on recreation would be expected.	Impacts on land use and recreation would be similar in nature but slightly greater than the Proposed Action.	Impacts on land use and recreation would be similar in nature but slightly greater than Alternative 1.
Transportation	Long-term major impacts would be expected due to failing levels of service (LOS) values.	Long-term minor impacts would be expected due to an increase in failing LOS values.	Long-term minor impacts would be expected due to an increase in failing LOS values.	Long-term moderate impacts would be expected due to an increase in failing LOS values.
Noise	No impacts on the noise environment would be expected.	Short-term, negligible to minor, adverse impacts from construction activities would be expected. Long-term, negligible to minor, adverse impacts from facility operation would be expected. No impacts to sensitive no receptors outside of Fort Meade would be expected.	Impacts on the noise environment would be similar in nature but slightly greater than the Proposed Action.	Impacts on the noise environment would be similar in nature but slightly greater than Alternative 1.
Air Quality	No impacts on air quality would be expected.	Short- and long-term minor adverse impacts on air quality would be expected from increased air emissions during construction and operation of the generators.	Impacts on air quality would be similar in nature but greater than the Proposed Action.	Impacts on air quality would be similar in nature but greater than the Alternative 1.

Resource Area	No Action Alternative	Proposed Action (Phase I)	Alternative 1 (Phases I and II)	Alternative 2 (Phases I, II, and III)
Geological Resources	No impacts on geological resources would be expected.	Short- and long-term, minor to moderate adverse impacts on geological resources would be expected from additional disturbance to soils and erosion during construction activities.	Impacts on geological resources would be similar in nature but greater than the Proposed Action.	Impacts on geological resources would be similar in nature but greater than the Alternative 1.
Water Resources	No impacts on water resources would be expected.	Short- and long-term, negligible to minor, adverse impacts from the generation of additional wastewater and the increase in impervious surfaces would be expected. Long-term, minor, beneficial effects on water quality would be expected from the removal of the golf course.	Impacts on water resources would be similar in nature but greater than the Proposed Action.	Impacts on water resources would be similar in nature but greater than the Alternative 1.
Biological Resources	No impacts on biological resources would be expected.	Long-term, minor, adverse impacts on vegetation and wetlands would be expected. Short-term, minor adverse impacts on wildlife would be expected from temporary noise disturbances associated with construction activities. Long-term, minor, beneficial impacts would be expected from replanting vegetation. No adverse impacts on coastal zone management, floodplains, or threatened and endangered species.	Impacts on biological resources would be similar in nature but greater than the Proposed Action.	Impacts on biological resources would be similar in nature but greater than the Alternative 1.

Resource Area	No Action Alternative	Proposed Action (Phase I)	Alternative 1 (Phases I and II)	Alternative 2 (Phases I, II, and III)
Cultural Resources	No impacts on cultural resources would be expected.	No major impacts would be expected.	No major impacts would be expected.	A major impact on potentially historic properties could occur if they were not treated as a design constraint and avoided.
Infrastructure and Sustainability	No impacts on infrastructure would be expected.	Short-term, negligible to major, adverse, and long-term, major, adverse impacts on water supply would be expected. Short- and long-term, minor, adverse impacts on sanitary sewer and wastewater systems, natural gas, and solid waste systems would be expected. Long-term, minor, adverse impacts on pavements would be expected. Short- and long-term, negligible to major, adverse impacts from the use of energy would be expected. Long-term, negligible, adverse impacts from use of liquid fuel would be expected. No adverse impacts on communication systems would be expected. Long-term, beneficial impacts on heating and cooling capabilities would be expected.	Impacts on infrastructure systems would be similar in nature but slightly greater than the Proposed Action.	Impacts on infrastructure systems would be similar in nature but slightly greater than the Alternative 1.

Resource Area	No Action Alternative	Proposed Action (Phase I)	Alternative 1 (Phases I and II)	Alternative 2 (Phases I, II, and III)
Hazardous Materials and Wastes	No impacts on hazardous materials and wastes would be expected.	Short-term, negligible, adverse impacts on hazardous materials and petroleum products; hazardous and petroleum wastes; and storage tanks and oil/water separators would be expected. No impacts on ACM, radon, LBP, pesticides, PCBs, and ordnance would be expected. Short-term, minor, adverse and long-term minor beneficial impacts on ERP would be expected.	Impacts on hazardous materials and wastes would be similar in nature to those described for Proposed Action.	Impacts on hazardous materials and wastes would be similar in nature but greater than those described for Alternative 1.
Socioeconomics and Environmental Justice	No impacts on socioeconomics or environmental justice would be expected.	Short- and long-term, major, beneficial impacts on the local economy and long-term, moderate, beneficial impacts on local demographic and housing characteristics would be expected. Short-term, moderate, adverse impacts on the Class A Office Space market and long-term, minor, adverse impacts on the school systems and recreation would be expected. No impacts on the law enforcement and fire protection facilities and minority or low income populations would be expected.	Impacts on socioeconomics and environmental justice would be similar in nature but slightly greater than those described for the Proposed Action.	Impacts on socioeconomics and environmental justice would be similar in nature but greater than those described for the Alternative 1.

Table ES-5. Proposed BMPs, Mitigation, and Environmental Protection Measures

Resource Area	Proposed Measures
Land Use (see Section 4.1)	• Sustainability features would be incorporated to meet LEED Silver requirements, be energy-efficient, and use "green" technology.
Transportation (see Section 4.2)	• Contribute to development of a region-wide traffic study to analyze the impacts of future growth in and around Fort Meade on the regional roadway network in Howard County and Anne Arundel County. • Potential on-installation road improvements already identified by U.S. Army: o Add left turn lanes to selected approaches to the following on-installation road intersections: Ernie Pyle Street and Mapes Road, Cooper Avenue and Mapes Road, Cooper Avenue and Rockenbach Road, and MD 175 and Rockenbach Road/Ridge Road o Add right turn lanes to selected approaches to the following on-installation road intersection: O'Brien Road and Mapes Road o Add through lanes to selected approaches to the following on-installation road intersections: Ernie Pyle Street and Mapes Road, MacArthur Road and Mapes Road, Taylor Avenue and Mapes Road, O'Brien Road and Mapes Road, O'Brien Road and Rockenbach Road, and Reece Road and MacArthur Road, o Add traffic signalization to the O'Brien Road and Rockenbach Road intersection. • Recommended road improvements to minimize impacts from the Proposed Action: o Add turn and/or through lanes to the following intersections: MD 175 and Rockenbach Road/Ridge Road, MD 175 and 26th Street/Disney Road, MD 175 and Reece Road (MD 174), MD 175 and Mapes Road/Charter Oaks Road, MD 175 and Llewellyn Avenue/Blue Water Boulevard, MD 174 (Reece Road) and Jacobs Road, Ernie Pyle Street and Mapes Road, MacArthur Road and Mapes Road, Cooper Avenue and Mapes Road, Taylor Avenue and Mapes Road, and O'Brien Road and Mapes Road. o Add traffic signalization to MD 174 (Reece Road) and Jacobs Road, and O'Brien Road and Samford Road. o Add loop ramp for traffic coming from westbound MD 32 to westbound MD 198. o Add additional lanes for northbound and southbound traffic on MD 295 and eastbound and westbound traffic on MD 32. • Contribute to development of mass transit proposals that have been identified by local and state agencies to address on-installation and regional circulation and connectivity issues.

Resource Area	Proposed Measures
Noise (see Section 4.3)	• Utilizing the best available noise control techniques (i.e. improved mufflers, equipment redesign, intake silencers, ducts, and engine enclosures and noise attenuating shields or shrouds on all equipment and trucks) could mitigate noise impacts. • Pile-driving noise could be mitigated through the use of plywood noise barriers around the site, noise control blankets, noise attenuation, providing 30 days notice prior to pile-driving activities. • Specific construction times would be provided under the direction of the Garrison Command and could be restricted due to proximity of residential areas.
Air Quality (see Section 4.4)	• Construction would be accomplished in full compliance with current and pending Maryland regulatory requirements through the use of compliant practices or products. • Implementation of fugitive dust control measures (e.g., wind breaks and barriers, control of vehicle access). • Construction and demolition equipment would be properly tuned and maintained prior to and during construction and demolition activities
Geological Resources (see Section 4.5)	• Develop Erosion and Sediment Control Plan for the Proposed Action. • Utilize BMPs to minimize soil erosion, including fencing and sediment traps, applying water to disturbed soil, installing green roofs, and revegetating disturbed areas as soon as possible after disturbance, as appropriate.
Water Resources (see Section 4.6)	• Implement non structural storm water management techniques per NSA design standards, the NSA Real Property Master Plan, or outlined in the Fort Meade *Green Building Manual* as appropriate. • Maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property. • A forested 100-foot buffer would be established on the western side of Midway Branch within Site M • If sizing criteria are not met through the implementation ESD structural BMPs would be used and could include: stormwater retention ponds, storm water wetlands, infiltration basins or trenches, stormwater filtering systems and open channel systems.
Biological Resources (see Section 4.7)	• Use forestry practices to control erosion and sedimentation during clearing and construction activities. • Wetland area management should follow a dual policy of floodplain and riparian area management and in-situ wetland management emphasizing preservation and where possible, enhancement and expansion of wetlands.
Cultural Resources (see Section 4.8)	• In the event of an unexpected discovery of human remains during construction, an unanticipated discovery plan would be utilized.
Infrastructure and Sustainability (see Section 4.9)	• To promote sustainability the following practices could be employed: reduction of the heat island effect, construction of green roofs, retention of stormwater for alternative uses, reduction of water usage, use of energy efficiency equipment, use and purchase of renewable energies, and purchase of locally produced materials.

Resource Area	Proposed Measures
Hazardous Materials and Wastes (see Section 4.10)	• Preparation of a health and safety plan by the contractor prior to commencement of construction and demolition activities. • If contamination is encountered, the handling storage, transportation, and disposal activities would be conducted in accordance with appropriate regulations. • All permanent storage tanks would be used with appropriate BMPs, such as secondary containment systems, leak detection systems, and alarm systems, and adhere to the NSA's Hazardous Materials Management Program to ensure that contamination from a spill would not occur. If a spill occurs, the installation Spill Prevention Control and Countermeasures Plan outlines the appropriate measures for spill situations.
Socioeconomics and Environmental Justices (see Section 4.11)	• No environmental protection measures have been identified for socioeconomic resources and environmental justice.

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AT FORT GEORGE G. MEADE, MARYLAND

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APPENDICES

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FIGURES

FIGURES (CONTINUED)

ACRONYMS AND ABBREVIATIONS

ACPs	access control points
AR	Army Regulation
AST	aboveground storage tank
AT/FP	Anti-Terrorism/Force Protection
BGE	Baltimore Gas & Electric
BMP	Best Management Practice
BNR	biological nutrient removal
BP	before present
BRAC	Base Realignment and Closure
BW Parkway	Baltimore-Washington Parkway
BWI	Baltimore-Washington International airport
CAA	Clean Air Act
CCTV	Closed-Circuit Television
CEMP	Comprehensive Expansion Management Plan
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
COMAR	Code of Maryland Regulations
CPCN	Certificate of Public Convenience and Necessity
CTC	Corridor Transportation Corporation
CWA	Clean Water Act
DERP	Defense Environmental Restoration Program
DINFOS	Defense Information School
DISA	Defense Information Systems Agency
DMA	Defense Media Activity
DOD	Department of Defense
DOE	Determination of Eligibility
DoS	Department of State
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESD	Environmental Site Design
FEMA	Federal Emergency Management Agency
FGGM	Fort George G. Meade
FPPA	Farmland Protection Policy Act
FR	Federal Register
FSD	Forest Stand Delineation
ft^2	square feet
ft^3/hr	cubic feet per hour
gpd	gallons per day
gpm	gallons per minute
GPR	ground penetrating radar
GRH	Guaranteed Ride Home
HCS+	Highway Capacity Software
HLPS	High Lift Pump Stations
hp	horsepower
IDG	Installation Design Guide
ITE	Institute of Transportation Engineers'
ITR	injection timing retard
kV	kilovolt
kW	kilowatt
LEED	Leadership in Energy and Environmental Design

LOSs	Levels of Service
LPZ	Lower Pressure Zone
MARC	Maryland Area Rail Commuter
MCZ	Meade Coordination Zone
MD	Maryland
MDE	Maryland Department of the Environment
MFH	military family housing
mg/L	milligrams per liter
mgd	million gallons per day
MHT	Maryland Historical Trust
msl	mean sea level
MTA	Maryland Transit Administration
MUTCD	Manual on Uniform Traffic Control Devices
MW	megawatt
NEC	Network Enterprise Center
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOA	Notice of Availability
NOI	Notice of Intent
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NSA	National Security Agency
NSA/CSS	National Security Agency/Central Security Service
NSPS	New Source Performance Standards
NSR	New Source Review
ntu	nephelometric turbidity units
O_3	ozone
percent g	Percent of the force of gravity
$PM_{2.5}$	particulate matter less than or equal to 2.5 micrometers
psig	pound-force per square inch gauge
PTE	potential to emit
RGMC	Regional Growth Management Committee
ROD	Record of Decision
ROI	Region of Influence
SCR	selective catalytic reduction
SHA	Maryland State Highway Administration
SNCR	selective noncatalytic reduction
SO_x	sulfur oxides
SWMA	storm water management area
TMP	Transportation Management Plan
TSS	total suspended solids
U.S.C.	United States Code
UFC	Unified Facilities Criteria
UPZ	Upper Pressure Zone
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VCP	vehicle control point
VOC	volatile organic compound
WMATA	Washington Metropolitan Area Transit Authority
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

SECTION 1

PURPOSE OF AND NEED FOR THE ACTION

1. Purpose of and Need for the Action

1.1 Introduction

This Draft Environmental Impact Statement (EIS) has been prepared to address the proposal by the Department of Defense (DOD) for implementation of campus development initiatives for the National Security Agency (NSA) complex at Fort George G. Meade (Fort Meade), Maryland, and the construction of associated facilities. The location of Fort Meade is shown on **Figure 1.1-1**. The EIS has been prepared to comply with the requirements of the National Environmental Policy Act of 1969 (NEPA), as amended (42 United States Code [U.S.C.] Section 4321–4347); the Council on Environmental Quality's (CEQ) *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 Code of Federal Regulations [CFR] Parts 1500–1508); *Environmental Analysis of Army Actions* (32 CFR Part 651); Department of Defense Instruction 4715.9 (*Environmental Planning and Analysis*); and, for guidance, NSA's draft *National Environmental Policy Act Procedures*.

The National Security Agency/Central Security Service (NSA/CSS) is a cryptologic intelligence agency administered as part of the DOD. It is responsible for the collection and analysis of foreign communications and foreign signals intelligence. For NSA/CSS to continue to lead the Intelligence Community into the next 50 years with state-of-the-art technologies and productivity, its mission elements will require new facilities and infrastructure.

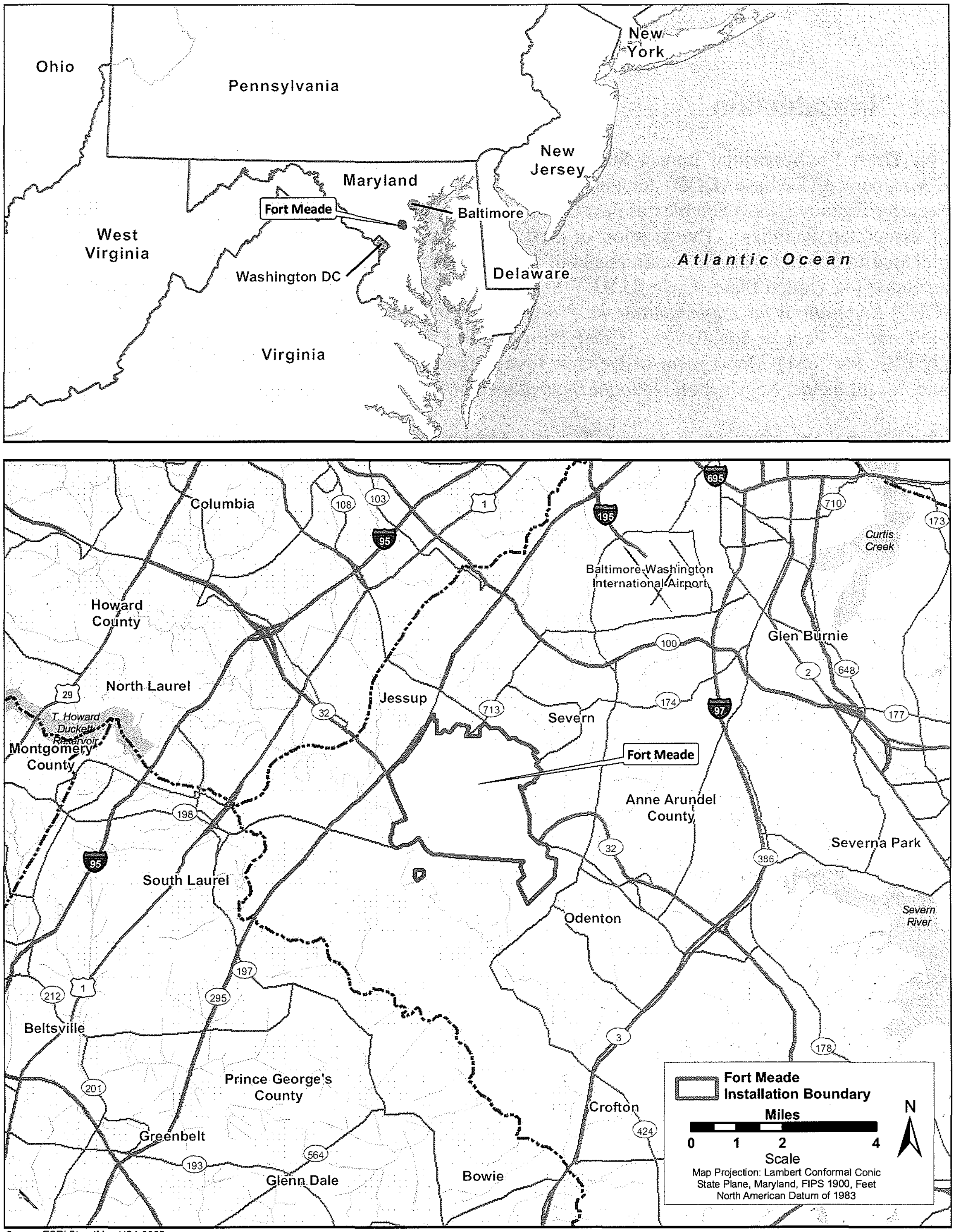
The EIS is organized into seven sections and appendices. **Section 1** states the purpose, need, scope, and public involvement efforts for the Proposed Action. **Section 2** contains a detailed description of the Proposed Action and the alternatives considered. **Section 3** describes the existing conditions of the potentially affected environment. **Section 4** identifies the environmental impacts of implementing all reasonable alternatives. **Section 5** identifies cumulative impacts associated with past, present, and reasonably foreseeable future actions when combined with the Proposed Action and alternatives. **Section 6** provides the names of those persons who prepared the EIS. **Section 7** lists the references used to support the analysis.

1.2 Purpose and Need

To meet the NSA's continually evolving requirements, the DOD proposes to develop a portion of Fort Meade (referred to as "Site M") as an operational complex and to construct and operate consolidated facilities for Intelligence Community use. The purpose of the Proposed Action is to provide facilities that fully support the Intelligence Community's mission. The need for the action is to consolidate multiple agencies' efforts to ensure capabilities for current and future mission requirements as directed by Congress and the President.

1.3 Scope of the EIS

The scope of the analysis in this EIS consists of evaluation of the range of actions, alternatives, and impacts to be considered in accordance with NEPA. The purpose of the EIS is to inform decisionmakers and the public of the likely environmental consequences of the Proposed Action and alternatives. At Fort Meade, meeting NSA's requirements for facilities consists of developing a portion of the installation and constructing and operating new facilities for use by NSA. These actions are similar in timing and location and would fulfill a common need for providing essential infrastructure.



Source: ESRI StreetMap USA 2005

Figure 1.1-1. Location of Fort Meade

The scope of the Proposed Action and the range of alternatives to be considered are presented in detail in **Section 2**. In accordance with CEQ regulations, the No Action Alternative is analyzed to provide the baseline against which the environmental impacts of implementing the range of alternatives addressed can be compared. This EIS identifies appropriate mitigation measures that are not already included in the Proposed Action or alternatives in order to avoid, minimize, reduce, or compensate for adverse environmental impacts.

1.3.1 Environmental Laws, Regulations, and Executive Orders

To comply with NEPA, the planning and decisionmaking process involves reference to other relevant environmental laws, regulations, and Executive Orders (EOs). The NEPA process does not replace procedural or substantive requirements of other environmental laws; it addresses them collectively in an analysis, which enables decisionmakers 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 practice so that all such procedures run concurrently rather than consecutively" (40 CFR 1500.2).

This EIS examines the environmental impacts of the Proposed Action and reasonable alternatives on the following resource areas: land use, noise, air quality, geological resources, water resources, biological resources, cultural resources, visual resources, infrastructure, transportation, hazardous materials and wastes, and socioeconomics and environmental justice. **Appendix A** of this EIS contains summaries of the environmental laws, regulations, and EOs that might apply to this project. Where relevant, these laws are described in more detail in the appropriate resource areas presented in **Section 3**. The scope of the analyses of potential environmental consequences given in **Section 4** considers direct, indirect, and cumulative impacts.

As required in 40 CFR 1502.25, the EIS contains a list of all Federal permits, licenses, and coordination that might be necessary in implementing the Proposed Action or alternatives (see **Table 1.3-1**).

1.3.2 Other Relevant Laws, Regulations, and Executive Orders

The policies and goals of NEPA supplement an agency's existing authorizations (42 U.S.C. Section 4335). The DOD will adhere to mission requirements as identified in the National Security Act of 1947 (50 U.S.C. Section 401) and EO 12333, United States Intelligence Activities, as amended by EO 13355, *Strengthened Management of the Intelligence Community*. There could be aspects and details of the Proposed Action that are classified. However, the EIS presents the Proposed Action and alternatives in sufficient detail to adequately describe the types and magnitudes of environmental impacts potentially associated with the Proposed Action while also ensuring that sensitive information is safeguarded.

1.4 Interagency and Public Involvement

Agency and public participation in the NEPA process promotes open communication between the proponent and regulatory agencies, the public, and potential stakeholders. All persons and organizations having a potential interest in the proposed project are encouraged to participate in the public involvement process.

Table 1.3-1. List of Federal Permits, Licenses, and Other Entitlements for the Proposed Action

Agency	Permit/Approval/Coordination
U.S. Fish & Wildlife Service (USFWS)	– Endangered Species Act (ESA) Section 7 coordination – Migratory Bird Treaty Act coordination
U.S. Army Corps of Engineers (USACE)	– Clean Water Act (CWA) Section 404 Permit
Maryland Department of the Environment (MDE), Water Management Administration	– CWA Section 401 State Water Quality Certification CWA NPDES permit
MDE, Air and Radiation Management Administration	– Clean Air Act (CAA) Minor New Source Review (NSR) construction permit – CAA Title V Minor permit modification – CAA Title V Significant permit modification
Maryland Department of Natural Resources Forest Service	– Forest Stand Delineation (FSD) and Forest Conservation Plan coordination
National Park Service (NPS)	– Consultation regarding potential impacts
Federally recognized Native American Tribes	– Consultation regarding potential impacts of cultural resources
Maryland Historical Trust (MHT)	– National Historic Preservation Act (NHPA) Section 106 consultation
Maryland Public Service Commission	– Waivers from Certificate of Public Convenience and Necessity (CPCN)

1.4.1 Scoping Process

The purpose of conducting scoping for an EIS is to provide members of the public and applicable regulatory agencies with the opportunity to submit formal comments regarding the development of the Proposed Action and alternatives and to assist in identifying issues relevant to the EIS. Scoping helps ensure that relevant issues are identified early in the NEPA process and are properly studied, that minor issues do not needlessly consume time and effort, and the Proposed Action and alternatives are thoroughly developed.

DOD initiated the public scoping process for this EIS on July 2, 2009, with the publication of the Notice of Intent (NOI) to prepare an EIS (74 *Federal Register* [FR] 126). A letter was distributed on July 10, 2009, to 69 potentially interested Federal, state, and local agencies; Native American tribes; and other stakeholder groups or individuals. Announcements were also published in the *Baltimore Sun* and the *Washington Post* on July 12, 2009, notifying the public of the intent to prepare an EIS, identifying the public meeting date, and requesting scoping comments on the project. Subsequently, a scoping meeting was held on July 21, 2009, at the Meade Middle School on Fort Meade to provide a forum for the public and governmental and regulatory agencies to obtain information and to provide scoping comments. Scoping comments were officially accepted through August 17, 2009. All scoping outreach tools, including the NOI, the text of the display advertisements, the interested party letter, interested party mailing list, and agency coordination, are included in **Appendix B**. All scoping comments have been considered during the preparation of the Draft EIS. Substantive concerns identified during scoping were (1) impacts on the regional transportation network systems, (2) regional impacts on fiscal and public revenue, (3) public utility capacity (e.g., water, sewer, and storm water systems) in terms of quality and quantity, (4) public safety and emergency services, and (5) potential historic resources on Site M.

1.4.2 Review of the Draft EIS

DOD will provide a 45-day public review period for the Draft EIS (40 CFR 1506.10). The public review period is initiated through publication of a Notice of Availability (NOA) in the *Federal Register.* Methods similar to those used during the scoping period are used to notify the public and agencies of the public review period for the Draft EIS, including a mailing of the document to potentially interested parties. The Draft EIS is circulated to Federal and state agencies having jurisdiction by law or special subject matter expertise and to any person, organization, stakeholder group, or agency that has requested a copy (40 CFR 1502.19). **Appendix C** of the EIS will include all materials, including the NOA and other public outreach tools, and all substantive comments on the Draft EIS that are received during the 45-day public review period.

1.4.3 Availability of the Final EIS

An NOA for the Final EIS will be published in the *Federal Register* announcing that the Final EIS is available for review. At a minimum, the Final EIS will be circulated to Federal and state agencies having jurisdiction by law or special subject matter expertise; any person, organization, or agency that has requested a copy of the Final EIS; and any person, organization, stakeholder group, or agency that has made a substantive comment on the Draft EIS (40 CFR 1502.19). During the 30-day waiting period associated with the release of the Final EIS, DOD will take no action nor make any decisions regarding whether or not to implement the Proposed Action. Comments that are received during the waiting period associated with the Final EIS will be considered in the decisionmaking process and documented as such input in the Record of Decision (ROD).

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SECTION 2

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2. Description of the Proposed Action and Alternatives

2.1 Proposed Action (Phase I)

The DOD proposes to implement a plan to develop "Site M" at Fort Meade as an operational complex and to construct and operate consolidated facilities for Intelligence Community use. Implementation of the Phase I construction plan under the Proposed Action would provide up to 1.8 million square feet (ft^2) of facilities. Further details are provided in the following sections.

2.1.1 Land Use Planning

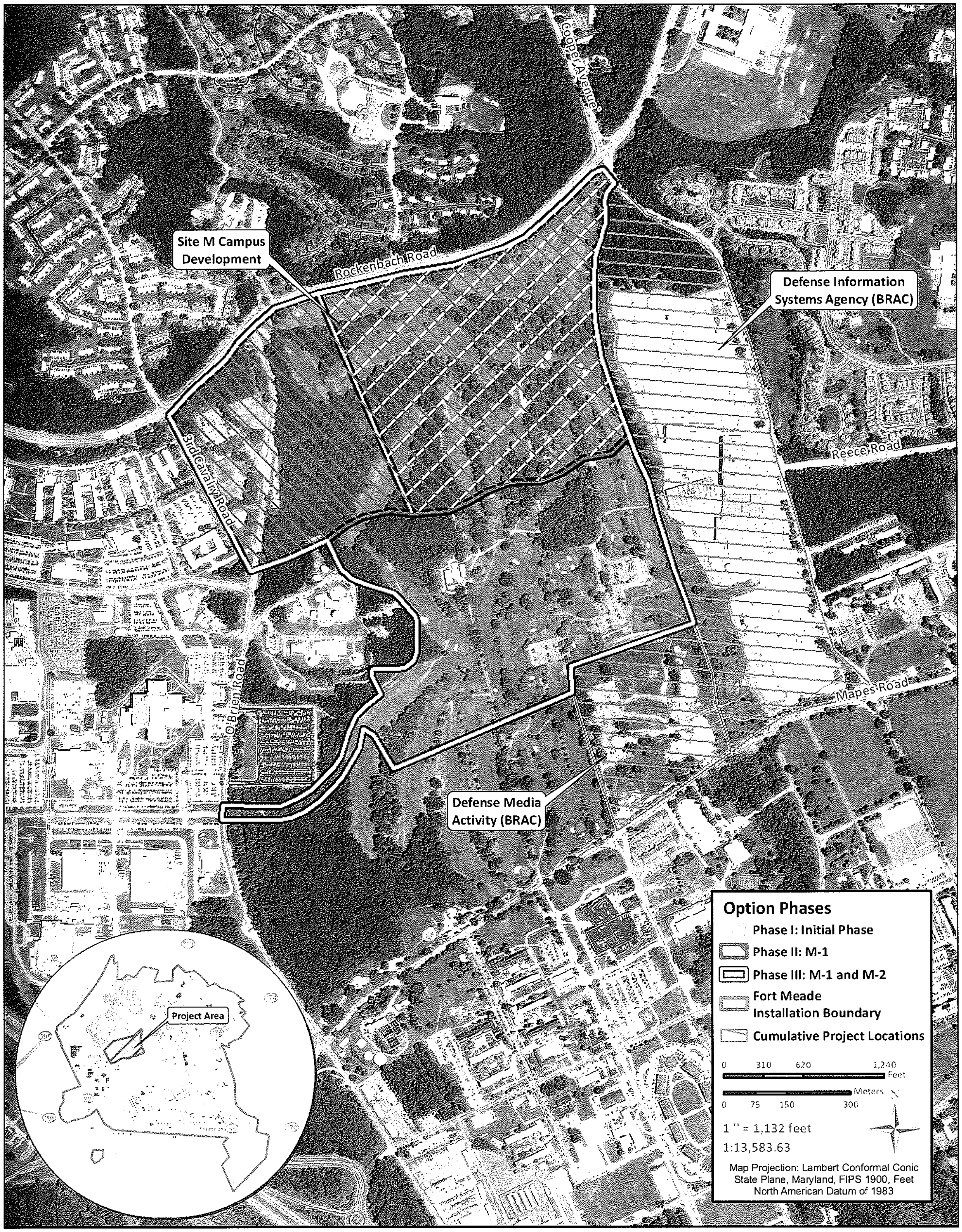
Site M consists of approximately 227 acres in the southwestern quadrant of Rockenbach Road and Cooper Avenue, as shown in **Figure 2.1-1**. The area presently serves as portions of Fort Meade's Applewood and Park golf courses (The Courses). For development planning purposes, Site M is divided into two portions. The northern portion, fronting on Rockenbach Road and consisting of approximately 137 acres, is referred to as Site M-1. The southern portion, consisting of approximately 90 acres, is referred to as Site M-2.

DOD has considered development of Site M under three discrete phases identified for implementation over a horizon of approximately 20 years. Implementation of Phase I is being treated in this EIS as the Proposed Action. Phases II and III are being analyzed as alternative development options and are discussed in **Section 2.2**. Under Phase I, development would occur in the near term (approximately 2012 to 2014) on the eastern half of Site M-1, supporting 1.8 million ft^2 of facilities for a data center and associated administrative space. NSA would consolidate mission elements, which would enable services and support services across the campus based on function; service the need for a more collaborative environment and optimal adjacencies, including associated infrastructure (e.g., electrical substation and generator plants providing 50 megawatts [MW] of electricity); and provide administrative functions for up to 6,500 personnel. Phase I would also include a steam and chilled water plant, water storage tower, and electrical substations and generator facilities capable of supporting the entire Site M.

Development of Site M takes into account several factors, including mission requirements, the condition of current facilities (both on and off NSA's Exclusive Use Area at Fort Meade), space planning, anti-terrorism/force protection, land availability, utility requirements, base realignment and closure actions, traffic and parking changes, and environmental impacts. A key factor driving the site development concept planning is the collocation of mission functions to provide a more efficient and effective work environment for mission-critical functions of the Intelligence Community.

Construction of the proposed facilities and the addition of personnel would require additional campus parking. The existing NSA campus has limited developable land; therefore, the use of multi-level parking facilities will be considered in lieu of surface parking. Parking lots are fully used most days, including overflow parking, so the net loss of any parking would require replacement parking. However, the amount of replacement parking needed would depend on the facility alternatives selected, as described in **Section 2.2**.

Since the development of Site M is in the planning stages, no engineering or design work for replacement parking has been accomplished. Therefore, this EIS does not consider various design factors in detail but makes generalizations about the requirement that would be associated with surface parking and parking garages. The exact space requirements would not be known until the detailed design process begins.



Source of Potential Project Actions: HDR | e²M, Inc 2010; Source of Aerial Photography: USDA-APFO National Agricultural Inventory Project (NAIP) 2009.

Figure 2.1-1. Site M and Surrounding Areas

As a result of Base Realignment and Closure Actions (BRAC), substantial personnel increases will occur at Fort Meade for the Defense Information Systems Agency (DISA) and the Defense Media Activity (DMA). These agencies will develop new facilities adjacent to Site M. DISA is currently developing a portion of the golf course east of Cooper Avenue, and DMA is developing an area south of Site M-2 (fronting on Mapes Road).

2.1.2 Operational Complex – Principal Facilities

DOD proposes to construct and operate a complex of facilities to house mission functions related to understanding the intentions and capabilities, and to limit the effectiveness, of our Nation's geopolitical adversaries. The operational complex would consist of the following principal facilities:

- *Office Modules and Operations Center.* Three office modules and one operations center (wholly contained in an office module as a discrete area) would provide approximately 1,728,000 ft^2 of space. The office modules would include a customized structural component, and supporting electrical, mechanical, fire protection/suppression, and security components. Initial operational capability would provide work space for approximately 6,500 personnel in an open environment conducive to both physical and virtual collaboration.
- *Module Interconnections.* Two two-floor module interconnections, totaling approximately 40,000 ft^2 of space, would provide access between the three office modules. The module interconnections would provide shared special purpose space including support and enabler areas (e.g., lobbies, main reception, security) for continuously secure operations.
- *Data Center.* A data center totaling 325,200 ft^2 of space, would provide computational, data storage, and analytical support.

All facilities within the operational complex would comply with all Unified Facilities Criteria (UFC) 04-010-01, *DOD Minimum Antiterrorism Standards for Buildings*. Handicap accessibility design would comply with Federal and state requirements. The complex would include sustainability features that can be cost-effectively integrated to meet Leadership in Energy and Environmental Design (LEED) Green Building Rating System Silver requirements at a minimum. Facility and site design would place emphasis on maximizing operating efficiencies of building systems and minimizing the environmental footprint. The facilities would be energy-efficient and use "green" technology, including photovoltaic panels, solar collectors, heat recovery systems, wind turbines, green roofs, and habitat-oriented storm water management, where feasible.

2.1.3 Operational Complex – Supporting Facilities

Facilities supporting the data center would include an electrical substation and generator plants (providing 50 MW of service); chiller plants; boiler plants; ancillary parking; site improvements; water storage; water, gas, and communications services; paving, walks, curbs, and gutters; storm water management; and security systems.

Three alternatives for power generation equipment and three alternatives for generator pollution controls are available to the DOD and are discussed further in **Section 2.2.3**.

2.2 Alternatives Analysis

2.2.1 Development Alternatives to the Proposed Action

In addition to the Proposed Action, two additional phases of development have been identified and are options that are addressed here as alternatives. These alternatives are discussed below and presented along with the Proposed Action in **Table 2.2-1.**

Table 2.2-1. Buildout Comparison for the Proposed Action and Alternatives

Alternative	Area of Building Footprints (ft^2)	Number of Personnel	Occupation Year	Estimated Cost
Proposed Action (Phase I)	1.8 million	6,500	2012-2014	$2.07 billion
Alternative 1 (Phases I and II)	3.0 million	8,000	2020	$3.18 billion
Alternative 2 (Phases I, II, and III)	5.8 million	11,000	2029	$5.23 billion

Approximately 11,000 personnel would be located at the proposed facilities at Site M, if all three phases were completed. It is estimated that one-third of the personnel that would staff the new operational complex are already on Fort Meade, in currently obligated NSA areas. The remaining personnel would come from positions at other Intelligence Community locations throughout the Baltimore-Washington metropolitan area.

2.2.1.1 Alternative 1: Implement Phases I and II

Under this alternative, the Proposed Action (Phase I) (1.8 million ft^2) would be implemented along with Phase II. Under Phase II, development would occur in the mid-term on the western half of Site M-1 (see **Figure 2.1-1**), supporting the construction of an additional 1.2 million ft^2 of operational administrative facilities, and also would include demolition activities. The analysis of Alternative 1 includes Phases I and II combined.

2.2.1.2 Alternative 2: Implement Phases I, II, and III

Under this alternative, the Proposed Action (Phase I) would be implemented along with Phase II and Phase III. This alternative would include the demolition of the golf clubhouse buildings. Under Phase III, development would occur on Site M-2 in the long term (see **Figure 2.1-1**), supporting the construction of an additional 2.8 million ft^2 of operational administrative facilities, bringing total built space to 5.8 million ft^2 for a total of 11,000 personnel under all three phases[2].

[2] Approximately 11,000 personnel would be located at the proposed facilities at Site M, if all three phases were completed. It is estimated that one-third of the personnel (approximately 3,630 people) that would staff the new development are already on Fort Meade. The remaining personnel (approximately 7,370 people) would come from positions at other Intelligence Community locations throughout the Baltimore-Washington metropolitan area.

2.2.2 Development Alternatives Eliminated from Further Detailed Analysis

2.2.2.1 Expansion of the NSA Campus

NSA has considered other areas of the Fort Meade campus for possible expansion in the future. NSA desires to expand into tracts contiguous to its campus to maintain secure adjacency within a single fenceline. In addition to Site M, given the constraints presented by the installation fenceline, the only area adjacent to the NSA campus where expansion could occur is the tract east of Canine Road and north of Emory Road, called the "9800 Area," extending to the Fort Meade Golf Course. In the future, this parcel of land could become a viable location for the construction of NSA assets or expansion under appropriate real estate agreements. However, the 9800 Area is currently occupied by barracks; and at present there are no plans for relocation. Therefore, the possibility of expansion into the 9800 Area will not be further evaluated in detail in the EIS.

2.2.2.2 Redevelopment of NSA Campus

The NSA has considered redeveloping its existing campus on Fort Meade to accommodate a larger number of personnel and state-of-the-art technologies, and to meet recently increased security setback requirements from roads and its fenceline. Opportunities for redevelopment are limited given the developed nature of the campus. Space available for redevelopment includes existing buildings/operational spaces, and tracts currently occupied by parking lots. Converting or upgrading existing buildings is not feasible; all buildings are currently fully utilized with insufficient swing space to allow any building to be vacated and rebuilt. Construction of facilities on existing parking lots, and offsetting the loss of parking spaces by converting other parking lots into multi-level parking facilities, is another option. However, existing parking lots would have to be closed during construction of the multi-level parking facilities which would decrease the number of available parking spaces, so this alternative would not be feasible given the limited number of parking spaces currently available. Finally, all redevelopment options on the existing campus are limited by utility and roadway infrastructure issues. Existing utility systems are not expandable in terms of either operational capacity or accessibility and physical space for the scale of construction required. Therefore, this alternative will not be further evaluated in detail in the EIS.

2.2.2.3 Alternative Location to Fort Meade

The Proposed Action identified in **Section 2.1** would allow for the consolidation of multiple agencies' efforts to ensure Intelligence Community capabilities for current and future mission accomplishments as directed by Congress and the President. DOD has made significant investments at Fort Meade, and its desire is to consolidate and expand NSA's resources on and adjacent to its existing campus rather than moving to a different location. Therefore, an alternative outside of Fort Meade will not be further evaluated in detail in the EIS.

2.2.3 Alternatives to Electrical Generation and Pollution Control Systems

2.2.3.1 Electrical Generation Alternatives

DOD proposes to construct emergency generator facilities to ensure a redundant power supply. This section describes the process used to identify emergency power alternatives to be carried forward, and the alternatives to be eliminated from further detailed environmental analysis in this document. Alternatives to supply emergency power that were considered potentially viable included stationary internal combustion engines, natural gas-fired combustion turbines, and natural gas-fired microturbines.

A comparative summary of the alternatives, and how they do or do not meet specific selection criteria, is also included. Details of the potential impacts from these alternatives are primarily evaluated in **Section 4.3** (Noise) and **Section 4.4** (Air Quality).

Stationary Internal Combustion Engines. Generators used to generate electricity can be driven by internal combustion engines that run on diesel fuel. They range in size from a few hundred to several thousand kilowatts (kW). Generators are commonly used for electricity and emergency power generation in central utility facilities and industrial applications. This alternative considers the use of 2.2- to 2.7-MW Tier 2 generators to provide emergency power.

Manufacturers' specifications for several generator types were reviewed. The 2.2- to 2.7-MW generator sets were selected for analysis because they are among the largest commercially available off-the-shelf units in terms of energy output that meet the Tier 2 air emissions standards. Tier 2 emissions controls are very effective for off-the-shelf generators of this size and type, and are ideal for the addition of other postcombustion control technologies. One 2.2- to 2.7-MW generator unit has a minimum space requirement that consists of an area approximately 22 feet long, 8.5 feet wide, and 10 feet high (Caterpillar 2008). Depending on the size of the individual units selected, between 22 and 24 generators would be needed to generate 50 MW of electrical energy output.

Although not required for emergency applications, it is possible that new Tier 4 generators could be available for nonemergency applications in the next few years. Generators ultimately selected might differ in specific features from the ones described in this EIS, but the emissions profiles would be consistent with or lower than the Tier 2 engines described herein. All generators meeting Tier 2 air emissions standards in the range of 2.2 to 2.7 MW would have comparable emissions profiles. Therefore, the 2.5-MW Tier 2 generators have been selected for the detailed analysis in this EIS.

Generator sets are the industry standard for emergency power generation and are a proven commercially available technology with rapid start-up capabilities. Banks of off-the-shelf generator sets can be configured to provide the emergency power requirements outlined and have the capacity for application of emissions-control technologies to meet the strict state and Federal air quality regulations within the Baltimore Metropolitan region. The use of stationary internal combustion engine generator sets meets the critical evaluation criteria, and consequently, this alternative is carried forward for further detailed analysis in this EIS.

Natural Gas-Fired Combustion Turbines. Generators used to generate electricity that are driven by natural gas-fired combustion turbines are similar in many respects to those operated on diesel fuel. The principal difference between the two fuel types pertains to the potential air emissions, with natural gas-fired internal combustion producing fewer oxides of nitrogen emissions.

Like stationary internal combustion engines, natural gas-fired combustion turbines have the capacity for application of emissions-control technologies to meet the strict state and Federal air quality regulations within the Baltimore Metropolitan region. The use of natural gas-fired combustion turbines meets the critical evaluation criteria, and consequently, this alternative is carried forward for further detailed analysis in this EIS.

Natural Gas-Fired Microturbines. Microturbines are small combustion turbines that produce between 25 kW and 1,000 kW of power. Microturbines were derived from turbocharger technologies found in large trucks or the turbines in aircraft auxiliary power units. Turbines of many sizes are commonly used for electricity generation in central utility generating stations and industrial applications. There are a number of manufacturers of turbine generator sets in a size appropriate to the Proposed Action. For the purposes of this analysis, this alternative considers the use of 1-MW microturbines for emergency power.

Manufacturers' specifications for several microturbines types were reviewed. The 1-MW microturbines were selected for analysis because they are among the largest commercially available units in terms of energy output. A single 1-MW microturbine unit has a minimum space requirement of approximately 28 feet long, 8 feet wide, and 10 feet high. All microturbines would be driven by internal combustion engines, though not all units would necessarily be made by the same manufacturer. Sixty 1-MW units would be needed to generate 50 MW of energy output. Other microturbines reviewed were smaller in size and power output, and had a higher cost per MW than other options evaluated. They would require a larger overall building footprint and cost and consequently were not considered realistic for the facilities being proposed.

Microturbines have limited air emissions, have a long record of commercial service in emergency and standby power applications, and are highly reliable. They come in a variety of sizes and can be operated together to meet the proposed project power requirements. However, they require more extensive start sequences and do not increase load quickly because of the need to equalize internal temperatures before applying additional load. Microturbines are not considered to be a viable alternative because of the time it takes for them to generate useful power. Additionally, microturbines have a substantially high capital cost and are more financially viable for uses requiring full-time operation. Therefore, microturbines have been eliminated from further detailed analysis in this EIS as an emergency power alternative.

Summary of Alternatives. The DOD developed seven evaluation criteria to compare alternative ways of providing emergency power. These criteria are (1) proven and commercially available technology, (2) reliable equipment, (3) rapid start-up, (4) sufficient energy output, (5) meets Federal and state environmental regulations, (6) energy-efficient, and (7) cost-effective. For an emergency power system to be considered reasonable, at a minimum it must meet the first five criteria. Furthermore, any alternative that DOD selects would need to comply with Federal policy for energy efficiency and cost effectiveness in accordance with EO 13221, *Energy Efficient Standby Power Devices*, and EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*. **Table 2.2-2** compares stationary internal combustion engines, natural gas-fired combustion turbines, and microturbines to the evaluation criteria outlined above. Based on the information shown in the table, only the stationary internal combustion engine generator sets and natural gas-fired combustion turbines alternatives are carried forward for further detailed analysis in this EIS.

Table 2.2-2. Comparison of Electrical Generation Alternatives

Emergency Power System	Proven and commercially available technology	Reliable equipment	Rapid start-up	Sufficient energy output	Meets environmental regulations	Meets evaluation criteria
Internal combustion engines	Yes	Yes	Yes	Yes	Yes	Yes
Natural gas-fired combustion turbines	Yes	Yes	Yes	Yes	Yes	Yes
Microturbines	Yes	Yes	No	Yes	Yes	No

2.2.3.2 Pollution Control System Alternatives

The proposed emergency generators could emit pollution and have adverse contributions to already poor air quality in the Fort Meade area. DOD has identified and considered alternatives to limit air emissions during implementation of the Proposed Action. These measures are being addressed proactively to avoid, by design, major impacts on air quality; and to identify the most direct way to comply with strict state and Federal air quality regulations in the region. Fort Meade is in a nonattainment area for ozone (O_3) and fine particulate matter ($PM_{2.5}$) (i.e., particulate matter less than or equal to 2.5 micrometers). DOD seeks to minimize, by design, the effects of the Proposed Action on regional air quality by limiting emissions of nitrogen oxides (NO_x), volatile organic compounds (VOCs), $PM_{2.5}$, and sulfur oxides (SO_x), which are the precursors of O_3 and $PM_{2.5}$. Air quality conditions and regulations pertinent to the Proposed Action and alternatives and associated impacts are discussed in **Sections 3.4** and **4.4**.

Generators have the potential to emit (PTE) NO_x at rates much greater than VOC, $PM_{2.5}$, and SO_x. Emissions of NO_x, in particular, are a concern in O_3 and $PM_{2.5}$ nonattainment areas. Due to the scope of the Proposed Action and the equipment requirements, NO_x emissions could be considerable, and controls likely would be mandatory under Federal and state air permitting requirements. Although emissions controls for VOC, $PM_{2.5}$, and SO_x have all been carried forward for detailed analysis, NO_x emissions are the focus of the control systems and strategies outlined herein.

NO_x controls can be classified into two types: combustion- and postcombustion-control methods. Combustion-control methods prevent the formation of NO_x during the combustion process, while post-combustion methods reduce NO_x emissions after they are created by the combustion process. Combustion-control methods reduce the amount of NO_x emissions by lowering combustion temperatures. They are more economical than post-combustion methods and are often incorporated directly into the design of generators to maximize efficiency and to meet regulatory requirements. Combustion-control methods include injection timing retard (ITR) for generators. Post-combustion-control methods "treat" flue gases to remove NO_x after its formation. Post-combustion control methods include selective catalytic reduction (SCR) and selective noncatalytic reduction (SNCR).

An example of a combustion-control technology for generators is ITR. Injection of fuel into the cylinder of an internal combustion engine initiates the combustion process. Retarding the timing of the diesel fuel injection causes the combustion process to occur later in the power stroke when the piston is in the downward motion and combustion chamber volume is increasing. By increasing the volume, the combustion temperature and pressure are lowered, thereby lowering NO_x formation. Preignition chamber combustion, adjusting the air-to-fuel ratio, and derating are other combustion-control technologies used in generators. These technologies are often used in concert to meet the Federal Tier 1 and Tier 2 emissions standards for generators, and are naturally incorporated into the standard designs. Therefore, combustion-control technologies for generators are not distinctly and separately addressed in this EIS. Generators that meet the Tier 2 standards have been carried forward for detailed analysis in this EIS, and it is assumed that they incorporate reasonable combustion-control technologies to meet these standards.

Selective Catalytic Reduction. SCR is a very effective postcombustion-control method of reducing NO_x emissions in generators. It involves the injection of ammonia in the exhaust gases in the presence of a catalyst. The catalyst allows the ammonia to reduce NO_x levels at lower exhaust temperatures than SNCR (discussed below). SCR can result in NO_x reductions up to 90 percent. Despite its high cost and due to the limited effectiveness of other emissions-control technologies incorporated into off-the-shelf generator units, SCR is the most effective NO_x control for generators. SCR also meets the Lowest Achievable Emissions Rate requirement for generators, which is, by definition, independent of cost. It is likely that the use of SCR would be required to meet both Federal and state air permitting requirements. SCR for generators has been carried forward for detailed analysis.

Emergency diesel generators greater than 2.237 MW (3,000 horsepower [hp]) must meet the Tier 4 New Source Performance Standards (NSPS) in 2011 only if add-on controls such as SCR are not required to do so (71 FR 39157). Since it is technologically unlikely the Tier 4 standards are achievable without add-on controls, the effective NSPS for 2.2- to 2.7-MW emergency diesel generators is Tier 2. Notably, there are currently no commercially obtainable Tier 4 generators of suitable size; therefore, nominal emissions factors are not available. Although not required for emergency generator applications, it is possible that Tier 4 generators could be available for nonemergency application within the next few years. For the purposes of this EIS, it is assumed that off-the-shelf Tier 4 generators available after 2011 will be similar in design or have emissions similar to the existing off-the-shelf Tier 2 units with SCR. Generators ultimately selected might differ in specific features from the ones described in this EIS, but the emissions profiles would be consistent with or lower than the Tier 2 engines described herein. Therefore, the Tier 2 generators have been carried forward to facilitate a detailed analysis in this EIS because they are the most suitable off-the-shelf generators at this time.

Selective Noncatalytic Reduction. SNCR is a moderately effective postcombustion-control method of reducing NO_x emissions from generators. It involves the injection of a NO_x-reducing agent, such as ammonia or urea, in the exhaust gases. The ammonia or urea breaks down the NO_x in the exhaust gases into water and atmospheric nitrogen. SNCR reduces NO_x up to 50 percent. However, the technology is extremely difficult to apply to emergency generators that do not operate under steady conditions because the location where the ammonia (or urea) must be injected is constantly changing. Unlike SCR, SNCR does not meet the Lowest Achievable Emissions Rate requirements for generators. It is unlikely that it would be sufficient to meet Federal and state permitting requirements. Therefore, SNCR was eliminated from detailed analyses as an emissions-control alternative for generators.

Operational Limits. Limiting emergency generator operation is the most direct and cost-effective emissions-control method. It is accomplished by incorporating federally enforceable limits in the construction and operating permit(s) of new units. The obvious drawback to this approach is that if the limitations are not carefully chosen, the equipment might not meet the needs of the Proposed Action. Due to the operational requirements of the Proposed Action, limiting the operation would not be a suitable stand-alone approach to reducing emissions. However, when used in conjunction with other control methods, such as SCR, it might be a very effective approach to reduce the potential for emissions and to subsequently comply with Federal and state permitting requirements. Therefore, although not distinctly and separately addressed in this EIS, restricting operation through federally enforceable limits might be required in addition to other control methods, and has been addressed throughout this EIS in that context.

Summary of Alternatives. The DOD developed four evaluation criteria to compare alternative ways of reducing air pollutant emissions: (1) potential to significantly reduce air emissions, (2) proven and commercially available technology, (3) energy efficiency, and (4) cost effectiveness. **Table 2.2-3** compares each emissions-control alternative to all the evaluation criteria outlined above. As shown in the table for the reasons stated above, only the SCR and Operational Limits alternatives are carried forward for further detailed analysis.

Table 2.2-3. Comparison of Emissions Controls Alternatives

Control Method	Potential to Significantly Reduce Air Emissions	Proven and Commercially Available Technology	Energy Efficiency	Cost Effectiveness	Meets Evaluation Criteria
SCR	Yes	Yes	Yes	No	Yes[1]
SNCR	No	Yes	No	No	No
Operational Limits	Yes	N/A	N/A	N/A	Yes[2]

Notes:

1. Although not a cost-effective control method, SCR is carried forward for analysis in this EIS because it might be required to meet strict permitting requirements in the region.
2. Restrictions on operations through federally enforced limits might be required in addition to other control methods and is carried forward in that context.

2.3 No Action Alternative

CEQ regulations specify the inclusion of the No Action Alternative in the alternatives analysis (40 CFR 1502.14). Since DOD has identified a need for action (i.e., consolidate multiple agencies' efforts to ensure capabilities for current and future mission requirement) that will be necessary to sustain the mission on Fort Meade's NSA campus, it is understood that taking no action does not meet the project purpose and need. The No Action Alternative is analyzed to provide a baseline of the existing conditions against which potential environmental and socioeconomic impacts of the Proposed Action and alternative actions can be compared. Under the No Action Alternative, DOD would not develop Site M on a phased, multi-year basis and would not construct and operate approximately 1.8 million ft^2 of administrative facilities. NSA/CSS operations, as well as similar or related operations of other Intelligence Community agencies, would continue at their present locations.

2.4 Identification of the Preferred Alternative

CEQ's implementing regulations instruct EIS preparers to "identify the agency's preferred alternative, if one or more exists in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference" (40 CFR 1502.14(c)). The DOD's preferred alternative is to implement the Proposed Action (Phase I) as described in **Section 2.1**.

2.5 Identification of Cumulative Actions

CEQ defines cumulative impacts as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." Informed decisionmaking is served by consideration of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future.

The following discussion presents those actions or projects that are temporally or geographically related to the Proposed Action and, as such, have the potential to result in cumulative impacts. The cumulative impacts analysis will be presented by resource area in **Section 4.15** of the EIS.

Actions on Fort Meade

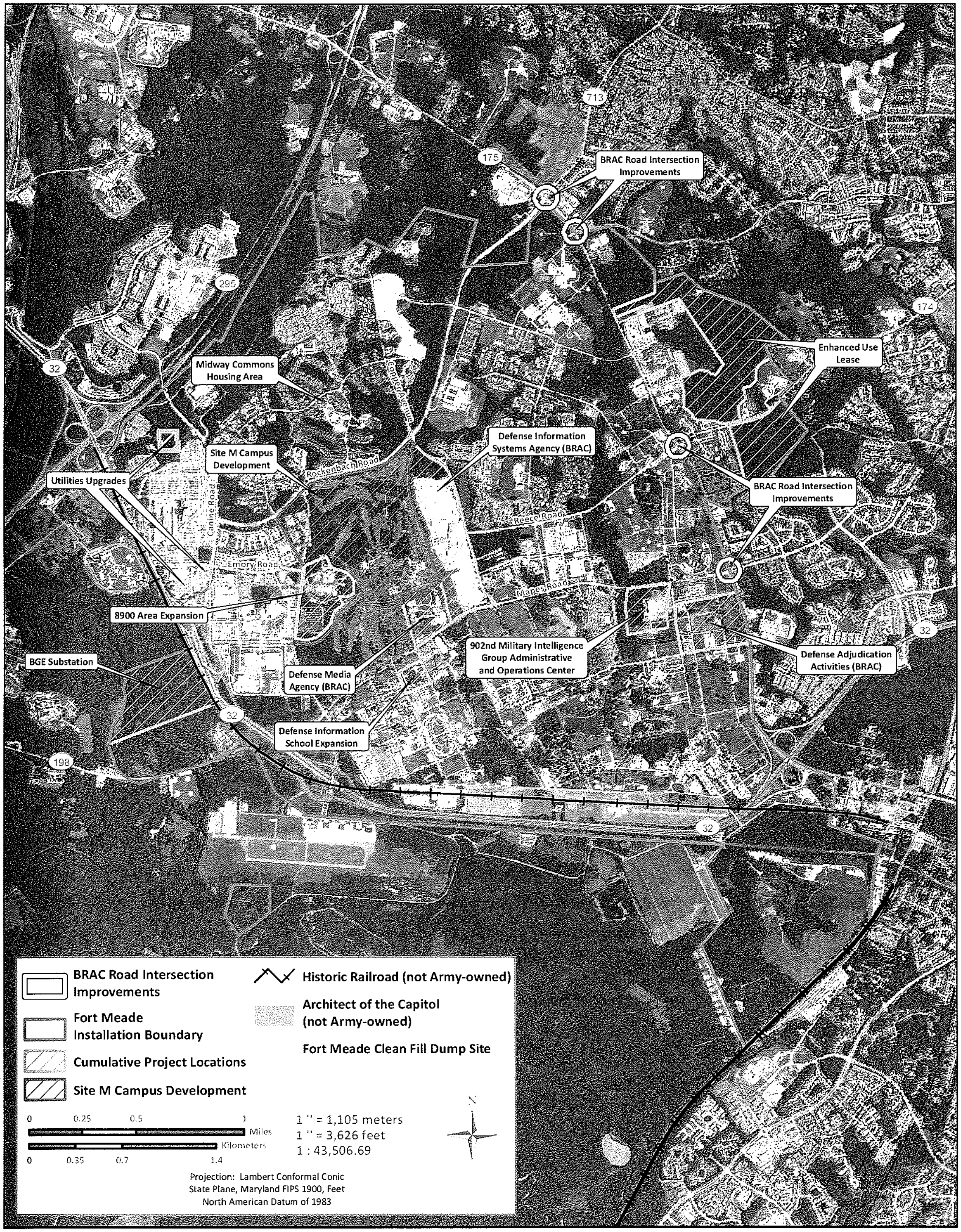
Past Actions. Prior to its establishment as a military reservation in 1917, Site M was used as farmland (DOD 2001). The area currently occupied by Site M was originally developed as the northern half of what was known as the Camp Meade cantonment area during World War I. Between World Wars I and II, the buildings were demolished and Site M was used as a firing range and training area, before being developed as a golf course in 1938. Development of the NSA campus to the west of Site M began in the mid-1950s when NSA became a tenant of Fort Meade (USACE Baltimore District 2004a). Past actions and development of the campus that could result in cumulative impacts would be encompassed in the description of the existing condition given in this EIS (see **Section 3**). Therefore, no specific past actions have been identified for cumulative impacts analysis.

Utilities Upgrades. DOD prepared an EIS for the replacement and modernization of utilities infrastructure on the NSA campus (DOD 2009a). The *Environmental Impact Statement for the Proposed Utilities Upgrade Project at Fort George G. Meade* analyzed the construction and operation of a utility plant, generator facility, and central boiler plant. Components of the utility plant include new transmission and distribution lines on the NSA campus, an electrical substation and associated switchgear, and an emergency generator facility and associated fuel storage. The proposed generator facility and associated fuel storage would upgrade emergency electrical power to an existing substation. The proposed Central Boiler Plant would replace an existing central boiler plant that is outdated and inefficient. No major impacts were identified; however, this project will be considered in the cumulative impacts analysis because of its proximity to the Proposed Action.

Base Realignment and Closure Actions. The U.S. Army prepared a ROD in November 2007 based on the *Final Environmental Impact Statement for Implementation of Base Realignment and Closure 2005 and Enhanced Use Lease Actions at Fort George G. Meade, Maryland* (the "BRAC/EUL EIS") (USACE Mobile District 2007). The DOD is consolidating and relocating DISA, DMA, and Department of Adjudication Activities to Fort Meade and these facilities are scheduled to open by September 2011. A Post Exchange, gym, and unaccompanied personnel housing would also be constructed on Fort Meade to provide facilities associated with accommodating additional incoming personnel. The locations of the major projects are shown in **Figure 2.4-1**. Combined, these projects would require approximately 3 million ft^2 (69 acres) of new facility and vehicle space. Major adverse impacts on traffic and transportation, vegetation and wildlife, and utilities were identified as a result of the associated increased personnel (approximately 5,700 people) and removal of forest (approximately 25 acres) (USACE Mobile District 2007). As a result of traffic impacts, intersection improvements are planned for four intersections along Maryland State Route (MD) 175 (see **Figure 2.4-1**). Construction activities for BRAC projects are underway and estimated to be completed in 2011 (Fort Meade RGMC 2009a). BRAC actions are considered in the cumulative impacts analysis.

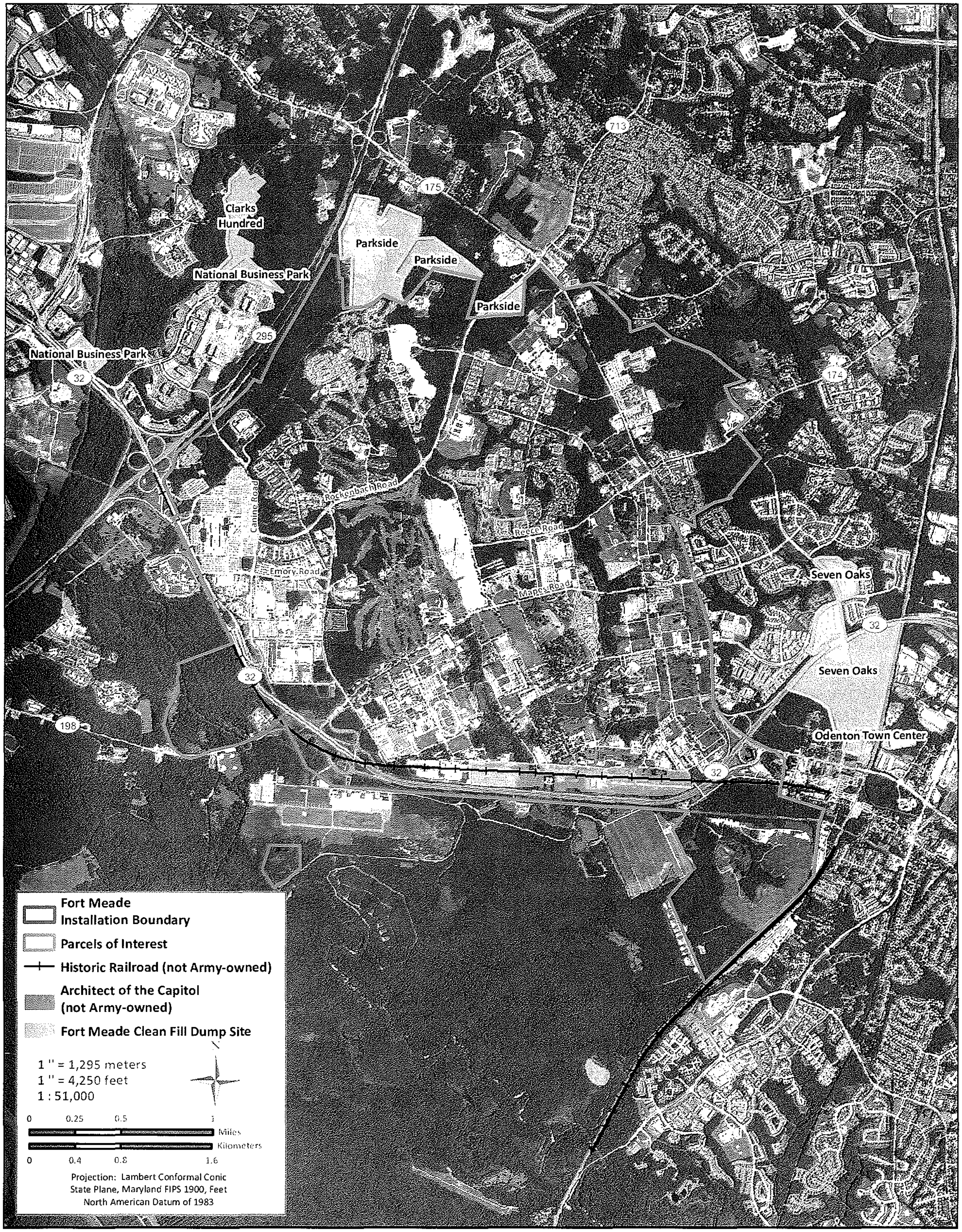
Enhanced Use Lease (EUL) Actions. The November 2007 ROD based on the BRAC/EUL EIS also identified excess land owned by Fort Meade to be leased to a private developer for the construction of office buildings (173 acres) and two 18-hole golf courses (367 acres) (see **Figure 2.4-1**). It is anticipated that approximately 2.0 million ft^2 (46 acres) would be developed for office space and parking. Major adverse impacts on traffic and transportation, vegetation and wildlife, and utilities were identified as a result of the associated increased personnel (approximately 10,000 people) and removal of forest (approximately 205 acres) (USACE Mobile District 2007). No construction plans or timelines have been determined at this time. However, EUL actions are considered in the cumulative impacts analysis.

Military Family Housing. In 2002, the U.S. Army transferred military family housing (MFH) responsibilities on Fort Meade to Picerne Military Housing through leasing agreements. The neighborhood closest to Site M is Midway Common. Midway Common is the largest MFH



Source of Potential Project Actions: HDR | e²M, Inc 2010; Source: of Boundary Data: Fort Meade GIS 2010; Source of Aerial Photography: USDA-APFO NAIP 2009.

Figure 2.4-1. Locations of Other Actions under Consideration for Cumulative Impacts



1 Source of Parcels of Interest: HDR | e²M, Inc 2010; Source: of Boundary Data: Fort Meade GIS 2010; Source of Aerial Photography: USDA-APFO NAIP 2009.

2 **Figure 2.4-2. Locations of Other Actions Outside of NSA and Fort Meade**

- *National Business Park* – National Business Park, owned by Corporate Office Properties Trust, is a 285-acre office park to the west of Site M and Fort Meade, on the west side of the BW Parkway. Tenants of National Business Park include primarily defense contractors such as Booz Allen Hamilton, Lockheed Martin, Northrup Grumman, Computer Sciences Corp, and Mitre Corp (Bell 2005, McIlroy 2006, Sernovitz 2009a). National Business Park has approximately 20 buildings totaling over 2 million ft^2 of office space and additional land that can support approximately 500,000 ft^2 (McIlroy 2006). Construction of a 161,000-ft^2 building began in July 2009. It is anticipated that government contractors associated with BRAC actions at Fort Meade will lease this office space (Sernovitz 2009b).
- *Clarks Hundred* – Clarks Hundred is a new development that will be an extension of the adjacent National Business Park. The office park consists of 178 acres. Construction of the first building, approximately 125,000 ft^2, was to begin in Fall 2009 for completion in 2011 (Sernovitz 2009a). The Clarks Hundred parcel is anticipated to have an estimated seven or eight buildings at full build-out (McIlroy 2006).
- *Seven Oaks* – Seven Oaks is a 725-acre mixed-use residential neighborhood to the east of Fort Meade. Development of Seven Oaks has been ongoing since 1987, and the majority of construction activities are complete. Seven Oaks consists primarily of 2,700 residential units with some commercial office space available. It is anticipated that many BRAC newcomers will seek a residence in Seven Oaks (Siegel 2008).
- *Odenton Town Center* – The Odenton Town Center will be a 128-acre area consisting of more than 5.5 million ft^2 of high-tech office and retail space to the east of Fort Meade. This area is being designed to accommodate several types of Federal government security requirements (AAEDC undated). The Odenton Town Center is a subarea of the Odenton Growth Management Area, which comprises approximately 1,600 acres of real estate that will be developed or redeveloped to provide shopping, entertainment, and access to transportation (e.g., MARC rail line) (Anne Arundel County 2008a).
- *Parkside* – Parkside, owned by Classic Group LLC, is a proposed mixed-use development consisting of 245 acres to the north of Fort Meade. The proposed development consists of 1,003 mixed residential units, 136,250 ft^2 of retail space, and 408,750 ft^2 of office space (AAEDC undated).

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SECTION 3

AFFECTED ENVIRONMENT

3. Affected Environment

3.1 Land Use

3.1.1 Definition of 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.

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 master plans/management plans and zoning regulations. In appropriate cases, the locations and extent of proposed actions need to be evaluated for their potential effects on project site and adjacent land uses.

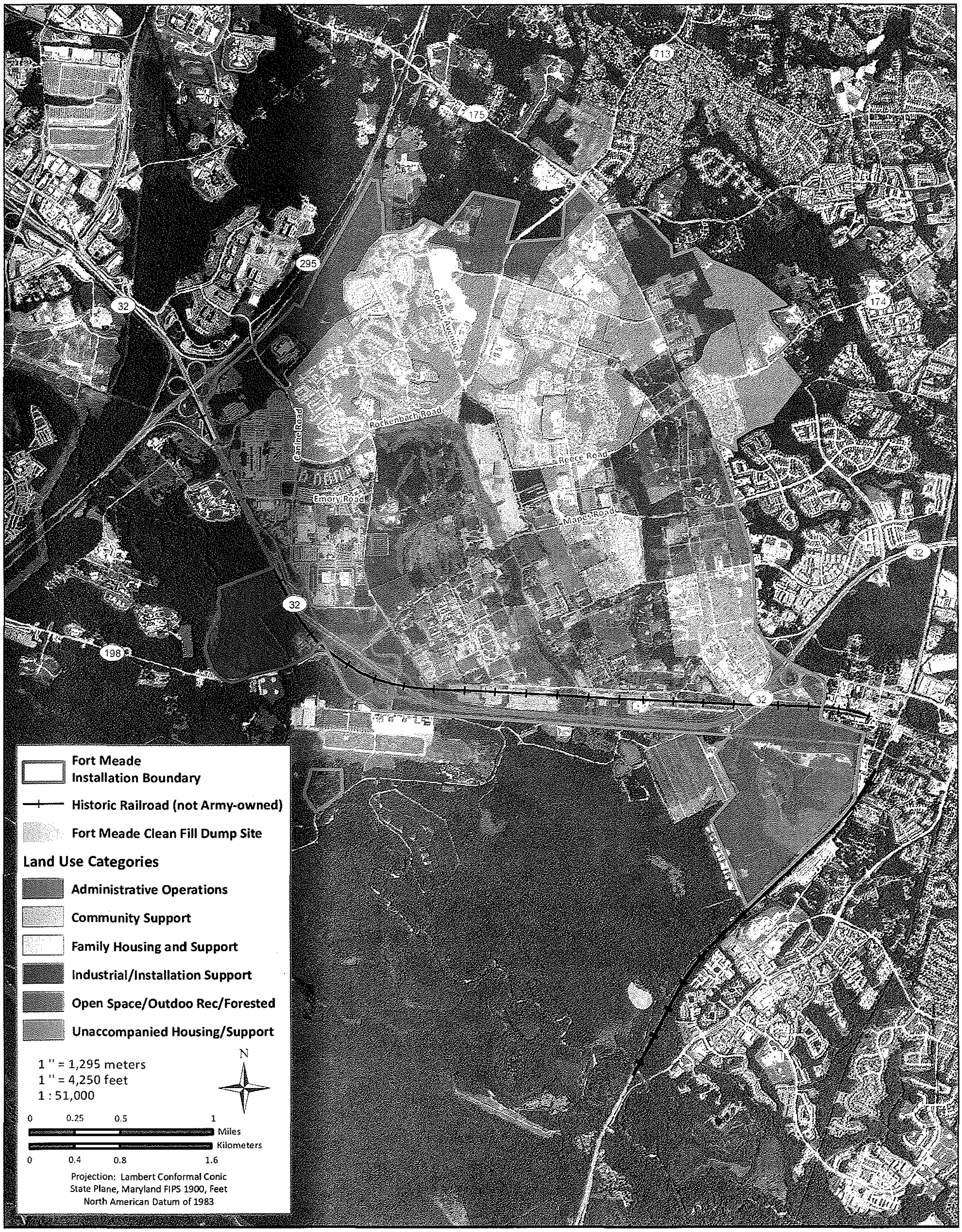
The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include existing land use at the project site, surrounding land use, and the duration of a proposed activity and its "permanence."

Visual resources are defined as the natural and man-made features that give a particular setting or area its aesthetic qualities. These features define the landscape character of an area and form the overall impression that an observer receives of that area. Evaluating the aesthetic qualities of an area is a subjective process because the value that an observer places on a specific feature varies depending on his/her perspective.

3.1.2 Existing Conditions

Fort Meade encompasses 5,067 acres in the northwestern corner of Anne Arundel County, Maryland. The installation is 17 miles southwest of Baltimore, Maryland, and 24 miles northeast of Washington, D.C. (see **Figure 3.1-1**). The installation is primarily composed of administration, intelligence operations, instructional institutions, family housing, and support facilities. Fort Meade is bounded by the BW Parkway (MD 295) to the northwest, Annapolis Road (MD 175) to the northeast, and Patuxent Freeway (MD 32) to the south and west. Other significant nearby transportation arteries include U.S. Route 1 and Interstate 95, which run parallel to and just to the west of the BW Parkway. Interstate 97, which connects Baltimore and Annapolis, is several miles east of Fort Meade (Fort Meade 2005b, USACE Mobile District 2007).

Fort Meade is part of the Baltimore Metropolitan Region, which includes Baltimore City and the five surrounding counties of Anne Arundel, Baltimore, Carroll, Harford, and Howard. Land use at Fort Meade is made up of general categories including Operations, Tenant Agency, Housing, Community, School (county), and Open Space (see **Table 3.1-1**). Fort Meade itself is zoned R1 Residential by Anne Arundel County but the county does not have jurisdiction over Federal land.



Source of Land Use: Fort Meade 2005b; Source: of Boundary Data: Fort Meade GIS 2010; Source of Aerial Photography: USDA-APFO NAIP 2009.

Figure 3.1-1. Existing Land Uses on Fort Meade

Table 3.1-1. Land Use at Fort Meade

Land Use	Approximate Acres	Percentage
Administrative Operations	1,422	28%
Community Support	593	12%
Family Housing and Support	1,140	22%
Industrial/Installation Support	571	11%
Open Space/Outdoor Recreation/Forested	1,093	22%
Unaccompanied Housing/Support	248	5%
Total	**5,067**	**100%**

Source: Fort Meade 2005b

On-installation. The northern half of Fort Meade is predominantly military family housing with schools. The southern half consists primarily of administrative, unaccompanied housing, and instructional operations. The Applewood and Park golf courses and retail center are between the northern and southern portions of the installation. The NSA campus is on the western edge of Fort Meade and is approximately 630 acres. The NSA campus is a mix of administrative and industrial functions that includes administrative and operations buildings, utilities, parking, and open space land uses (Fort Meade 2005b). Areas on Fort Meade surrounding the NSA campus include the Midway Common MFH neighborhood to the northeast, administrative facilities and barracks to the east, and open space to the southeast (DOD 2009a).

Site M makes up approximately 227 acres of Open Space and Tenant Agency land use and is bounded by O'Brien and 3rd Cavalry Road to the west, Rockenbach Road to the north, Cooper Avenue to the east, and Mapes Road to the south (Fort Meade 2005b). Zimborski and Taylor Avenues run north to south through Site M. Currently land use on Site M includes portions of the Applewood and Park golf courses and is zoned for Government Use and Recreation. Three buildings are currently associated with the golf course area: the maintenance facility, club house, and driving range service building. Site M was acquired by the DOD in 1919/1920 and was used for housing, training, and recreational purposes. The site has functioned as a golf course since the late 1930s (USACE Baltimore District 2004a).

The northwest portion of Site M includes two baseball fields and wooded areas that are within the Tenant Agency land use category (USACE Baltimore District 2004a). Existing land uses surrounding Site M include MFH to the north, the NSA campus to the west, and administration/operations to the east. Currently, DMA and DISA facilities are under construction east and south of Site M as reviewed in the 2007 BRAC EIS (see **Figure 2.4-1**). Future land use adjacent to Site M also potentially includes the Post Exchange, gym, and unaccompanied personnel housing, all south of Site M.

The U.S. Army supports morale, welfare, and recreation (MWR) programs at Fort Meade for military families and personnel. These programs and related facilities at Fort Meade include, but are not limited to, an arts and crafts center; fitness center; automotive skills center; outdoor recreation; and the Post library; child, youth, and school services; and the golf courses. MWR programs remain an important part of Fort Meade and the U.S. Army in providing recreational opportunities for military families and personnel. The club house area associated with the golf course hosts events through MWR programs on the installation. BRAC development for administrative use on the eastern portion of the golf courses has reduced the golf course from 36 to 27 holes. Currently the golf course supports numerous golf tournaments and recreational events for DOD personnel, family, and civilians. Fort Meade has two areas available for public access besides the golf courses, the Post Exchange and Commissary, which are currently in the central portion of the installation.

Fort Meade has developed a Comprehensive Expansion Management Plan (CEMP) to establish goals for future development conducive to high technology, intelligence, administrative, and training missions by current and future tenants over the next 30 years (Fort Meade 2005b). The CEMP envisions Fort Meade as a Federal campus, built for long-term sustainability for the mission and the environment (DOD 2009a). NSA completed a Real Property Master Plan in January 2009 to ensure the adequacy of the physical environment to support mission requirements and the introduction of new technology necessary to effectively implement the Intelligence Enterprise at the NSA campus (URS/LAD 2009). The land use vision of the NSA Real Property Master Plan includes supporting the collocation of appropriate organizations, promoting collaboration, and increasing efficiencies related to land use. The Fort Meade CEMP also envisions future public access and community support function land uses on the southeastern perimeter of the installation (Fort Meade 2005b). See **Section 2.5** and **Section 5** of this EIS for a discussion of cumulative actions related to Fort Meade.

Off-installation. Land use surrounding Fort Meade consists primarily of developed property that supports a growing population. Towns near Fort Meade include Odenton to the east, Jessup to the north, and Laurel to the west. The populations of Laurel, Jessup, and Odenton around Fort Meade have increased by approximately 3, 20, and 60 percent respectively between 1990 and 2000 (U.S. Census Bureau 2000). Areas to the north and east of Fort Meade are zoned for a range of residential uses with higher density residential units to the east. Areas to the northwest are zoned for residential with some industrial zoning areas as well. Zoning regulations to the west of Fort Meade establish a wide variety of residential, commercial, and industrial uses with large amounts of open space along the Little Patuxent River. Land use in these commercial and industrial areas is mostly government in nature. Areas to the south of Fort Meade are zoned for recreation and parks, including the 12,750-acre Patuxent Research Refuge (URS/LAD 2009, DOD 2009a).

Anne Arundel County has a General Development Plan that is a comprehensive land use plan prepared in compliance with state requirements and guidelines. It is a policy document that is formally adopted by the County Council. The General Development Plan establishes policies and recommendations to guide land use decisions over a 10- to 20-year planning period (Anne Arundel County 2009b).

Anne Arundel County has three designated "Town Centers," Glen Burnie, Parole, and Odenton, which are areas with a mix of general commercial and multifamily residential uses. The Odenton Town Center Master Plan was adopted in 2003 and establishes development and zoning regulations and guidelines to promote an attractive, viable, and pedestrian-friendly Transit Oriented Development center near the Odenton MARC rail station, southeast of Fort Meade (Anne Arundel County 2008b). The Odenton Growth Management Area is a 1,600-acre area encompassing major commercial and industrial zoned portions of Odenton that was established in 1990. Approximately 55 percent of the land in the Odenton Growth Management Area is developed. The remaining 45 percent is available for development and is one of the county's priority target areas for new growth given its public transit opportunities and its proximity to Fort Meade (Fort Meade 2005b, Anne Arundel County 2008b). The Odenton Town Plan is the guide for the future development of the Odenton Growth Management Area. The Odenton Town Plan identifies where new roads and community facilities should be located, as well as the type and intensity of future development in the different subareas (Anne Arundel County 2008b).

Maryland counties adopted Smart Growth initiatives in 1997 as guidelines for future development. Smart Growth initiatives call for mixed-use land development, walkable communities, preservation of open space, a variety of transportation options, and compact building design.

Visual Resources. Fort Meade has six visual zones based on the architectural character and land use patterns. These zones are different from land use categories shown in **Table 3.1-1**. In addition, there are three overlaying visual themes: the Georgian Revival, community life, and industrial. The six visual zones include:

- **Administrative Zones:** Four predominantly administrative areas compose the southern, western, central, and eastern zones. The southern administrative zone is one of the most prominent and visible areas of Fort Meade. It houses important buildings such as the Pershing and Hodges Halls and the McGlachlin Parade field. While a mix of uses and varying building scales exist in this zone, continuity is maintained through frequent use of red brick on building facades and uniform building setbacks. Predominant architectural style in the older sections is Georgian Revival and Colonial Revival. Mature tree-lined avenues and formal landscaping and road planning give this area a historical look. The western administrative zone is along the Patuxent Freeway (MD 32), and is characterized by large modern buildings. Overall site planning mirrors a modern industrial park-type character. The eastern administrative zone is along Annapolis Road (MD 175), and is characterized by relatively new buildings scattered amongst older World War II buildings. New buildings follow Georgian and Colonial Revival styles of architecture.
- **Unaccompanied Personnel Housing Zones:** Two areas, one near Site M and another in the 6th Cavalry area compose the unaccompanied personnel zone. This zone is characterized by several uses such as housing, administration, recreation, shops, dining halls, and chapels. With functions dedicated to the mission support of active military personnel, this zone is characterized with similar building layouts, uses, and purpose; however, the architectural style is not Georgian or Colonial Revival. Buildings have painted masonry facades and lack adequate landscaping and outdoor site planning.
- **Residential Zone:** Three distinct areas, an area in the north of the installation, an area in the central administrative zone area, and an area to the east of Annapolis Road (MD 175), compose the Residential Zone. While the dominant use in this zone is family housing, other support uses like schools, the chapel complex, convenience stores, and day care are also in this zone. This zone has a very definite image directly related to its function. Architectural styles promoted for new construction are Craftsman, Urban, Seaside, and Colonial.
- **Recreational Zones:** These zones are scattered throughout the installation and include the centrally located golf course and its associated buildings, and the Burba Park in the south. These zones are characterized by jogging trails, wooded picnic areas, thick tree cover, and green fields.
- **Community Support Zones:** Currently, in the central portion of the installation, this zone encompasses the Post Exchange mall, the Commissary, and Club Meade. With considerable new construction planned in the future, improved site planning, landscaping, and Colonial Revival architectural style can be incorporated.
- **Industrial Zones:** Industrial areas are scattered throughout the installation; however, Rock Avenue composes the main industrial corridor. Adequate landscaping and comprehensive use of shaded trees along streets is missing in this area. Most buildings are old wooden warehouse structures with the exception of a few new buildings with red brick facades and green standing seam metal roofs (USACE Mobile District 2007).

The Site M visual character is in the Western Administrative Zone and is bound by Rockenbach Road in the north; Mapes Road in the south; and the Midway Branch, a tributary of the Little Patuxent River, in the east. O'Brien Road cuts through the western part of the site dividing it into two separate parcels. There are no significant structures on the golf course parcels. The majority of the Proposed Action site has gently rolling contours with trees lining the existing golf course holes. Site M has open views to the east and south. Mature trees line Rockenbach Road in the north and buffer the MFH community from the site (USACE Mobile District 2007).

3.2 Transportation

3.2.1 Definition of Resource

This section documents existing transportation systems, conditions, and travel patterns in the vicinity of Fort Meade. The transportation systems consist of the road network and transit system (comprising rail and bus services). Available capacity and performance of the transportation system indicate the conditions that commuters and travelers encounter. The traffic network, vehicular traffic, travel patterns circulation, and parking are described for the modeled area. Traffic operations during the peak hour are evaluated, with emphasis on intersection levels of service (LOSs). The transportation system is addressed from a regional and a local perspective.

3.2.2 Existing Conditions

3.2.2.1 Study Area

Fort Meade is located along the northern side of Patuxent Freeway (MD 32), east of Baltimore-Washington Parkway (MD 295), on the western edge of Anne Arundel County, Maryland. It is favorably situated in proximity to the Baltimore-Washington International (BWI) airport and regional arterial and freeway facilities. A vicinity map is presented in **Figure 1.1-1**.

The proposed campus development site would be located in the southwestern quadrant of Rockenbach Road and Cooper Avenue, inside the Fort Meade installation. The area presently serves as a portion of the Fort Meade Golf Course. The northern portion of the site, fronting Rockenbach Road, is referred to as Proposed Action – Phase I. The portion of the site in-between the Phase I parcel and 3rd Cavalry Road is referred to as Phase II. The remaining portion of the site, south of Phase I and Phase II, is referred to as Phase III. Implementation of Proposed Action (Phase I) would be completed by Year 2015. Phases II and III are alternative development actions and would be built-out by Year 2020 and Year 2029, respectively. Location of the proposed site and associated phases are shown in **Figure 2.1-1**.

3.2.2.2 Transportation System Network

This section describes the internal and external roadway network surrounding Fort Meade, as well as the description of access control points (ACPs) for Fort Meade.

Internal Roadway Network (On-Installation)

Fort Meade is well-connected internally through arterial and collector roadways. The following describes major roadways inside Fort Meade:

- <u>Rockenbach Road (Route 713)</u>: It is a four-lane undivided roadway connecting Annapolis Road (MD 175) to the east and Canine Road to the west. Posted speed limit is 45 mph.
- <u>Reece Road (Route 174)</u>: It is a two-lane undivided roadway connecting Annapolis Road (MD 175) to the east and Cooper Avenue to the west. It also provides access to the military housing to the eastern side of MD 175. Posted speed limit is 25 mph.

- Mapes Road: It is a two-lane undivided roadway connecting Annapolis Road (MD 175) to the east and MD 32 to the west. Posted speed limit is 30 mph.
- Cooper Avenue: It is a two-lane undivided roadway connecting Llewellyn Avenue to the south and Rockenbach Road to the north. Cooper Avenue further traverses north of Rockenbach Road and provides access to the military housing. Posted speed limit is 25 mph.
- Other major roadways inside Fort Meade boundary include Llewellyn Avenue, O'Brien Road, Samford Road and Ernie Pyle Street.

External Roadway Network (Off-Installation)

Major highways serving Fort Meade include MD 295, MD 32, MD 175, and Fort Meade Road (MD 198). The following describes each of these highways:

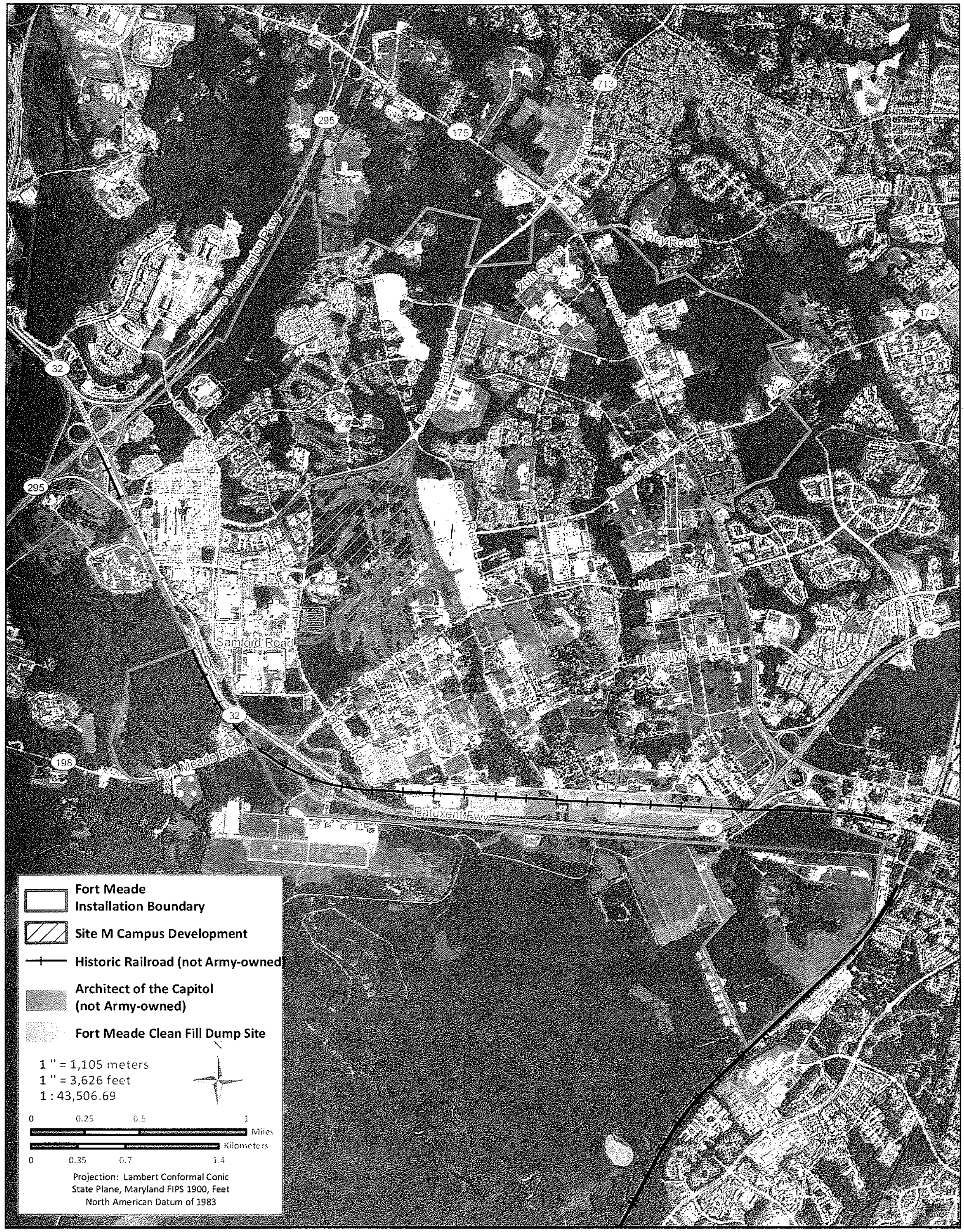
- Baltimore-Washington Parkway (MD 295): It is a freeway located along the west side of Fort Meade. It traverses in north-south direction connecting Baltimore to the north and Washington, DC, to the south. It carries two lanes in each direction.
- Patuxent Freeway (MD 32): It forms the southern boundary of Fort Meade. It is a limited access freeway that connects I-70 to the northwest and beyond and I-97 to the southeast. It carries two lanes in each direction.
- Annapolis Road (MD 175): It forms the northeastern boundary of Fort Meade connecting Columbia Pike (U.S. Route 29) to the north and MD 3 to the south. It is a two-lane to four-lane road in the vicinity of Fort Meade with auxiliary lanes at intersections.
- Fort Meade Road (MD 198): It is a two-lane undivided roadway on the east side of MD 295. It widens to a four-lane divided roadway to the west side of MD 295. It connects the Fort Meade ACP at Mapes Road to the east and U.S. Route 29 to the west.

Figure 3.2-1 is provided to illustrate the roadway network in the vicinity of Fort Meade.

Access Control Points

Access to Fort Meade, not including NSA, is provided via five ACPs. All ACPs are gated entry. Inspection is conducted for all inbound vehicles at each access point. Four ACPs are located on Rockenbach Road, Reece Road, Mapes Road, and Llewellyn Avenue, respectively, west of MD 175. The Llewellyn Avenue gate is closed at this time; however, it is opened for special events and to lessen traffic demand at the MD 175/Mapes Road ACP. An ACP is also located on Mapes Road east of MD 32.

Five current access points to NSA are located on Canine Road via MD 295 interchange, Canine Road via MD 32 interchange, O'Brien Road (north of Mapes Road), Rockenbach Road (east of Canine Road), and Samford Road via MD 32. **Table 3.2-1** summarizes the access control point locations.



Source of Potential Project Actions: HDR | e²M, Inc 2010; Source of Boundary Data: Fort Meade GIS 2010; Source of Aerial Photography: USDA-APFO NAIP 2009.

Figure 3.2-1. Roadway Network Surrounding Fort Meade

Table 3.2-1. Access Control Points

Gate Location	Type of Entry
Rockenbach Road @ MD 175	Fort Meade Employees
Reece Road @ MD 175	Fort Meade Employees, Visitors
Mapes Road @ MD 175	Fort Meade Employees
Llewellyn Avenue Road @ MD 175	Closed (open as needed for special events and to alleviate heavy traffic on at the MD 175/Mapes Road ACP)
Mapes Road @ MD 32	Fort Meade Employees, Truck Entry
Rockenbach Road @ Canine Road	Restricted – for NSA Employees only
O'Brien Road @ Mapes Road	Restricted – for NSA Employees only
Samford Road @ MD 32	Restricted – for NSA Employees only
Canine Road @ MD 32	Restricted – for NSA Employees only
Canine Road @ MD 295	Restricted – for NSA Employees only

Intermodal Transportation

Fort Meade, including current NSA areas, is accessible via several public transportation modes. Transit services serving Fort Meade are as follows:

Train Service

- Maryland Area Rail Commuter (MARC), operated by Maryland Transit Administration (MTA), provides rail services from Washington, DC, and Baltimore to Odenton Station and Savage Station in the Fort Meade area. The Odenton Station in Anne Arundel County and Savage Station in Howard County are along the Penn line and Camden line, respectively. Both of the train stations are within a 4-mile radius of Fort Meade. In the morning, there are 14 trips departing from Baltimore and 8 trips departing from Washington, DC (Union Station) to Fort Meade area stations. In the afternoon, there are 14 trips departing from Baltimore and 9 trips departing from Washington, DC. Additional limited service north of Baltimore includes stops at Martin Airport, Edgewood, Aberdeen, and Perryville.
- The closest Washington Metropolitan Area Transit Authority (WMATA) train station to Fort Meade is Greenbelt Metro Station. It is located in Prince George's County on the Green Line. However, there is no connecting bus service from the Metro Station to Fort Meade.

Bus Service

- K Route, operated by Corridor Transportation Corporation (CTC), provides peak hour service to Fort Meade. It operates from Arundel Mills to the Odenton MARC Rail Station. This route operates with 60-minute headway and provides two morning and two evening trips to Reece Road Gate at Fort Meade.
- F Route, also operated by CTC, provides service from Laurel to the NSA complex at Fort Meade. This route also operates with two morning and two evening trips.
- Route 17, operated by MTA, provides service from the Patapsco Light Rail Station to BWI airport, and it reaches within a 4-mile radius of Fort Meade.

Air Service

- BWI airport is within 10 miles of Fort Meade. The airport provides services to national and international locations. Connections to BWI are provided via other regional bus and train stations; however, a direct connection from Fort Meade does not exist.

Government Operated Shuttle Service

- NSA provides shuttle service between the Maryland Area Regional Commuter (MARC) Rail Station at Odenton and the NSA campus and Fort Meade to employees and civilians with proper identification. The shuttle operates seven morning trips from the Odenton MARC Rail Station to the NSA campus and the installation, and seven return trips in the evening from the NSA campus to the Odenton MARC Rail Station.
- The Link shuttle is operated by the BWI Business Partnership, a public policy organization. The shuttle circulates in and around the BWI Hotel District. The shuttle provides services between the BWI MARC Rail Station and the NSA Visitor Center Gate, including intermediate stops at the BWI Business Park Light Rail Station and the Friendship Annex (FANX) 3 Building. It operates Monday through Friday from 5 a.m. to 5 p.m.

Parking Facilities

There are approximately 112 acres of surface parking spaces and one small two-level parking structure on the NSA campus. Parking is provided throughout the NSA campus on surface lots adjacent to most buildings. Existing parking lots, including overflow parking, are at nearly 100 percent capacity on most weekdays during normal business hours. Currently, preferential parking spaces are assigned to NSA employees who carpool/vanpool (two or more people riding together). The NSA also participates in the Guaranteed Ride Home Program, administered by the BWI Business Partnership, for employees who carpool, vanpool, use public transportation, or ride a bike to work at least 3 days per week (URS/LAD 2009).

3.2.2.3 Existing Traffic Operations

The study area is composed of the intersections along MD 175, MD 32, and MD 174 that would be affected by the proposed campus development as well as BRAC and EUL actions. Additionally, the interchange of MD 295/MD 32 is considered in the analysis per the request of Fort Meade Regional Growth Management Committee (RGMC). **Table 3.2-2** summarizes the study area intersections list and the intersections are shown in **Figure 3.2-2**.

Existing Conditions: Traffic Volumes

Turning movement traffic counts for the intersection of O'Brien Road/Samford were performed during regular weekday AM (6 to 8) and PM (4 to 6) peak hours for this study. Traffic counts for all other study area intersections were obtained from the report titled *Fort Meade Installation-Wide Traffic and Safety Engineering Study* (DOD 2008b). Weekday peak hour traffic counts on the roadway/ramp links of MD 295/MD 32 interchange were obtained from the highway traffic monitoring team of Maryland State Highway Administration (SHA). The intersection traffic counts obtained from the Traffic and Safety Engineering Study and the interchange traffic counts obtained from the SHA team were conducted in Year 2007. In order to reflect the current (Year 2009) traffic volumes, an annual compounded growth rate of 4 percent per year was applied to the old counts through Year 2009 based upon the *Anne Arundel County Design Manual: Guidelines for Traffic Impact Studies*. Note that 4 percent growth is a realistic rate considering the recent economic climate.

Table 3.2-2. Study Area Intersection List

No.	Location	Intersection
1	Off-installation (Boundary)	MD 175 and Rockenbach Road/Ridge Road
2		MD 175 and Disney Road/26th Street
3		MD 175 and MD 174 (Reece Road)
4		MD 175 and Mapes Road
5		MD 175 and Llewellyn Avenue
6	Off-installation	Jacobs Road and MD 174 (Reece Road)
7	Off-installation (Boundary)	Mapes Road and MD 32 Eastbound Ramps
8		Mapes Road and MD 32 Westbound Ramps
9	On-installation (Internal)	Llewellyn Avenue and Ernie Pyle Street
10		Mapes Road and Ernie Pyle Street
11		Mapes Road and MacArthur Road
12		Mapes Road and Cooper Avenue
13		Mapes Road and Taylor Avenue
14		Mapes Road and O'Brien Road
15		O'Brien Road and Samford Road
16		O'Brien Road and Rockenbach Road
17		Cooper Avenue and Rockenbach Road
18		Reece Road and MacArthur Road
19	Off-installation	MD 295 and MD 32 Interchange
20		
21		
22		
23		

Figure 3.2-3 illustrates the AM/PM peak hour traffic volumes at each of the study area intersections and interchange links.

Existing Conditions: Capacity Analysis and Levels of Service

Traffic analyses were performed for the study area's signalized and unsignalized intersections using the latest version of traffic modeling and analysis software – Synchro version 7. Synchro/SimTraffic is the software application used in modeling traffic flow and optimizing traffic signal timing. AM/PM peak hour traffic volumes and lane configurations were programmed in Synchro to determine the intersection LOSs. Due to continual growth in the area, the existing signal timings at the signalized intersections are in need of constant adjustments. Therefore, in an effort to show the best-case conditions, existing traffic signal timings were optimized.

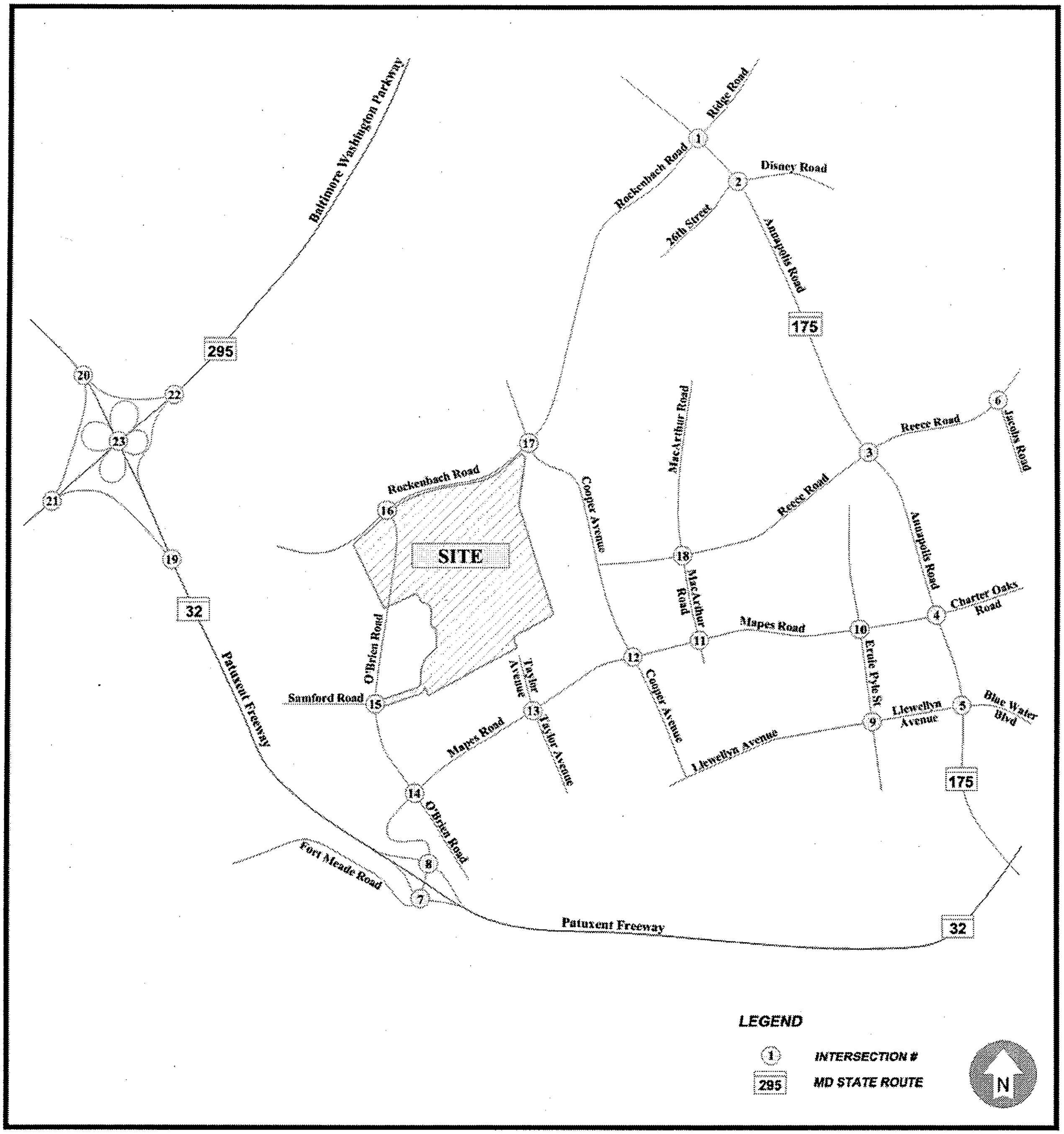


Figure 3.2-2. Study Area Intersections

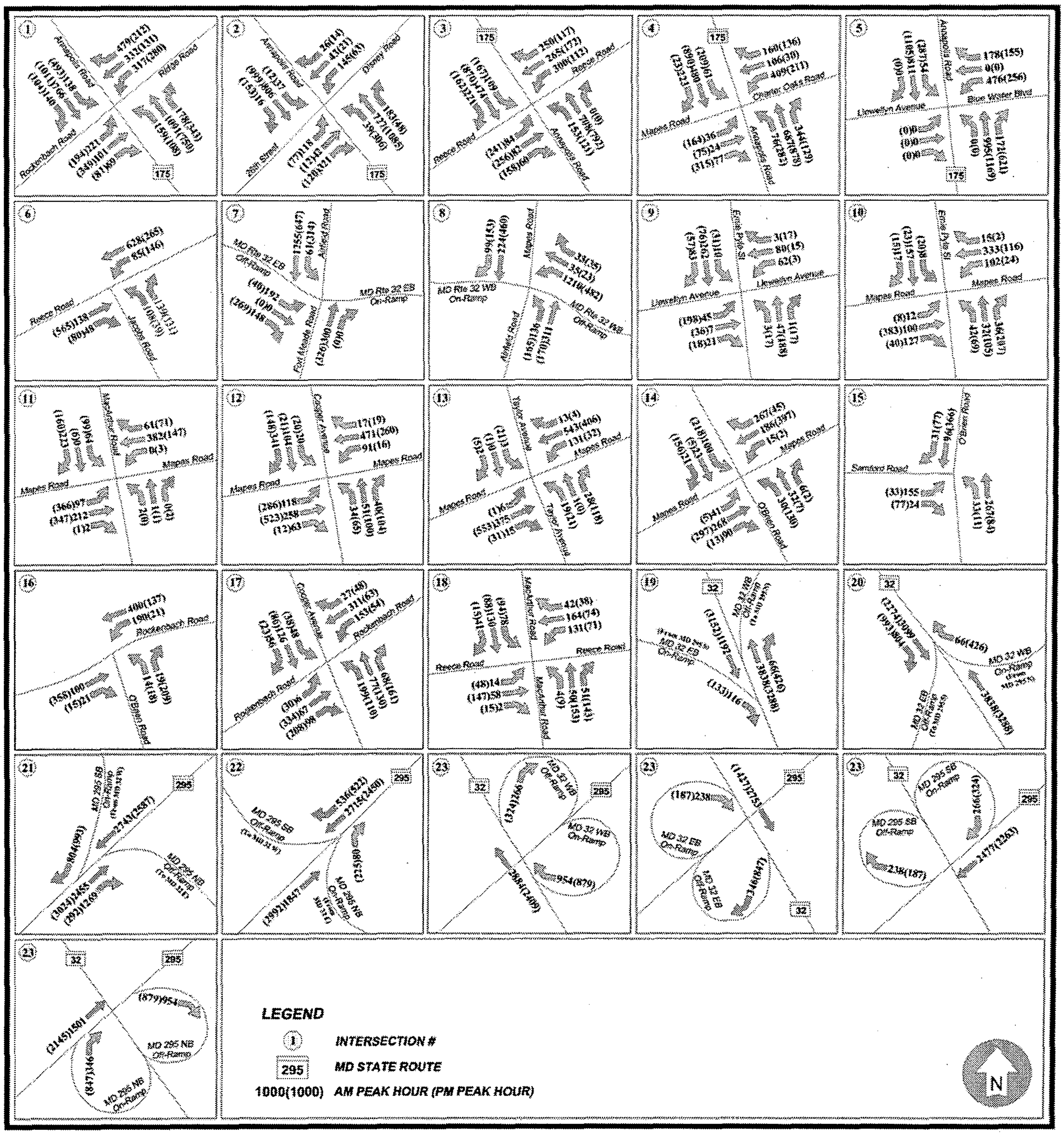


Figure 3.2-3. Existing Peak Hour Traffic Volumes (Year 2009)

Highway Capacity Software (HCS+) was utilized to analyze the weaving and merging/diverging conditions at the MD 295/MD 32 interchange.

The LOS describes the operational conditions of an intersection. It ranges from a LOS of A (least congested) through LOS F (most-congested). Per Anne Arundel County and State of Maryland standards, levels at D or better for an intersection would be a satisfactory level of service. The intersections operating with LOSs E or F are considered failed conditions.

Table 3.2-3 shows the general definition of each LOS category for a signalized intersection.

Table 3.2-3. LOS Definitions

Levels of Service	Operating Conditions	Delay (seconds per vehicle)
A	Free-flow condition	< 10
B	Little congestion	10–20
C	Moderate congestion	20–35
D	Approachable unstable flow with increasing congestion	35–55
E	Unstable flow, congested condition	55–80
F	Heavy congestion, stop and go	> 80

Source: TRB 2000

Figure 3.2-4 presents the existing AM/PM peak hour LOS results at all the study area intersections and interchange. The results are discussed after the figure.

As shown in **Figure 3.2-4**, the signalized intersection of MD 175 and Rockenbach Road would operate with LOS E during existing conditions, which is considered a failed intersection. All other signalized and unsignalized study area intersections would maintain LOS D or better, which is an acceptable LOS per the county and state standard.

Per the HCS+ analysis results for the MD 295 and MD 32 interchange, the weaving segment along MD 32 in the westbound direction between on-ramp and off-ramp would fail in AM and PM peak hour conditions. The weaving segment along MD 295 in northbound direction between on-ramp and off-ramp would also fail in PM peak hour conditions. The weaving segments along the MD 32 eastbound and the MD 295 southbound directions would maintain satisfactory LOS D or better. All the merging/diverging segments would also operate with desired LOSs.

3.3 Noise

3.3.1 Definition of Resource

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Noise can be intermittent or continuous, steady or impulsive, and can involve any number of sources and frequencies. It can be readily identifiable or generally nondescript. Human response to increased sound levels varies according to the source type, characteristics of the sound source, distance between source and receptor, receptor sensitivity, and time of day. Affected receptors can be specific (i.e., schools, churches, or hospitals) or broad areas (e.g., nature preserves or designated districts) in which occasional or persistent sensitivity to noise above ambient levels exists.

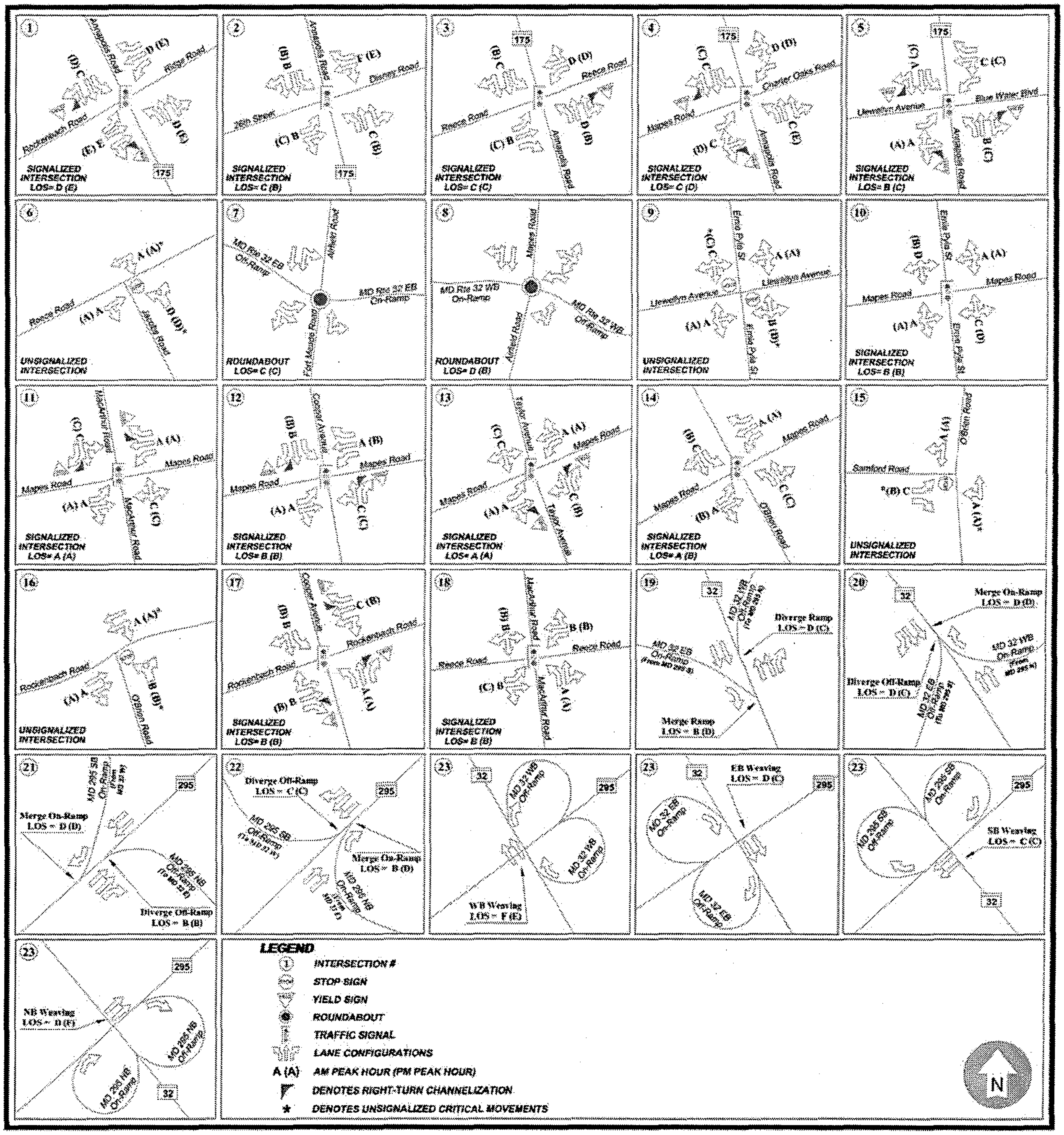


Figure 3.2-4. Existing Lane Geometry and Level of Service (Year 2009)

Noise Metrics. Sound varies by both intensity and frequency. Sound Pressure Levels (SPLs), described in decibels (dB) are used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of an SPL to a standard reference level. The cycles from high to low pressure each second, also called Hertz (Hz), are used to quantify sound frequency. The human ear responds differently to different frequencies. A-weighted decibels (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 sound-producing event to represent the way in which the average human ear responds to the audible event. All sound levels discussed in this EIS are A-weighted.

The SPL noise metric describes instantaneous noise levels; there is no time domain associated with an SPL. The equivalent noise level (L_{eq}) is often used to describe an average noise level occurring over a stated period of time, usually an hour. Being an average, it is the total energy of the noise, so it is easier to measure and a better indicator of the likelihood that a noise would generate complaints. Many noise standards and noise ordinances are based on L_{eq}. The Day-Night Average A-weighted Sound Level (DNL) is a form of 24-hour average noise level. DNL is the energy-averaged sound level measured over a 24-hour period, with a 10-dBA penalty assigned to nighttime noise events (10:00 p.m. to 7:00 a.m.) to account for increased annoyance. DNL is a useful descriptor for noise because it averages ongoing, yet intermittent, noise, and it measures total sound energy over a 24-hour period.

Federal Regulations. The Federal government has established noise guidelines and regulations for the purpose of protecting citizens from potential hearing damage and from various other adverse physiological, psychological, and social effects associated with noise. According to U.S. Army, Federal Aviation Administration, and the U.S. Department of Housing and Urban Development (HUD) 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 exposed to noise between 65 and 75 dBA, and "normally acceptable" in areas exposed to noise of 65 dBA or less. The Federal Interagency Committee on Noise developed land use compatibility guidelines for noise in terms of DNL (FICON 1992). For outdoor activities, the U.S. Environmental Protection Agency (USEPA) recommends a DNL of 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).

EO 12088, *Federal Compliance with Pollution Control Standards*, identified the head of each executive agency as being responsible for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to Federal facilities and activities under the control of the agency. The head of each executive agency is responsible for compliance with applicable pollution control standards, which includes the Noise Control Act of 1972 (Public Law [P.L.] 92-574). "Applicable pollution control standards" means the same substantive, procedural, and other requirements that would apply to a private person under the Act. The executive agency is responsible for submitting an annual plan for the control of environmental pollution, which shall provide for any necessary improvement in the design, construction, management, operation, and maintenance of Federal facilities and activities. The head of each executive agency also ensures that sufficient funds for compliance with applicable pollution control standards are requested in the agency budget.

Under the Noise Control Act of 1972, the Occupational Safety and Health Administration (OSHA) established workplace standards for noise. The minimum requirement states that constant noise exposure must not exceed 90 dBA over an 8-hour period. The highest allowable sound level to which workers can be constantly exposed to is 115 dBA, and exposure to this level must not exceed 15 minutes within an 8-hour period. The OSHA limit for instantaneous noise exposure, such as impact noise, is 140 dBA. An employer must administer a continuing, effective hearing conservation program as provided in 29 CFR Part 1910.95(c) if employee noise exposure equals or exceeds an 8-hour average sound level of 85 dBA.

One component of the program is that employers are required to provide hearing protection equipment that will reduce sound levels to acceptable limits (29 CFR Part 1910.95).

State Regulations. The State of Maryland's Environmental Noise Act of 1974 limits noise to the level that will protect health, general welfare, and property. The State of Maryland limits both the overall noise environment (see **Table 3.3-1**) and the maximum allowable noise level for residential, industrial, and commercial areas (see **Table 3.3-2**). Construction and demolition activities are exempt from the limits shown in **Tables 3.3-1** and **3.3-2** during the daytime hours (i.e., between 7:00 a.m. and 10:00 p.m.). For construction and demolition activities, a person may not cause or permit noise levels that exceed 90 dBA during daytime hours or the noise levels specified in **Table 3.3-2** during nighttime hours (i.e., between 10:00 p.m. and 7:00 a.m.). Blasting operations for construction and demolition activities are exempt from the limits shown in **Tables 3.3-1** and **3.3-2** during the daytime hours. In addition, noise from pile-driving activities is exempt from the limits shown in **Tables 3.3-1** and **3.3.2** during the daytime hours of 8 a.m. to 5 p.m. Emergency operations are completely exempt from the regulation (Code of Maryland Regulations [COMAR] 26.02.03).

Table 3.3-1. State of Maryland Overall Environmental Noise Standards

Zoning District	Sound Level (dBA)	Measure
Industrial	70	L_{eq} (24-hour)
Commercial	64	DNL
Residential	55	DNL

Source: COMAR 26.02.03

Table 3.3-2. Maximum Allowable Noise Levels for Receiving Land Use Categories

Day/Night	Maximum Allowable Noise Levels (dBA)		
	Industrial	Commercial	Residential
Day (7 a.m. to 10 p.m.)	75	67	65
Night (10 p.m. to 7 a.m.)	75	62	55

Source: COMAR 26.02.03

Per COMAR 26.02.03, an exception to the regulation may be requested if an individual feels that meeting the requirements is not practical in a particular case. The request must be submitted in writing to the MDE and must provide evidence as to why compliance is not practical.

Ambient Sound Levels. Noise levels vary depending on the housing density and proximity to parks and open space, major traffic areas, or airports. As shown on **Table 3.3-3**, the noise level in a normal suburban area is a DNL of about 55 dBA, which increases to 60 dBA for an urban residential area, and to 80 dBA in the downtown section of a city (USEPA 1974). Most people are exposed to sound levels of 50 to 55 dBA or higher on a daily basis.

Construction Sound Levels. Clearing and grading activities, and building construction, can cause an increase in sound that is well above the ambient level. A variety of sounds come from graders, pavers, trucks, welders, and other work processes. **Table 3.3-4** lists sound levels associated with common types of construction equipment that could be used under the Proposed Action and alternatives. 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 3.3-3. Typical Outdoor Noise Levels

DNL (dBA)	Location
50	Residential area in a small town or quiet suburban area
55	Suburban residential area
60	Urban residential area
65	Noisy urban residential area
70	Very noisy urban residential area
80	City noise (downtown of major metropolitan area)
88	3rd floor apartment in a major city next to a freeway

Source: USEPA 1974

Table 3.3-4. Predicted Noise Levels for Construction Equipment

Construction Category and Equipment	Predicted Noise Level at 50 feet (dBA)
Clearing and Grading	
Bulldozer	80
Grader	80–93
Truck	83–94
Roller	73–75
Excavation	
Backhoe	72–93
Jackhammer	81–98
Building Construction	
Concrete mixer	74–88
Welding generator	71–82
Pile driver	91–105
Crane	75–87
Paver	86–88

Source: USEPA 1971

3.3.2 Existing Conditions

Fort Meade, including current NSA areas, is relatively quiet with no significant sources of noise. The existing NSA campus does not have an airfield, heavy industrial operations, or heavy weapons ranges. The main source of noise on Fort Meade and the NSA campus is vehicular traffic. Other sources of noise on Fort Meade and the NSA campus include the normal operation of heating, ventilation, and air conditioning (HVAC) systems; military unit physical training; lawn maintenance; snow removal; and construction activities. None of these operations or activities produces excessive levels of noise.

Vehicular traffic is the major contributor to the ambient noise levels at Fort Meade (USACE Mobile District 2007). Two major highways in the region are adjacent to Fort Meade: MD 295 (BW Parkway) to the north and MD 32 (Patuxent Freeway) to the west. MD 295 and MD 32 provide direct access to the NSA campus area of the installation via ramps onto Canine Road, and MD 32 provides access to Fort Meade via ramps onto Mapes Road. In addition, the roadways in the immediate vicinity of Site M (Canine Road to the west, O'Brien Road on the western side of Site M-1, Rockenbach Road to the north, and Mapes Road to the south) are designated as primary roads within the installation and are, therefore, heavily used by Fort Meade and NSA personnel. Cooper Avenue east of Site M is designated as a secondary road (Fort Meade 2005b).

Another potential noise source is Tipton Airport, a public airport approximately 1.7 miles southwest of Site M-1 just south of the Fort Meade installation boundary (URS/LAD 2009). Approximately 135 aircraft operations per day are conducted at the airfield, primarily by transient general aviation aircraft (AirNav 2009). Aircraft noise in the Fort Meade area is low however, due to the fact that approach paths to the Tipton runway are oriented in an east-west direction, and commercial planes are not permitted to fly over the NSA campus. Occasional helicopter arrivals and departures from Fort Meade that are required for Naval Support Activity Washington's mission can increase the local ambient sound levels, but these events are generally of short duration (URS/LAD 2009).

The 2009 *Environmental Impact Statement for the Proposed Utilities Upgrade Project at Fort George G. Meade* estimated existing ambient noise levels at several locations within Fort Meade and the NSA campus. Noise levels were estimated to be between a DNL of 55 to 65 dBA, depending on the noise-sensitive receptor's proximity to major roadways (DOD 2009a). Therefore, existing ambient noise levels at Fort Meade and the NSA campus fall into the "normally acceptable" range as defined by U.S. Army, Federal Aviation Administration, and HUD criteria.

The Patuxent Research Refuge, administered by the USFWS, abuts the installation to the southwest. The northern tract of the refuge is directly across MD 32 from the installation; activities within the north tract include hunting, fishing, wildlife observation, trails, and many interpretive programs (USFWS 2009). Please see **Section 3.1.2** for more information on the refuge. An outdoor small arms firing range is within the northeastern corner of the refuge, approximately 5,000 feet east of Tipton Airport. The range is actively used by local law enforcement personnel as well as Federal and government personnel, for handgun and rifle proficiency training. Ambient noise levels in recreational areas vary from approximately 35 dBA in wilderness areas up to approximately 60 dBA in heavily used areas (USEPA 1974). Due to the multiple noise-generating activities adjacent to the northern portion of the Patuxent Research Refuge (i.e., Tipton Airport, the small arms range, and MD 32) the ambient noise level in this area would be expected to approach a suburban residential area, as shown in **Table 3.3-3.**

3.4 Air Quality

3.4.1 Definition of Resource

Air pollution is the presence in the outdoor atmosphere of one or more contaminants (e.g., dust, fumes, gas, mist, odor, smoke, or vapor) in quantities and of characteristics and duration such as to be injurious to human, plant, or animal life or to property, or to interfere unreasonably with the comfortable enjoyment of life and property. Air quality as a resource incorporates several components that describe the levels of overall air pollution within a region, sources of air emissions, and regulations governing air emissions. Below is a discussion of the regional climate, the National Ambient Air Quality Standards (NAAQS), local ambient air quality, and the State Implementation Plan (SIP) for the CAA for the Baltimore Region.

3.4.2 Existing Conditions

Regional Climate. The climate of the project area is affected by its proximity to the Chesapeake Bay, Delaware Bay, and Atlantic Ocean. The daily average high temperatures range from 40 degrees Fahrenheit (°F) during January to 87 °F during July. Daily average low temperatures range from 23 °F during January to 67 °F during July. The record minimum and maximum temperatures are -7 °F and 105 °F, respectively. The annual average precipitation amounts to 41 inches and is uniformly distributed throughout the year. The annual average snowfall amounts to 20 inches. At least a trace of precipitation occurs on approximately one-third of the days during the year. Prevailing winds are from the west-northwest. Southwesterly winds are more frequent during the summer months and northwesterly winds are more frequent during the winter months. The region is frequently under the influence of the Bermuda High Pressure System during the summer months. Air quality problems in the region are typically associated with this summer phenomenon (USACE Mobile District 2007).

National Ambient Air Quality Standards and Attainment Status. USEPA Region 3 and MDE regulate air quality in Maryland. The CAA (42 U.S.C. 7401–7671q), as amended, gives USEPA the responsibility to establish the primary and secondary NAAQS (40 CFR Part 50) that set acceptable concentration levels for seven criteria pollutants: particulate matter less than 10 microns (PM_{10}), $PM_{2.5}$, sulfur dioxide (SO_2), CO, NO_x, O_3, and lead. Short-term standards (i.e., 1-, 8-, and 24-hour periods) have been established for pollutants contributing to acute health effects, while long-term standards (i.e., annual averages) have been established for pollutants contributing to chronic health effects. Each state has the authority to adopt standards stricter than those established under the Federal program; however, the State of Maryland accepts the Federal standards.

Federal regulations designate air quality control regions (AQCRs) that have concentrations of one or more of the criteria pollutants that exceed the NAAQS as *nonattainment* areas. Federal regulations designate AQCRs with levels below the NAAQS as *attainment* areas. *Maintenance* areas are AQCRs that have previously been designated nonattainment and have been redesignated to attainment for a probationary period through implementation of maintenance plans. According to the severity of the pollution problem, nonattainment areas can be categorized as marginal, moderate, serious, severe, or extreme. Anne Arundel County (and therefore Fort Meade and NSA) is within the Baltimore Intrastate AQCR, or AQCR 115 (40 CFR 81.12). AQCR 115 is within the ozone transport region (OTR) that includes 11 states and Washington, DC. USEPA has designated Anne Arundel County as the following (40 CFR 81.321):

- Moderate nonattainment for the 8-hour O_3 NAAQS
- Attainment for all other criteria pollutants.

Local Ambient Air Quality. Existing ambient air quality conditions in the region can be estimated from measurements conducted at air quality monitoring stations close to the NSA campus. The most recent available data from MDE for nearby monitoring stations describe the existing ambient air quality conditions at Fort Meade, including current NSA areas (see **Table 3.4-1**). With the exception of the 8-hour O_3 NAAQS, most recent air quality measurements are below the NAAQS (USEPA 2008a). The reported measurement of 0.113 ppm for the 8-hour level exceeds the NAAQS of 0.08 ppm. This exceedance is expected because the region has been designated an O_3 nonattainment area.

State Implementation Plan. The CAA, as amended in 1990, mandates that state agencies adopt SIPs that target the elimination or reduction of the severity and number of violations of the NAAQS. SIPs set forth policies to expeditiously achieve and maintain attainment of the NAAQS.

Table 3.4-1. 2007 Local Ambient Air Quality Monitoring Results

Pollutant	Primary NAAQS[a]	Secondary NAAQS[a]	Monitored Data[b]
CO			
8-Hour Maximum[c] (ppm)	9	None	3.1
1-Hour Maximum[c] (ppm)	35	None	19
NO_2			
Annual Arithmetic Mean (ppm)	0.053	0.053	0.019
O_3			
8-Hour Maximum[d] (ppm)	0.08	0.12	0.113
$PM_{2.5}$			
Annual Arithmetic Mean[e] (µg/m3)	15	15	14.1
24-Hour Maximum[f] (µg/m3)	65	65	46
PM_{10}			
Annual Arithmetic Mean[g] (µg/m3)	50	50	29
24-Hour Maximum[c] (µg/m3)	150	150	64
SO_2			
Annual Arithmetic Mean (ppm)	0.03	None	0.004
24-Hour Maximum[c] (ppm)	0.14	None	0.021

Notes:

a. Source: 40 CFR 50.1–50.12.
b. Source: USEPA 2008a.
c. Not to be exceeded more than once per year.
d. The 3-year average of the fourth highest daily maximum 8-hour average O_3 concentrations over each year must not exceed 0.08 ppm.
e. The 3-year average of the weighted annual mean $PM_{2.5}$ concentrations at each monitor within an area must not exceed 15.0 $\mu g/m^3$.
f. The 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor must not exceed 65 $\mu g/m^3$.
g. The 3-year average of the weighted annual mean PM_{10} concentration at each monitor within an area must not exceed 50 $\mu g/m^3$.

Because the Baltimore Metropolitan Area is a moderate nonattainment area for the 8-hour O_3 NAAQS, the State of Maryland was required to develop SIPs that outline the actions that would be taken to achieve the 8-hour O_3 NAAQS. The current USEPA-approved regional air quality plans are the *Baltimore Nonattainment Area 8-Hour Ozone State Implementation Plan and Base Year Inventory* (MDE 2007). Within this plan, MDE compiles a regional emissions inventory and sets regional emissions budgets. The current USEPA-approved SIP revisions for the region estimates of NO_x and VOC are outlined below (see **Table 3.4-2**).

Since 1990, Maryland has developed a core of air quality regulations that have been approved by the USEPA. These approvals signified the development of the general requirements of the Maryland SIP. The Maryland program for regulation of air emissions affects industrial sources, commercial facilities, and residential development activities. Regulation occurs primarily through a process of reviewing engineering documents and other technical information, applying emissions standards and regulations in the issuance of permits, performing field inspections, and assisting industries in determining their compliance status with applicable requirements.

Table 3.4-2. 2009 Projected Annual Emissions Inventory for the Baltimore Nonattainment Area

Emission Source	Criteria Pollutant or Precursor Emissions (tpy)			
	NO_x	VOC	$PM_{2.5}$	SO_x
Point	23,644	3,903	3,291	113,942
Quasi-Point	3,401	500	408	2,189
Area	7,862	37,537	9,196	5,396
Non-Road	11,696	12,566	1,403	413
On-Road	36,502	13,460	686	320
Biogenics	635	33,527	0	0
Total	**83,742**	**101,496**	**14,987**	**122,261**

Source: MDE 2007

The CAA defines mandatory Class I Federal areas as certain national parks, wilderness areas, national memorial parks, and international parks that were in existence as of August 1977. There are no Class I areas in the State of Maryland. Class I Areas closest to the Site M include Shenandoah National Park and James River Face in Virginia, and Otter Creek and the Dolly Sods Wilderness Area in West Virginia (USEPA 2008b).

Clean Air Act Conformity. The 1990 amendments to the CAA require Federal agencies to ensure that their actions conform to the SIP in a nonattainment area. USEPA has developed two distinctive sets of conformity regulations: one for transportation projects and one for nontransportation projects. Nontransportation projects are governed by general conformity regulations (40 CFR Parts 6, 51 and 93), described in the final rule *Determining Conformity of General Federal Actions to State or Federal Implementation Plans*, published in the *Federal Register* on November 30, 1993. The General Conformity Rule requirements became effective January 31, 1994. Under Section 176(c) of CAA, the General Conformity Rule became applicable 1 year after the O_3 nonattainment designations became effective. Maryland has adopted the Federal conformity regulations by reference (COMAR 26.11.26.03). The Proposed Action is a nontransportation project within a nonattainment area. Therefore, a general conformity analysis is required with respect to the 8-hour O_3 NAAQS.

The General Conformity Rule specifies threshold emissions levels by pollutant to determine the applicability of conformity requirements for a project (see **Table 3.4-3**). For an area in moderate nonattainment for the 8-hour O_3 NAAQS within the OTR, the applicability criterion is 100 tons per year (tpy) for NO_x and 50 tpy for VOCs (40 CFR 93.153).

Mobile Sources. Mobile sources of concern include primarily automobiles and vehicular traffic. The primary air pollutants from mobile sources are CO, NO_x, and VOCs. Lead emissions from mobile sources have declined in recent years through the increased use of unleaded gasoline and are extremely small. Potential SO_2 and particulate emissions from mobile sources are small compared to emissions from point sources, such as power plants and industrial facilities. Air quality impacts from traffic are generally evaluated on two scales.

Table 3.4-3. Applicability Thresholds for Nonattainment Areas

Criteria pollutants	Applicability threshold (tpy)
O_3 (NO_x or VOCs)	
Serious Nonattainment Areas	50
Severe Nonattainment Areas	25
Extreme Nonattainment Areas	10
Other O_3 Nonattainment Areas outside an O_3 Transport Region	100
Marginal and Moderate Nonattainment Areas Inside an O_3 Transport Region	
VOC	**50**
NO_x	**100**
CO	100
All Nonattainment Areas	100
SO_2 or NO_x	
All Nonattainment Areas	100
PM_{10}	
Moderate Nonattainment Areas	100
Serious Nonattainment Areas	70
$PM_{2.5}$ ($PM_{2.5}$, NO_x)	
All Nonattainment Areas	100
Lead	
All Nonattainment Areas	25

Sources: 40 CFR 93.153 and 71 FR 40420

- *Mesoscale*—Mesoscale analysis is performed for the entire AQCR by the MDE. Potential emissions increases from additional vehicle miles traveled resulting from an action could affect regional O_3 levels. However, because these are problems of regional concern and subject to air transport phenomena under different weather conditions, regional impacts are generally evaluated using regional airshed models. Mesoscale analysis is not sensitive enough to detect changes due to a single project and generally not conducted on a project-specific basis. Additional information on mesoscale analysis for the region, regional modeling, and transportation conformity can be found in **Section 5.1**.
- *Microscale*—Microscale analysis is performed to identify localized hot spots of criteria pollutants. CO is a site-specific pollutant with higher concentrations found adjacent to roadways and signalized intersections. Microscale analysis is often conducted on a project-specific basis in regions where CO is of particular concern. Anne Arundel County, and therefore NSA and Fort Meade, is neither a nonattainment nor a maintenance area for CO; therefore, microscale analysis is not necessary for this EIS.

The project does not involve new intermodal freight or bus terminals, and major highway projects, or significant diesel traffic. The intersections affected are primarily secondary arterial roads, at which it is not expected for levels of $PM_{2.5}$ to exceed the NAAQS (USEPA 2008c). A detailed qualitative $PM_{2.5}$ analysis has not been conducted because the proposed action does not meet any of the following criteria:

- A new or expanded highway project that serves a significant volume of or will result in a significant increase in diesel vehicles, such as facilities with greater than 125,000 annual average daily traffic (AADT) and 8 percent or more of such AADT is diesel truck traffic.
- A project that creates a new, or expands or improves accessibility to an existing bus or rail terminal or transfer point that will have a significant number of diesel vehicles congregating at that location, or that is defined as regionally significant.
- A project that affects intersections that are at LOS D, E or F with a significant number of diesel vehicles, or that will change to LOS D, E or F because of increased traffic volumes from a significant number of diesel vehicles related to the project.
- A project otherwise considered a project of "air quality concern" as outlined in 40 CFR 93.123 (b)(1)(i),(ii),(iii) or (iv).

Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the CAA. The MSATs are compounds emitted from highway vehicles and nonroad equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. In the design year it is expected that MSAT levels could be higher in some locations than others, but current tools and science are not adequate to quantify them. However, on a regional basis, USEPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today (USDOT 2006).

Existing Emissions. Title V of the CAA requires states to establish an air operating permit program. The requirements of Title V are outlined in the Federal regulations in 40 CFR Part 70 and in the MDE's regulations at COMAR 26.11.03. The permits required by these regulations are often referred to as Title V or Part 70 permits. Based on its PTE, NSA is a major source of air emissions for NO_x. Stationary sources of air emissions at NSA include boilers, generators, and classified material reclamation furnaces. An NSA campus-wide Title V permit (No. 24-003-00317) was issued on April 1, 2005 (NSA 2005). As part of the Title V permit requirements, NSA must submit a comprehensive emissions statement annually. **Table 3.4-4** summarizes the 2008 NSA campus emissions from significant stationary sources. Fort Meade (not including NSA) holds a Synthetic Minor permit and has accepted federally enforceable limitations to ensure its emissions remain below the major source thresholds for all criteria pollutants. Because the activities described in this EIS would ultimately be located entirely on the NSA campus and would be under the direct control of NSA, all new stationary sources of emissions would be processed as an addition to the NSA campuswide Title V permit, and not Fort Meade's permit.

Table 3.4-4. 2008 Emissions from Significant Stationary Sources at NSA (tpy)

SO_x	CO	PM_{10}	$PM_{2.5}$	NO_x	VOC	Total HAP
9.38	3.13	0.85	0.01	39.77	2.61	0.31

Source: Vice 2009

Permitting Requirements. MDE oversees programs for permitting the construction and operation of new or modified stationary source air emissions in Maryland. Maryland air permitting is required for many industries and facilities that emit regulated pollutants. Based on the size of the emissions units and type of pollutants emitted (criteria pollutants or hazardous air pollutants [HAPs]), MDE sets permit rules and standards for emissions sources.

The air quality permitting process begins with the application for a construction permit. The generator facility, the boiler plant, and other stationary sources of air emissions would require permits to construct in one form or another. There are three types of construction permits available through the MDE for the construction and temporary operation of new emissions sources: Major New or Modified Source Construction Permits in Nonattainment Areas (Nonattainment New Source Review [NNSR]); Prevention of Significant Deterioration (PSD) permits in Attainment Areas; and Minor New Source Construction Permits (Minor New Source Review [NSR]).

NNSR and PSD permits are both part of the MDE Major NSR program. Thresholds that determine the type of construction permit that might be required depend on both the quantity and type of emissions. Thresholds requiring either an NNSR or a PSD permit for a modification to an existing source in Anne Arundel County are outlined in **Table 3.4-5**. PSD review and permitting is required for sources emitting 100 tpy of any regulated pollutant for any of 26 named PSD source categories. One of the named source categories is fossil fuel boilers that singly or in combination at a single facility total more than 250 MMBtu/hr heat input (COMAR 26.11.01.01B[37]). For all other sources not in the 26 named source categories, PSD review is required if the source emits 250 tpy or more of any regulated pollutant.

Table 3.4-5. Major Modification Thresholds of Criteria Pollutants within Anne Arundel County

Pollutant	New major source (tpy)		Major modification to an existing source [a] (tpy)	
	PSD[b]	NNSR	PSD	NNSR
CO	250 (100)	N/A	100	N/A
NO_x	N/A	25	N/A	25
SO_2	250 (100)	N/A	40	N/A
PM	250 (100)	N/A	25	N/A
PM_{10}	250 (100)	N/A	15	N/A
$PM_{2.5}$	250 (100)	N/A	10	N/A
VOCs	N/A	25	N/A	25

Source: COMAR 26.11.17.01 and 40 CFR Part 52

Notes:

a. Represents the project emission increase considered "significant."

b. PSD review and permitting is required for sources emitting 100 tpy of any regulated pollutant for fossil fuel boilers (or combination of them) totaling more than 250 MMBtu/hr heat input (COMAR 26.11.01.01B (37)).

Key: N/A = Not applicable

Nonattainment New Source Review. Major New or Modified Source Construction Permits in Nonattainment Areas (NNSR Permit) are required for any major new sources or major modifications to existing sources intended to be constructed in an area designated as nonattainment. Currently, when undergoing a physical or operational change, a source determines major NSR applicability through a two-step analysis. First, determine if the increased emissions from a particular proposed project alone are above the thresholds. If the emissions increase were below the threshold, a NNSR permit would not be required. Second, if the emissions increase is above the threshold a procedure called "netting" is applied to determine if the project's net emissions plus all contemporaneous increases and decreases in the previous 5 years at the source are above the thresholds (COMAR 26.11.17.01 B (16) and COMAR 26.11.17.02 F (1)). If this determination results in an increase that is lower than the threshold, a NNSR permit would not be required.

NNSR permits are legal documents that specify what construction is allowed; what emissions limits must not be exceeded; reporting, recordkeeping, and monitoring requirements; and often how the source can be operated. The NNSR permitting process typically takes 18 to 24 months. Specifically, typical requirements for a NNSR permit can include the following:

- Best Available Control Technology (BACT) review for qualifying attainment criteria pollutants
- LAER review for qualifying nonattainment pollutants (i.e., VOC and NO_x)
- Maximum Achievable Control Technology (MACT) review for HAPs
- Air quality analysis (predictive air dispersion modeling)
- Acquiring emissions offsets at a 1 to 1.3 or greater ratio for all contemporaneous emissions increases that have occurred or are expected to occur
- A public involvement process.

Prevention of Significant Deterioration. The PSD program protects the air quality in attainment areas. PSD regulations impose limits on the amount of pollutants that major sources may emit. The PSD process would apply to all pollutants for which the region is in attainment (all but O_3). The PSD permitting process typically takes 18 to 24 months to complete. Sources subject to PSD are typically required to complete the following:

- BACT review for criteria pollutants
- Predictive modeling of emissions from proposed and existing sources
- Public involvement.

Minor New Source Review. A Minor New, Modified, and certain Major Source Construction Permit (or Minor NSR permit) would be required to construct minor new sources, minor modifications of existing sources, and major sources not subject to NNSR or PSD permit requirements. The Minor NSR permitting process typically takes 4 to 5 months to complete. Sources subject to Minor NSR could be required to complete the following:

- BACT review for each criteria pollutant
- MACT review for regulated HAPs and designated categories
- Air quality analysis (predictive air dispersion modeling), upon request by MDE
- Establish procedures for measuring and recording emissions and process rates.

MD Public Service Commission (PSC). In Maryland, agencies constructing an electric generating station, including emergency back-up power, must apply for and obtain either 1) Certificate of Public Convenience and Necessity (CPCN) for larger power generation projects, or 2) or a CPCN waiver for smaller power generation projects that meet certain applicability thresholds established by the PSC.

Waivers are available for generating stations designed to provide on-site generated electricity where the capacity of the generating station does not exceed 70 megawatts.

Operation Permits. Under MDE's Title V Facility Permit regulations (COMAR 26.11.02 and 26.11.03), a Title V Significant Permit Modification is required for facilities whose emissions increases exceed the emissions thresholds outlined in **Table 3.4-5**. In addition, a Significant Permit Modification would be required if it became necessary to establish federally enforceable limitations to reduce potential emissions below the thresholds. A minor permit modification would be required if emissions were below the thresholds and a federally enforceable limit was not necessary. Submission of an application for these permit modifications would be required within 1 year of the first operation of a new emissions source.

Because this EIS has several separate project components that are being evaluated, it is important to assess how they can be combined or aggregated for permitting. Project emissions are aggregated from projects that are technically or economically dependent. A technically dependent project is incapable of being performed as planned in the absence of the other project. Economically dependent projects require each other for their economic viability. The generator plant and boiler plant are all both technically and economically independent of each other. Therefore, their emissions would not be aggregated for permitting purposes. Other stationary sources of air emissions would have to be reviewed on a case-by-case basis during the permitting process to make this determination.

In addition to the permitting requirements to construct and operate new or modified emissions sources, NSPS and National Emission Standards for Hazardous Air Pollutants (NESHAPs) set emissions control standards for categories of new stationary emissions sources of both criteria pollutants and HAPs.

The NSPS process requires USEPA to list categories of stationary sources that cause or contribute to air pollution that might reasonably be anticipated to endanger public health or welfare. The NSPS program sets uniform emissions limitations for many industrial sources. As of July 11, 2005, stationary diesel engines (such as back-up generators) are subject to NSPS. Applicability of the NSPS is based on engine size and date of purchase and construction. Limitations on emissions come into effect using a tiered approach over time, Tier 1 being the least restrictive and Tier 4 being the most. In addition, boilers and gas combustion turbines with a maximum heat input of 10 MMBtu/hr or greater would be required to comply with NSPS.

The CAA Amendments of 1990, under revisions to Section 112, required USEPA to list and promulgate NESHAPs to reduce the emissions of HAPs, such as formaldehyde, benzene, xylene, and toluene from categories of major and area sources (40 CFR Part 63). New stationary sources whose PTE HAPs exceeds either 10 tpy of a single HAP, or 25 tpy of all regulated HAPs, would be subject to MACT requirements.

Greenhouse Gases and Global Warming. Greenhouse gases (GHGs) are components of the atmosphere that trap heat relatively near the surface of the earth, and therefore, contribute to the greenhouse effect and global warming. Most GHGs occur naturally in the atmosphere, but increases in their concentration result from human activities such as the burning of fossil fuels. Global temperatures are expected to continue to rise as human activities continue to add carbon dioxide, methane, nitrous oxide, and other greenhouse (or heat-trapping) gases to the atmosphere. Most of the United States is expected to experience an increase in average temperature. Precipitation changes, which are also very important to consider when assessing climate change effects, are more difficult to predict. Whether or not rainfall will increase or decrease remains difficult to project for specific regions (USEPA 2010a, IPCC 2007).

The extent of climate change effects, and whether these effects prove harmful or beneficial, will vary by region, over time, and with the ability of different societal and environmental systems to adapt to or cope with the change. Human health, agriculture, natural ecosystems, coastal areas, and heating and cooling requirements are examples of climate-sensitive systems. Rising average temperatures are already affecting the environment. Some observed changes include shrinking of glaciers, thawing of permafrost, later freezing and earlier break-up of ice on rivers and lakes, lengthening of growing seasons, shifts in plant and animal ranges and earlier flowering of trees (USEPA 2010a, IPCC 2007).

Federal agencies, states, and local communities address global warming by preparing GHG inventories and adopting policies that will result in a decrease of GHG emissions. EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (October 5, 2009), outlines policies intended to ensure that Federal agencies evaluate climate change risks and vulnerabilities, and to manage the short- and long-term effects of climate change on their operations and mission. The EO specifically requires Federal agencies to measure, report, and reduce their greenhouse gas emissions from both their direct and indirect activities. Direct activities include sources the agencies own and control, and from the generation of electricity, heat, or steam they purchased. Indirect activities include their vendor supply chains, delivery services, and employee travel and commuting. NSA is in the process of inventorying their GHG emissions and setting reduction goals for year 2020 as outlined in the EO. NSA is not considered a major GHG emission source under the recent USEPA Mandatory Reporting of Greenhouse Gases Rule requiring the reporting of GHG emissions from large sources in the United States (USEPA 2010b).

3.5 Geological Resources

3.5.1 Definition of 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 geology, topography and physiography, soils, and, where applicable, geologic hazards and paleontology.

Geology is the study of the Earth's composition and provides information on the structure and configuration of surface and subsurface features. Such information derives from field analysis based on observations of the surface and borings to identify subsurface composition.

Topography and physiography pertain to the general shape and arrangement of a land surface, including its height and the position of its natural and human-made features.

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 (FPPA) of 1981. 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 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 FPPA is to minimize the extent that Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. The Act also ensures that Federal programs are administered in a manner that, to the extent practicable, will be compatible with private, state, and local government programs and policies to protect farmland.

The implementing procedures of the FPPA and Natural Resources Conservation Service (NRCS) require Federal agencies to evaluate the adverse effects (direct and indirect) of their activities on prime and unique farmland, as well as farmland of statewide and local importance, and to consider alternative actions that could avoid adverse effects. Determination of whether an area is considered prime or unique farmland and potential impacts associated with a proposed action are based on preparation of the farmland conversion impact rating form AD-1006 for areas where prime farmland soils occur and by applying criteria established at Section 658.5 of the FPPA (7 CFR 658). The NRCS is responsible for overseeing compliance with the FPPA and has developed the rules and regulations for implementation of the Act (see 7 CFR Part 658, 5 July 1984).

3.5.2 Existing Conditions

Physiography and Topography. The region around Fort Meade is in the Atlantic Coastal Plain physiographic province, characterized by relatively flat topography that gently slopes toward the east. The lowest elevation on the installation is less than 100 feet above mean sea level (msl) in the southwestern corner along Little Patuxent River. The highest elevation is recorded at 300 feet above msl in the northwestern corner of the installation. Minor variation in microtopography occurs throughout Fort Meade and is attributable to disturbance caused by development (USACE 2005). Slopes at Fort Meade are generally less than 10 percent grade (USACE Mobile District 2007).

Geology. The geologic history of the eastern United States is characterized by mountain-building processes and the cyclical opening and closing of a proto-Atlantic Ocean (USGS 2000). During the Alleghenian mountain-building event, shallow water marine sediments were uplifted, forming the Blue Ridge-South Mountain anticlinorium. During the Cenozoic Era (1.65 million years before present [BP] to Recent), the Blue Ridge-South Mountain anticlinorium began to erode, and Atlantic Coastal Plain sediments were deposited in lower elevations. Unconsolidated sand, clay, and silt compose the Atlantic Coastal Plain physiographic province. These sediments thicken towards the southeast, forming a wedge. Precambrian to early Cambrian igneous and metamorphic crystalline rocks underlie the sediments, and are exposed along the boundary between the Coastal Plain and Piedmont provinces several miles to the west of the installation.

Sediments underlying the Fort Meade region include interbedded, poorly sorted sand and gravel deposits up to 90 feet thick from the Pleistocene Epoch (100,000 to 1.65 million years BP); the Patapsco Formation (0 to 400 feet thick), the Arundel Clay (0 to 100 feet thick), and the Patuxent Formation (0 to 250 feet thick) of the Potomac Group, which were deposited during the Cretaceous period (138 to 63 million years BP) (USACE 2005a, MGS 2008). Metamorphic Precambrian bedrock underlies the Patuxent Formation (USACE 2005b). The Arundel Clay acts as a confining layer between the Lower Patapsco Aquifer and the Patuxent Aquifer, in the Patapsco and Patuxent Formations, respectively. This clay is composed of red, gray, and brown grains with some ironstone nodules and plant fragments. The Midway Branch stream borders Site M in its eastern boundary. Streams are underlain by alluvium such as interbedded sand, silt, and clay with minor gravel inclusions. See **Section 3.6.2** for a discussion on hydrology.

Soils. Thirty-nine distinct soil series are mapped at Fort Meade, but the primary soil series is the Evesboro complex. The Evesboro complex composes 42 percent of the installation and is a deep, well- to excessively drained sandy loam, which has only been slightly modified from the geologic parent material (U.S. Army 2007). Soils classified as Urban Land or Udorthents have also been mapped at Fort Meade. These classifications describe soils that have been modified and disturbed by earth-moving equipment or are composed of refuse, respectively.

Nine soil units have been mapped at Site M, including the Evesboro and Galestown soils, Patapsco-Evesboro-Fort Mott Complex, Downer-Hammonton Complex, Downer-Hammonton Urban Land Complex, Patapsco-Fort Mott Urban Land Complex, Sassafras and Croom soils, Zekiah and Issue silt loam, Udorthents, and Urban Land. All of these soils have been previously disturbed. Approximately 72 percent of soils mapped at Site M are classified as Evesboro and Galestown soils and Patapsco-Evesboro-Fort Mott Complex. The Evesboro and Galestown soils are classified as loamy sand with slopes ranging from 0 to 5 percent, and are somewhat excessively to excessively drained. The Patpsco-Evesboro-Fort Mott Complex is an excessively drained loamy sand with 0 to 5 percent slopes. All other soil units compose less than 10 percent of the soils mapped at Site M. **Table 3.5-1** lists the soil properties of soils mapped in order of descending extent at Site M (NRCS 2009).

Table 3.5-1. Soil Properties of Soils Mapped at Site M

Map Unit Name and Texture	Slope (percent)	Farmland Classification	Drainage	Road Limitations	Building Limitations
Evesboro and Galestown sandy loam	0 to 5	N	Excessively drained	S	V
Patapsco-Evesboro-Fort Mott sandy loam	0 to 5	St	Excessively drained	None	None
Downer-Hammonton complex loamy sand	2 to 5	P	Well-drained	None	None
Sassafras and Croom loam	15 to 25	N	Well-drained	V	V
Downer-Hammonton-Urban land complex	0 to 5	N	Moderately well drained	Not rated	Not rated
Patapsco-Fort Mott-Urban land complex	5 to 15	N	Somewhat excessively drained	S	V
Zekiah and Issue silt loam	0 to 2	N	Somewhat poorly drained	V	V
Downer-Hammonton complex loamy sand	5 to 10	St	Well-drained	S	V
Udorthents, refuse substratum	0 to 50	N	Well-drained	V	V
Urban Land	--	N	--	Not rated	Not rated

Source: NRCS 2009
Key:
P = prime farmland; St = farmland of statewide importance; N = not prime farmland; S = somewhat limited; V = very limited

Soils mapped at Site M are portrayed in **Figure 3.5-1**. At the site of the Proposed Action, four of the six soils mapped are rated as very limited for building construction. The Patapsco-Fort Mott Urban Land Complex, Evesboro and Galestown soils, and Udorthents are rated as very limited due to slope. The Zekiah and Issues silt loam flanks the Midway Branch stream and therefore is rated as very limited due to its flooding potential. Soils classified as very limited for roads at the Site of the Proposed Action would be the Zekiah and Issue silt loam (due to flood potential) and Udorthents (due to slope and shrink-swell potential). The Patpsco-Fort Mott Urban Land Complex and the Evesboro and Galestown soils are rated as somewhat limited for road construction because of slope (NRCS 2009). The Patapsco-Evesboro-Fort

Mott Complex and Downer-Hammonton Complex (2 to 5 percent slopes) are rated as having no limitation for building or road construction.

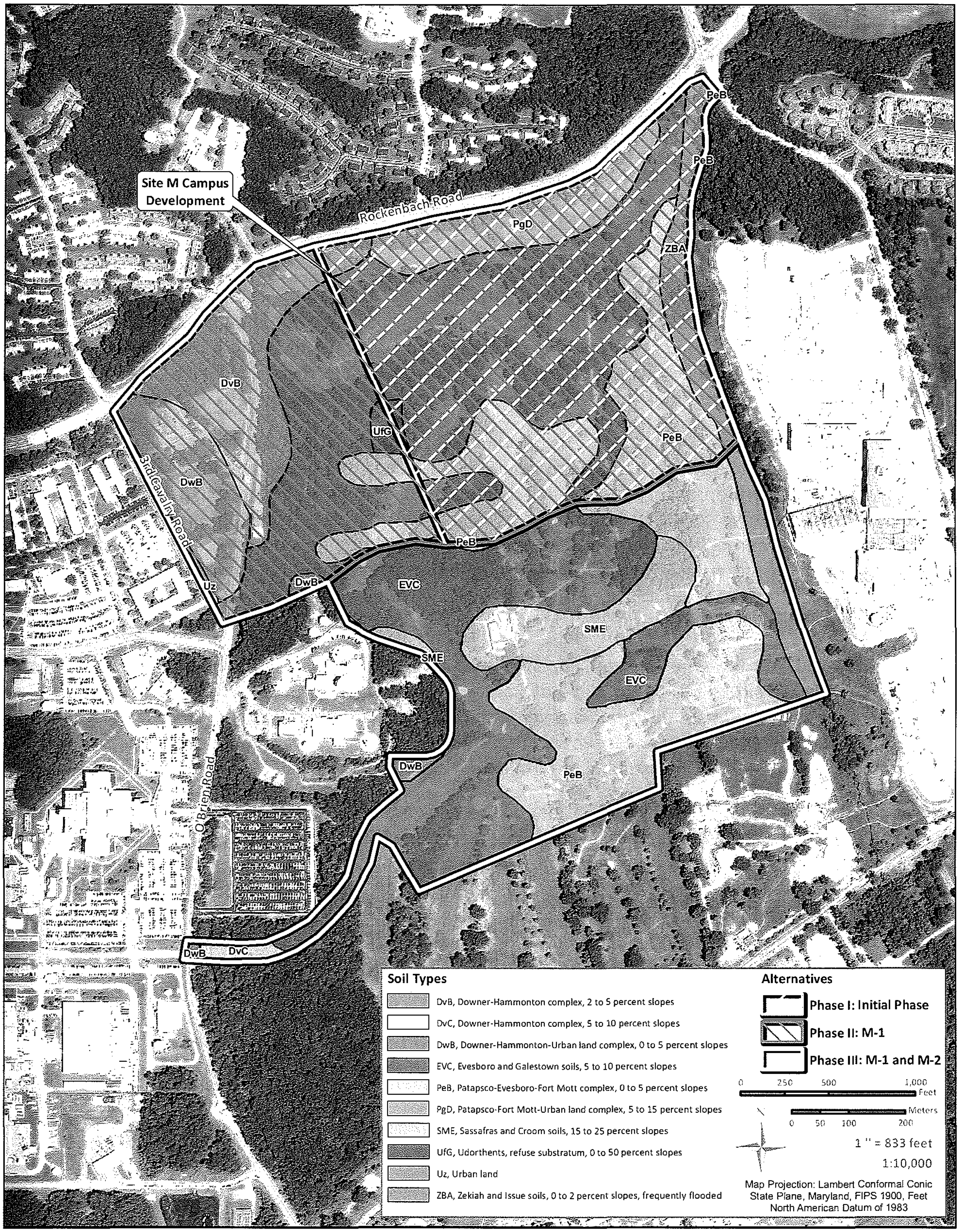
At Site M-1 (Phase II), the only soil rated as having any limitations to building or road construction is the Evesboro-Galestown soil. This soil is rated as very limited due to slope for buildings, and somewhat limited due to slope for roads. The Downer-Hammonton complex (2 to 5 percent slopes) and the Patapsco-Evesboro-Fort Mott complex are rated as having no limitations to building or road construction (NRCS 2009).

In addition to the soils mapped for Phase I and Phase II, soils mapped for Phase III include Sassafras and Croom soils and the Downer-Hammonton Complex (5 to 10 percent slopes). These soils are rated as very limited for both building and road construction primarily due to slope. The Sassafras and Croom soils also have shrink-swell potential as a building constraint, the Downer-Hammonton Complex (5 to 10 percent slopes) is limited for building construction due to the depth to saturation. The Patapsco-Evesboro-Fort Mott Complex and Downer-Hammonton-Urban Land Complex are rated as having no construction limitations for roads or buildings within all of Site M (NRCS 2009).

Hydric Soils. The Zekiah component of the Zekiah and Issue silt loam mapping unit is designated as a hydric soil. Hydric soils are soils that are saturated, flooded, or ponded for long enough during the growing season to develop anaerobic (oxygen-deficient) conditions in their upper part. Anaerobic soil conditions are conducive to the establishment of vegetation that is adapted for growth under oxygen-deficient conditions and is typically found in wetlands (hydrophytic vegetation). The presence of hydric soil is one of the three criteria (hydric soils, hydrophytic vegetation, and wetland hydrology) used to determine that an area is a wetland based on the USACE *Wetlands Delineation Manual*, Technical Report Y-87-1 (USACE 1987). See **Section 3.7.1** for a discussion of wetlands on Site M.

Prime Farmland. Of the nine soil units mapped within Site M, one soil is considered a prime farmland soil, and two are considered to be farmland of statewide importance soils (NRCS 2009). However, these soils have all been previously disturbed and modified, and no agricultural use of these lands occurs or is planned to occur. Therefore the areas where these soils occur are not available for use in agriculture and would not be considered prime farmland or farmland of statewide importance.

Geologic Hazards. Geologic hazards are defined as a natural geologic event that can endanger human lives and threaten property. Examples of geologic hazards include earthquakes, landslides, sinkholes, and tsunamis. The U.S. Geological Survey (USGS) has produced seismic hazards maps based on current information about the rate at which earthquakes occur in different areas and on how far strong shaking extends from the quake source. The hazard maps show the levels of horizontal shaking that have a 2 in 100 chance of being exceeded in a 50-year period. Shaking is expressed as a percentage of the force of gravity (percent g) and is proportional to the hazard faced by a particular type of building. In general, little or no damage is expected at values less than 10 percent g, moderate damage could occur at 10 to 20 percent g, and major damage could occur at values greater than 20 percent g. The 2008 United States National Seismic Hazards Map shows that the region of Fort Meade has a very low seismic hazard rating of approximately 6 percent g (USGS 2009). No other potential geologic hazards are identified for the project areas.



Sources: Potential Project Actions: HDR | e²M, Inc 2010; Soils: USDA, 2006; Aerial Photography: USDA-APFO NAIP 2009.

Figure 3.5-1. Soil Types on Site M

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 that functions to recharge surface water and is 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 generally consist of wetlands, lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. 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 in order to restore and maintain the chemical, physical, and biological integrity of the water. The NPDES program regulates the discharge of point (end of pipe) and nonpoint sources (storm water) of water pollution. Section 404 of the CWA regulates the discharge of fill material into waters of the United States, which includes wetlands. Waters of the United States are defined within the CWA, as amended, and jurisdiction is addressed by the USEPA and the U.S. Army Corps of Engineers (USACE). These agencies assert jurisdiction over (1) traditional navigable waters, (2) wetlands adjacent to navigable waters, (3) nonnavigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months), and (4) wetlands that directly abut such tributaries. A water body can be deemed impaired if water quality analyses conclude that exceedances of water quality standards, established by the CWA, occur. The CWA requires that Maryland establish a Section 303(d) list to identify impaired waters and establish Total Maximum Daily Loads (TMDLs) for the sources causing the impairment. A TMDL is the maximum amount of a substance that can be assimilated by a water body without causing impairment.

The USEPA issued a Final Rule for the CWA concerning technology-based Effluent Limitations Guidelines and New Source Performance Standards for the Construction and Development point source category. All NPDES storm water permits issued by the USEPA or states must incorporate requirements established in the Final Rule. This Rule is effective February 1, 2010, and will be phased in over 4 years. All new construction sites are required to meet the non-numeric effluent limitations and to design, install, and maintain effective erosion and sedimentation controls, including the following:

- Control storm water volume and velocity to minimize erosion
- Minimize the amount of soil exposed during construction activities
- Minimize the disturbance of steep slopes
- Minimize sediment discharges from the site
- Provide and maintain natural buffers around surface waters
- Minimize soil compaction and preserve topsoil where feasible.

In addition, construction site owners and operators that disturb one or more acres of land are required to use BMPs to ensure that soil disturbed during construction activities does not pollute nearby water bodies. Effective August 1, 2011, construction activities disturbing 20 or more acres must comply with the numeric effluent limitation for turbidity in addition to the non-numeric effluent limitations. The maximum daily turbidity limitation is 280 nephelometric turbidity units (ntu). On February 2, 2014, construction site owners and operators that disturb 10 or more acres of land are required to monitor discharges to ensure compliance with effluent limitations as specified by the permitting authority. The USEPA's limitations are based on its assessment of what specific technologies can reliably achieve. Permittees can select management practices or technologies that are best suited for site-specific conditions.

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. Proper management of storm water flows, which can be intensified by high proportions of impervious surfaces associated with buildings, roads, and parking lots, is important to the management of surface water quality and natural flow characteristics. Prolonged increases in storm water volume and velocity associated with development and increased impervious surfaces has the potential to impact adjacent streams as a result of stream bank erosion and channel widening or down cutting associated with the adjustment of the stream to the change in flow characteristics. Storm water management systems are typically designed to contain runoff onsite during construction and to maintain predevelopment storm water flow characteristics following development, through either the application of infiltration or retention practices. Maintaining storm water flows onsite during construction reduces potential for the transport of sediments or construction-related pollutants into adjacent water bodies during or as the result of storm events. Properly designed permanent storm water management practices following site development maintain or reduce predevelopment storm water flow volumes and velocity. 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.

Construction activities, such as clearing, grading, trenching, and excavating, disturb soils and sediment. If not managed properly, disturbed soils and sediments can easily be washed into nearby water bodies during storm events, where water quality is reduced. Section 438 of the Energy Independence and Security Act (EISA) (42 U.S.C. Section 17094) establishes into law new storm water design requirements for Federal construction projects that disturb a footprint greater than 5,000 ft^2 of land. The project footprint consists of all horizontal hard surfaces and disturbed areas associated with the project development, including both building area and pavements such as roads, parking lots, and sidewalks. Note that these requirements do not apply to resurfacing of existing pavements. Under these requirements, predevelopment site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. Predevelopment hydrology would be modeled or calculated using recognized tools and must include site-specific factors such as soil type, ground cover, and ground slope. Site design would incorporate storm water retention and reuse technologies such as bioretention areas, permeable pavements, cisterns/recycling, and green roofs to the maximum extent technically feasible. Post-construction analyses would be conducted to evaluate the effectiveness of the as-built storm water reduction features. As stated in a DOD memorandum dated January 19, 2010, these regulations will be incorporated into applicable DOD UFC within 6 months (DOD 2010). Additional guidance is provided in the USEPA's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act.*

Maryland's Stormwater Management Act of 2007 requires establishing a comprehensive process for storm water management approval and that Environmental Site Design (ESD), through the use of nonstructural BMPs and other better site design techniques, be implemented to the maximum extent practicable. ESD is defined as "...using small-scale storm water management practices, nonstructural techniques, and better site planning to mimic natural hydrologic runoff characteristics and minimize the impact of land development on water resources." Under this definition, ESD includes optimizing conservation of natural features (e.g., drainage patterns, soil, vegetation), minimizing impervious surfaces (e.g., pavement, concrete channels, roofs), and slowing runoff to maintain discharge timing and to increase infiltration and evapotranspiration. "Maximum extent practicable" is defined as designing storm water management systems so that all reasonable opportunities for using ESD planning techniques and treatment practices are exhausted before a structural BMP is implemented. The Stormwater Management Act emphasizes that structural storm water control practices be used only where absolutely necessary (MDE 2009c).

Designers must now ensure that storm water management plans are designed with the following criteria:

- Prevent soil erosion from development projects
- Prevent increases in nonpoint pollution
- Minimize pollutants in storm water runoff from both new development and redevelopment
- Restore, enhance, and maintain chemical, physical, and biological integrity of receiving waters to protect public health and enhance domestic, municipal, recreational, industrial, and other uses of water as determined by MDE
- Maintain 100 percent of the average annual predevelopment groundwater recharge volume
- Capture and treat storm water runoff to remove pollutants
- Implement a channel protection strategy to protect receiving streams
- Prevent increases in the frequency and magnitude of out-of-bank flooding from large, less frequent storms
- Protect public safety through the proper design and operation of storm water management facilities (MDE 2009c).

3.6.2 Existing Conditions

Groundwater. Three aquifers underlie Fort Meade: Upper Patapsco, Lower Patapsco, and the Patuxent. Flow from all three aquifers is generally toward the southeast. The aquifers are composed of unconsolidated silt, sand, and gravel. The Upper Patapsco Aquifer is unconfined and considered to be the water table aquifer. The Middle Patapsco Clay unit is the confining layer between the Upper and Lower Patapsco aquifers. The Arundel Clay is the confining layer between the Lower Patapsco Aquifer and the Patuxent Aquifer. The Patuxent Aquifer is confined above by the Arundel Clay and below by crystalline bedrock of the Baltimore Mafic Complex (U.S. Army 2007). The Upper Patapsco Aquifer's average thickness is 250 feet. The aquifer is under confined conditions and is one of the best waterbearing formations in Anne Arundel County. The Lower Patapsco Aquifer is capable of yielding 0.5 to 2 million gallons per day (mgd) of water from individual wells in most localities and is a source of water for several large wells within the region. The Patuxent Aquifer is capable of yielding large quantities of water. The aquifer is at or near the surface near the fall line (the boundary between the Coastal Plain and Piedmont Physiographic Provinces) and dips below the surface as it moves eastward. The aquifer is between 200 and 400 feet thick beneath Fort Meade. Fort Meade withdraws potable water from the Patuxent Aquifer (Fort Meade 2005c).

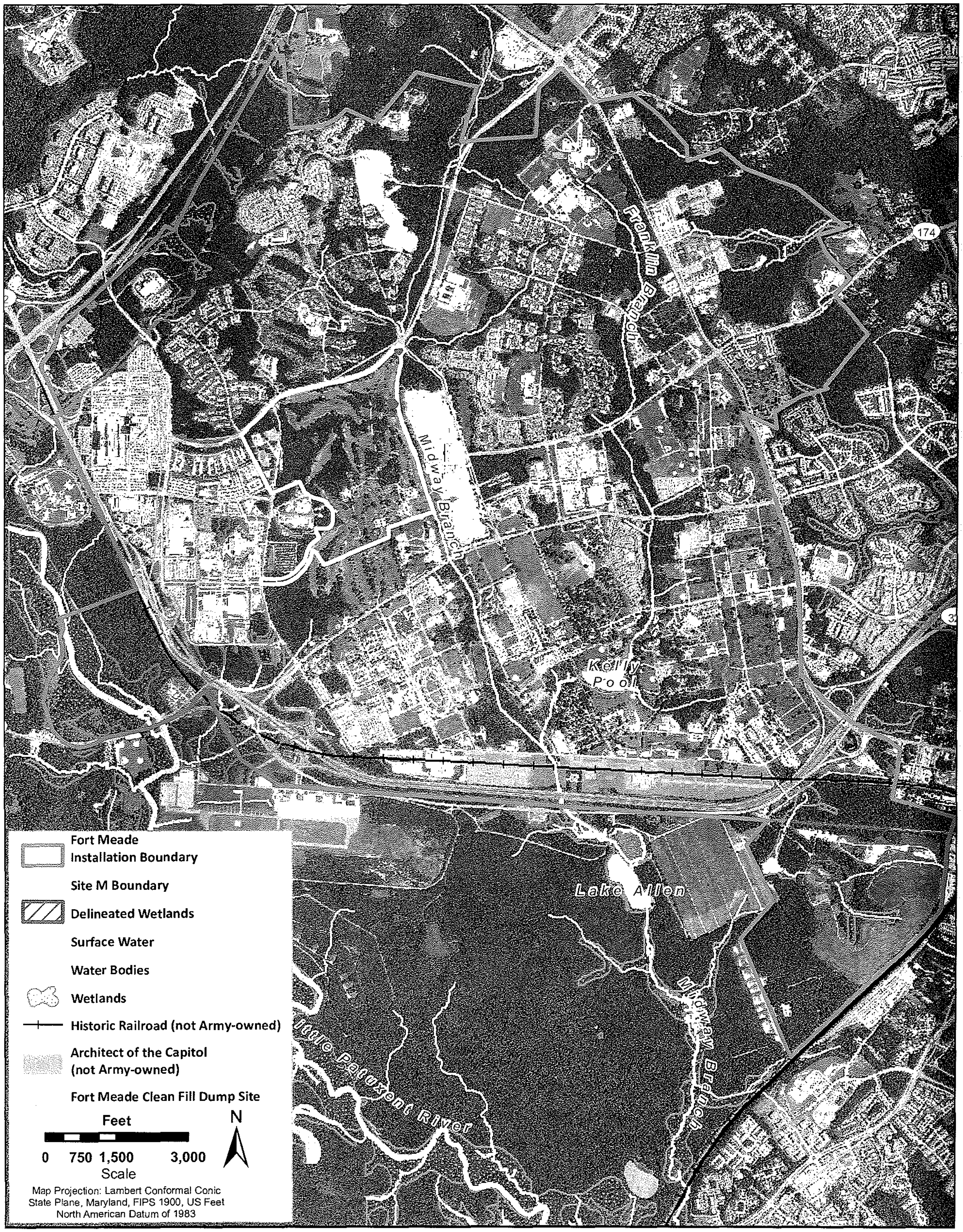
Drinking water for the installation is provided by six groundwater wells installed in the Patuxent Aquifer in the southern portion of Fort Meade. Well yield is dependent upon the thickness and permeability of sediments. Where strata are thick and permeable, well fields can produce up to 1 mgd of water (U.S. Army 2007). Average depth to groundwater in the six wells ranges from 80 to 120 feet below ground surface (INSCOM 2007). Fort Meade averages about 3.3 mgd withdrawn from wells. Various VOCs, pesticides, and explosive compounds have been detected in Fort Meade's groundwater from the Upper and Lower Patapsco aquifers (U.S. Army 2007). Additional information regarding Fort Meade's potable water supply is described in **Section 3.9.2**. Fort Meade complies with standards in the Safe Drinking Water Act (SDWA) and COMAR. Drinking water is tested according to permit requirements.

Surface Water. Fort Meade is primarily within the Little Patuxent River Watershed of the Patuxent River Basin, which drains 65,947 acres. The northeastern portion of the installation is within the Severn Run Watershed. The Little Patuxent River originates north of I-70 in Howard County, Maryland, converges with the Middle Patuxent River in the Town of Savage, and eventually empties into the Chesapeake Bay. The Little Patuxent River flows through the southwestern corner of Fort Meade (U.S. Army 2007). The velocity of the Little Patuxent River slows at Fort Meade, allowing formation of riffles and pools. The Chesapeake Bay, the largest estuary in the United States, lies approximately 12 miles east of the installation.

There are three primary tributaries and associated subwatersheds on Fort Meade, all of which drain to the Little Patuxent River. Midway Branch originates off-installation to the north and flows southward through the western half of the installation, draining approximately 1,461 acres on-installation. Midway Branch runs north to south along the eastern border of Site M. The stream is routed through several culverts throughout the golf course, one of which is approximately 500 feet long (URS/LAD 2009, USACE Baltimore District 1997). Franklin Branch originates as an intermittent stream near Meade Senior High School and flows to the south draining 1,176 acres of the eastern half of the installation. Franklin Branch merges with Midway Branch at Fort Meade's southern boundary, forming the Rogue Harbor Branch that flows off-installation into Allen Lake (formerly Soldier's Lake), south of MD 32. The third and southernmost tributary is composed of two small, unnamed branches that join on-installation before emptying into the Little Patuxent River to the south (U.S. Army 2007). With the exception of several storm water management ponds, Burba Lake, an 8-acre manmade surface water reservoir used for fishing and outdoor recreation, is the only enclosed water body on Fort Meade. Burba Lake is on Franklin Branch near its confluence with Midway Branch (USACE Mobile District 2007). Numerous swales, ditches, streams, and brooks also traverse Fort Meade. **Figure 3.6-1** shows the surface water bodies in the vicinity of Site M. Wetlands on Fort Meade are discussed in **Section 3.7.1**.

Storm water runoff on Fort Meade is conveyed to its three primary drainages, with the majority carried by the Midway and Franklin branches. All natural drainages discharge into the Little Patuxent River. Runoff from developed areas on Fort Meade is conveyed through an extensive network of drainpipes and associated drainage structures, supplemented by swales, ditches, other drains, and retention ponds. In recent years, Fort Meade has constructed new retention ponds to reduce concentrated flows to the main branch channels and prevent bank overflows and flooding (U.S. Army 2007). A Sediment and Erosion Control Plan has been produced for the Midway and Franklin Branch drainages. This plan proposes BMPs to be implemented to minimize the amount of erosion and transportation of sediment in the two main drainages on Fort Meade (DOD 2007).

The majority of storm water on Site M flows east-southeast to Midway Branch, which flows south into Allen Lake and eventually into the Little Patuxent River. Storm water in the westernmost portion of Site M flows west to a drainage path that runs north to south along O'Brien Road and empties into an unnamed tributary and storm water management wetland area, eventually draining into the Little Patuxent River (URS/LAD 2009). Storm water drainage across the golf course on Site M is of concern because of the lack of riparian buffers and associated pollutants from the use of various herbicides, pesticides, and fertilizers for golf course maintenance (USACE Baltimore District 2004b). A study was conducted by the USACE in March 2008 to further refine floodplain boundaries along Midway Branch in the vicinity of Site M. See **Section 3.7.2** for more information on floodplains in the vicinity of Site M.



1 Source of Aerial Photography: USDA-APFO NAIP 2009; Source of Boundary Data: Fort Meade GIS 2010; Surface Water and floodplains: Fort Meade 2009

2 **Figure 3.6-1. Surface Water Bodies and Wetlands on Fort Meade**

Midway Branch is classified as a Use I-P stream by MDE. This designation includes the use of the water body for public water supply; swimming and other whole-body water contact sports, play and leisure time activities where individuals can come in direct contact with the surface water, fishing, the growth and propagation of fish (other than trout), other aquatic life and wildlife, agricultural water supply, and industrial water supply (USACE Mobile District 2007). Midway Branch (a subbasin of the Little Patuxent River basin) was listed on Maryland's 2002, 2004, and 2006 303(d) lists as a Category 5 impaired water body due to excess sediment. The USACE performed a *Midway Branch Watershed Assessment* in May 2002. The Midway Branch Stream station, a water quality station bordering Site M, tested "poor" during the assessment (U.S. Army 2007). The USACE study recommended restoration opportunities for Midway Branch that included restoring riparian buffer vegetation and planting vegetation to stabilize stream banks (URS/LAD 2009). Maryland Department of Natural Resources (DNR) developed a *Stream Corridor Assessment Report* for Fort Meade in October 2005. More than 18 miles of streams on Fort Meade were surveyed and a total of 107 potential environmental problems were identified, including bank erosion sites, fish blockages, exposed pipe sites, inadequately vegetated stream buffers, channelization, pipe outfalls, and other unusual conditions. A large portion of these degraded sites occurs within the segment of Midway Branch along Site M (U.S. Army 2007).

The Little Patuxent River watershed is in nonattainment for its designated use of supporting aquatic life because of biological impairments. First through fourth order streams in the Little Patuxent River basin, including the three main tributaries on Fort Meade, are impaired for Aquatic Life and Wildlife Designated Use based on the results of a combination of fish and benthic bioassessments (MDE 2008b). As an indicator of designated use attainment, MDE uses Benthic and Fish Indices of Biotic Integrity developed by the Maryland DNR, Maryland Biological Stream Survey (MDE 2009a). A TMDL is required for the basin with low priority (MDE 2008b).

Data suggest that the Little Patuxent River watershed's biological communities are strongly influenced by urban land use. The probable causes and sources of the biological impairments of the Little Patuxent River watershed include altered hydrology and increased runoff resulting in channel erosion, elevated suspended sediment transport (total suspended solids), and increased inorganic pollutant loads and conductivity. Although there is presently a Category 5 listing for phosphorus in Maryland's 1996 Integrated Report, a Biological Stressor Identification Analysis performed in 2009 did not identify any nutrient stressors (e.g., total nitrogen, total phosphorus, dissolved oxygen) showing a significant association with degraded biological conditions (MDE 2009a). Currently, the waters of the Little Patuxent River watershed do not display signs of eutrophication. The State of Maryland reserves the right to require future controls if evidence suggests that nutrients from the basin are contributing to downstream water quality problems. Reductions could be required by the forthcoming Chesapeake Bay TMDL, currently under development and scheduled to be completed by the USEPA at the end of 2010 (MDE 2009b).

Fifty-three percent of the Little Patuxent River watershed is composed of urban land uses. Increased impervious surface cover in urban landscapes alters stream hydrology by forcing runoff to occur more readily and quickly during rainfall events, thereby causing urban streams to have more "flashy" hydrology. When storm water flows through stream channels faster, more often, and with more force, stream channel widening, erosion, and streambed scouring occur. The scouring associated with these increased flows leads to accelerated channel erosion, thereby increasing sediment deposition throughout the streambed either through the formation of bars or settling of sediment in the stream substrate (MDE 2009a). Generally, stream quality and watershed health diminish when impervious cover exceeds 10 percent and become severely degraded beyond 25 percent. Results from the Maryland Biological Stream Survey indicated that in surveyed streams, health was never good when watershed imperviousness exceeded 15 percent. These studies establish a fundamental connection between impervious cover and watershed impairment (MDE 2009c).

The State of Maryland Water Resources Administration has categorized Little Patuxent River above its confluence with the Patuxent River as "stressed" (but not impaired) with respect to bacteria. Nitrogen loading, nutrient loading, and suspended sediment concentrations in Little Patuxent River have also been characterized as high. These conditions are the result of a combination of storm water surface runoff and sewage treatment plant discharges, with the latter accounting for much of the nitrogen and nutrient loading under normal circumstances (URS/LAD 2009)

Fort Meade's wastewater treatment plant discharges treated wastewater to the Little Patuxent River under NPDES permit number MD0021717. The maximum permitted flow is 3 mgd and the permitted annual maximum loading rate limits for total nitrogen and total phosphorus are limited to 54,820 pounds per year (lbs/yr) and 4,112 lbs/yr, respectively (MDE 2008c). When a TMDL for the Patuxent River (of which the Little Patuxent River is a tributary to) is completed, the nutrient limitations could be revised accordingly to incorporate any TMDL requirements. Effluent from Fort Meade's wastewater treatment plant must be tested monthly for loading rates (MDE 2008c). An additional NPDES permit (number 95-DP-2634) regulates the use of wastewater treatment effluent for irrigation purposes at the golf course on Site M (DOD 2007).

The State of Maryland requires special protections for waters of very high quality, designated as Tier II waters. The policies and procedures that govern these special waters are commonly called "anti-degradation policies." Per COMAR 26.08.02.04, which outlines Maryland's antidegradation policy, an applicant for discharge permits for discharge to Tier II waters that will result in a new, or an increased, permitted annual discharge of pollutants and a potential impact on water quality, shall evaluate alternatives to eliminate or reduce discharges or impacts. If impacts are unavoidable, an applicant shall prepare and document a social and economic justification. MDE shall determine, through a public process, whether these discharges can be justified. A segment of the Patuxent River (Patuxent River 1) south of Fort Meade is categorized as a Tier II water. This segment is approximately a half mile in length and occurs upstream of its confluence with Little Patuxent River (MDE 2010).

3.7 Biological Resources

3.7.1 Definition of Resource

Biological resources include native or naturalized plants and animals and the habitats (e.g., wetlands, forests, and grasslands) in which they 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.

The Maryland Forest Conservation Act (Natural Resources Article Section 5-1601 through 5-1613) is in effect for Fort Meade and the NSA campus. The Maryland Forest Conservation Act is not applicable to Fort Meade property as Federal land; however, Fort Meade and NSA, as a tenant, have agreed to voluntarily participate, as long as not prohibited by critical national security mission obligations. The main purpose of the Forest Conservation Act is to minimize the loss of Maryland's forest resources during land development by making the identification and protection of forests and other sensitive areas an integral part of the site planning process. Of primary interest are areas adjacent to streams or wetlands, those on steep or erodible soils or those within or adjacent to large contiguous blocks of forest or wildlife corridors. Although the Maryland DNR, Forest Service administers the Forest Conservation Act, it is implemented on a local level. Gaining approval of the required Forest Conservation Plan (development of more than 1 acre) can necessitate long-term protection of included priority areas or planting/replanting a sensitive area offsite. Any activity requiring an application for a subdivision, grading permit, or sediment control permit on areas that are 40,000 ft^2 or greater is subject to the Forest Conservation Act and requires a Forest Conservation Plan and a Forest Stand Delineation (FSD) prepared by a licensed forester, licensed landscape architect, or other qualified professional (Maryland DNR undated).

Wetlands are important natural systems and habitats that can support a diverse number of different species. Wetlands perform a number of important biological functions, some of which include water quality improvement, groundwater recharge, nutrient cycling, wildlife habitat provision, 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 some wetlands. 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 has jurisdiction over wetlands that are determined to be jurisdictional 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 jurisdictional 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.

Section 401 of the CWA gives states 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 with or without conditions, or deny certification for activities that might result in a discharge to water bodies.

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.

MDE is the state agency largely responsible for administering Maryland's environmental laws, regulations, and environmental permits related to wetlands, water withdrawal, discharges, storm water, and water and sewage treatment. The mission of the MDE is to protect the state's air, land, and water from pollution and to provide for the health and safety of its citizens through a cleaner environment.

Freshwater wetlands in Maryland are protected by the Nontidal Wetlands Protection Program, which sets a state goal of no overall net-loss of nontidal wetlands acreage and functions. Activities in nontidal wetlands require a nontidal wetland permit or a letter of exemption, unless the activity is exempt by regulation. Any activity that involves excavating, filling, changing drainage patterns, disturbing the water level or water table, or grading and removing vegetation in a nontidal wetland or within a 25-foot buffer requires a permit from the MDE's Water Management Administration (MDE undated).

Under the Endangered Species Act (ESA) (16 U.S.C. § 1536), an "endangered species" is defined as any species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species likely to become an endangered species in the foreseeable future. Although candidate species receive no statutory protection under the ESA, the USFWS advises government agencies, industry, and the public that these species are at risk and might warrant protection under the ESA in the future.

3.7.2 Existing Conditions

Vegetation. The State of Maryland requires that institutions preparing large-scale land development plans coordinate with the Maryland DNR to protect and preserve existing forest stand conditions. Maryland's FCA strives to conserve forest cover on development sites by establishing rules that minimize the loss of existing forests and, in some cases, replenish forest that has been lost to development activities in the past. The Maryland DNR reviews development plans for compliance with the FCA and monitors forest protection during construction. Institutional land redevelopment plan reviews by Maryland DNR consider reforestation elements of campus master plans as best practices in the mitigation of potential environmental impacts associated with large-scale land development.

FCA requirements that Fort Meade would adhere to are described in the Fort Meade Policy, (Fort Meade 2006b) and are:

- Proposed projects 40,000 ft^2 or larger would comply with the FCA and submit their proposal through Fort Meade to the Maryland DNR for review and approval. The long-term agreement cannot be developed with Maryland DNR, but rather would be incorporated in the Installation's Natural Resources Management Plan (INRMP) to ensure compliance with the FCA plan.
- In lieu of submitting a FCA application to Maryland DNR, smaller development and short-term construction projects, as determined by Fort Meade, may be directly approved by the Installation. Approval requires FCA mitigation at 20 percent of the project area.
- FCA specifications and standards would be followed. To the fullest extent, all mitigation shall occur within the project area; otherwise on other Fort Meade designated land, such as Forest Conservation Areas (Fort Meade 2006a).
- The FSD plan would include existing forest, and locations of all 100-year old indigenous dominant trees (considered historic/specimen trees on Fort Meade). The Forest Conservation Plan would be a component of the project development plans, with full retention priority given to the preservation of the older developing forest areas and individual historic/specimen trees.
- Should existing designated forest conservation mitigation areas require disturbance or development, the project proponent would mitigate the impact as provided for in the FCA standards, but not less than an equal mitigation area.
- Landscape tree planting areas may be credited as FCA mitigation areas, but these areas must be a minimum of 35 feet wide (with 3 trees abreast) and cover a minimum 0.25 acre (measured from the tree trunks.
- All forestation/reforestation plants shall be indigenous dominant native trees, such as oaks, American beech, yellow poplar, and pitch pine, and have a one year replacement warranty. Planting density would be proportional to 120 caliper tree inches per acre (e.g. 96 – 1.25", 160 - 0.75", 240 – 0.5" caliper trees).

An FSD was conducted for Site M in September 2009. Based on data collected during the FSD, the forested component of the 104-acre forest area is characterized by a mid-climax hardwood forest dominated by chestnut oak with Virginia pine occurring as a co-dominant. Other canopy species include persimmon, sassafras, and southern red oak. The understory coverage is variable sparse and characterized primarily by *Smilax* with some *Vitis* and saplings of co-dominants present. Other understory species include American beech saplings, sassafras saplings, *Vaccinium* (blueberry), red oak, and hickory. Twenty plots within the site were evaluated based on stand composition, structure, and condition; all plots within the 104-acre FSD site have a Low Priority Retention rating (HDR|e²M 2009a).

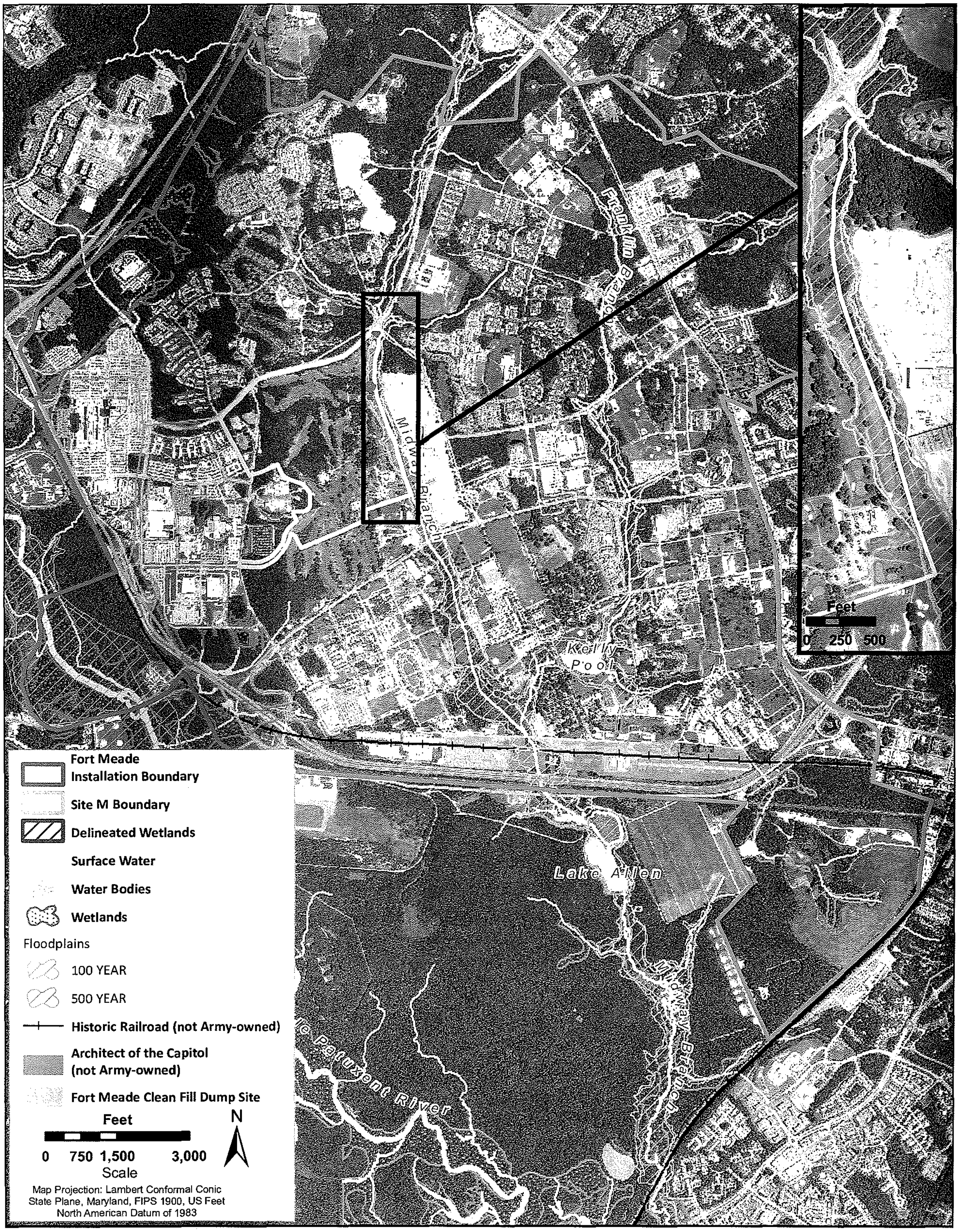
The Fort Meade Directorate of Public Works (DPW) Environmental Division has also developed a *Tree Management Policy* that formalizes tree management and replacement on post for activities that could cause the death, destruction or lead to removal of existing trees. The policy states that any person or activity that adversely impact desirably located trees would be responsible for replacing trees at their own cost. Preservation of dominant trees and woodland areas may be credited towards the total FCA requirement. Forestation that cannot feasibly be performed within the project area shall be performed on other designated land areas within Fort Meade. The planting plan and specifications shall be a component of the projects planning documents. All forestation planting shall be with indigenous and dominant plants species. Funding requirement for forestation planting shall be the equivalent of planting 5 gallon size trees at 20 feet spacing; presently valued at $5,000 per acre. For in-house restoration projects such as shoreline stabilization projects and riparian buffer planting, smaller planting stock may be used (U.S. Army 2007).

Landscaped areas on Fort Meade are primarily managed through implementation of the 2005 *Installation Design Guide* (IDG). The purpose of the IDG is to provide design guidance for standardizing and improving the quality of the total environment of the installation. This includes not only the visual impact of features on the installation, but also the impact of projects on the total built and natural environment. The improvement of the quality of visual design and development and use of sustainable design and development practices have a direct and future impact on the quality of life for those who live, work, or visit the installation. The IDG includes standards and general guidelines for the design issues of site planning, architectural, vehicular and pedestrian circulation, and landscape elements (Fort Meade 2005a). The IDG contains landscape design standards for the selection, placement, and maintenance of vegetation with an overall goal of improving the physical and psychological well being of the people who live and work on the installation (U.S. Army 2007).

Invasive plant species are an increasing concern and priority on Fort Meade. Fort Meade, through periodic volunteer efforts, performs active management to control or eradicate invasive plant species in a variety of habitats. Efforts for invasive species management are concentrated in wetland areas, at Burba Park, in designated habitat protection areas, and at the front entrance of Fort Meade; all other areas on post are monitored closely. Fort Meade tracks eradication location information in the post GIS database. Between 2005 and 2007, Fort Meade partnered with the USFWS Patuxent Wildlife Research Center under the "Pulling Together Initiative" to control invasive plants (U.S. Army 2007). Based on the FSD conducted in September 2009, coverage by invasive species in Site M is dominated by mile-a-minute, *Smilax*, and *Microstegium*.

Wetlands. Fort Meade, including current NSA areas, has 159.7 acres of jurisdictional wetlands, most of which occur along the Little Patuxent River floodplain in the southwestern portion of the installation (see **Figure 3.7-1**). During the September 2009 FSD site visit, additional wetlands were identified within Site M.

Wetland field investigations were conducted in October 2009 to determine the presence and extent of jurisdictional wetlands and other waters of the United States on and in close proximity to Site M. Four wetlands or other waters of the United States were delineated within the assessment area (see **Table 3.7-1**). Wetland-1 is a 0.05-acre Palustrine emergent herbaceous habitat in the northeastern corner of Site M adjacent to the west bank of Midway Branch. Wetland-2 is a 0.39-acre Palustrine forested habitat located adjacent to the west bank of Midway Branch in the north-central section of Site M. Wetland-3 is a 0.02-acre Palustrine emergent and open water habitat associated with a golf course pond. Midway Branch is considered a "waters of the United States" that drains to the south for approximately 3,330 linear feet along the eastern boundary of Site M (HDR|e²M 2009b).



Source of Aerial Photography: USDA-APFO NAIP 2009; Source of Boundary Data: Fort Meade GIS 2010; Surface Water and floodplains: Fort Meade 2009

Figure 3.7-1. Wetlands and Floodplains at Fort Meade

Table 3.7-1. Wetlands and Other Waters of the United States within and Adjacent to Site M

Site Name	Type	Size
Wetland 1	Palustrine emergent	0.05 acres
Wetland 2	Palustrine forested	0.39 acres
Wetland 3	Palustrine forested/open water	0.02 acres
Midway Branch	Perennial stream	3,330 linear feet

Source: Fort Meade 2009a

Coastal Zone Management. According to the Maryland DNR, all of Fort Meade and surrounding Anne Arundel County fall within Maryland's Coastal Zone Management Program (CZMP) area. MDE regulates activities proposed within Maryland's Coastal Management Zone through Federal consistency requirements. For activities impacting coastal and marine resources such as wetlands, a Coastal Zone Consistency Determination is issued as part of Maryland's environmental permitting process. Since tributaries running through Fort Meade eventually empty into the Chesapeake Bay, they are applicable for protection under CZMP.

In May 2002, the USACE completed a watershed assessment of Midway Branch that concluded the habitat condition for Midway Branch was fair, using the USEPA Rapid Bioassessment Protocols. The study also recommended restoration opportunities that included restoring riparian buffer vegetation and planting general vegetative protection to stabilize stream banks. Any development on Site M would require storm water retention and treatment before the release of storm water into Midway Branch, a tributary of the Chesapeake Bay (see **Section 3.6** for a discussion of storm water management). A 100-foot buffer must be established, preserved, and maintained between development and the streams to comply with the CZMA. The buffer acts as a water quality filter for the removal or the reduction of sediment, nutrients, and toxic substances found in surface runoff (URS/LAD 2009).

Floodplains. Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters that are subject to periodic or infrequent inundation due to rain or melting snow. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, nutrient cycling, water quality maintenance, and habitat for a diversity of plants and animals. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA), which defines the 100-year floodplain as an area within which there is a 1 percent chance of inundation by a flood event in a given year. Risk of flooding is influenced by local topography, the frequency of precipitation events, the size of the watershed above the floodplain, and upstream development. 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*, directs Federal agencies to avoid siting within floodplains unless the agency determines that there is no practicable alternative. Where the only practicable alternative is to site in a floodplain, a specific eight-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*. A study was conducted by the USACE in March 2008 to further refine floodplain boundaries along Midway Branch in the vicinity of Site M. See **Figure 3.7-1** for the locations of the 100-year and 500-year floodplains in the vicinity of Site M.

Wildlife. Wildlife species found on Fort Meade are typical of those found in urban-suburban areas. Mammalian species found on Fort Meade include white-tail deer (*Odocoileus virginianus*) and groundhogs (*Marmota monax*), particularly near the Little Patuxent River. Other mammals include gray squirrel (*Sciurus carolinensis*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), eastern chipmunk (*Tamias striatus*), field mouse and vole (*Microtus* sp.), mole (*Scalopus aquaticus*), and fox (*Vulpes vulpes*) (DOD 2009a, U.S. Army 2007).

Avian species common to Fort Meade include species that have adapted to an urban-suburban habitat, such as American robin (*Turdus migratorius*), catbird (*Dumetella carolinensis*), mockingbird (*Mimus polyglyottos*), Carolina chickadee (*Poecile carolinensis*), Carolina wren (*Thryothorus ludovicianus*), house wren (*Troglodytes aedon*), downy woodpecker (*Picoides pubescens*), common flicker (*Colaptes auratus*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), rock dove (*Columba livia*), mourning dove (*Zenaida macroura*), and song sparrow (*Melospiza melodia*) (DOD 2009a, U.S. Army 2007). Species observed on Site M on August 25, 2009 and September 4, 2009 are included in **Table 3.7-2.**

Table 3.7-2. Species Observed on Site M

Common Name	Scientific Name
Amphibians	
American bullfrog	*Rana catesbeiana*
Pickerel frog	*Rana palustris*
Birds	
American goldfinch	*Carduelis tristis*
American robin	*Turdus migratorius*
Blue jay	*Cyanocitta cristata*
Carolina chickadee	*Poecile carolinensis*
Carolina wren	*Thryothorus ludovicianus*
Cedar waxwing	*Bombycilla cedrorum*
Eastern towhee	*Pipilo erythrophthalmus*
Eastern wood pewee	*Contopus virens*
Gray catbird	*Dumetella carolinensis*
Killdeer	*Charadrius vociferus*
Northern flicker	*Colaptes auratus*
Pileated woodpecker	*Dryocopus pileatus*
White-breasted nuthatch	*Sitta carolinensis*
Willow flycatcher	*Empidonax traillii*
Mammals	
American beaver	*Castor canadensis*
Eastern gray squirrel	*Sciurus carolinensis*
Groundhog (woodchuck)	*Marmota monax*
White-tailed deer	*Odocoileus virginianus*

Threatened and Endangered Species. Except for occasional transient individuals, no federally listed or proposed endangered or threatened species are known to occur on any of the sites. No legally state-protected species are known to occur on any of the sites.

A species survey of the 70-acre northwestern extension of the NSA exclusive use area and the 580-acre NSA secure area was conducted in 2002. The only species of concern noted during this survey was the state rare mud salamander (*Pseudotriton montanus*) found along the west-central boundary of the 70-acre northwestern extension (DOD 2009a, U.S. Army 2007).

Fort Meade contains the following five Maryland species of concern (DOD 2009a, U.S. Army 2007):

- Glassy darter (*Etheostoma vitreum*) – Maryland Threatened
- Downy bushclover (*Lespedeza stuevei*) – Maryland Watchlist
- Pubescent sedge (*Carex hirtifolia*) – Maryland Watchlist
- Purple chokeberry (*Aronia prunifloia*) – Maryland Watchlist
- Roughish panicgrass (*Panicum leucothrix*) – Maryland status uncertain.

3.8 Cultural Resources

3.8.1 Definition of the Resource

"Cultural resources" is an umbrella term for many heritage-related resources defined in several Federal laws and EOs. These include the National Historic Preservation Act (NHPA) (1966), the Archeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), and the Native American Graves Protection and Repatriation Act (NAGPRA) (1990).

The NHPA focuses on cultural resources such as prehistoric and historic sites, buildings and structures, districts, or other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or other reason. Such resources might provide insight into the cultural practices of previous civilizations or they might retain cultural and religious significance to modern groups. Resources judged to be important under criteria established in the NHPA are considered eligible for listing in the National Register of Historic Places (NRHP). These are termed "historic properties" and are protected under the NHPA. NAGPRA requires consultation with culturally affiliated Native American tribes for the disposition of Native American human remains, burial goods, and cultural items recovered from federally owned or controlled lands.

Typically, cultural resources are subdivided into archeological sites (prehistoric or historic sites containing physical evidence of human activity but no structures remain standing); architectural sites (buildings or other structures or groups of structures, or designed landscapes that are of historic or aesthetic significance); and sites 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 warrant consideration for the NRHP. More recent structures, such as Cold War-era resources, might warrant protection if they are of exceptional importance or 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, sacred sites, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans consider essential for the preservation of traditional culture.

This EIS describes in detail the nature and extent of environmental impacts resulting from the Proposed Action and each alternative and discusses appropriate mitigation measures for adverse impacts on cultural resources. In addition, under Section 106 of the NHPA, Federal agencies must take into account the effect of their undertakings on historic properties and allow the Advisory Council on Historic

Preservation (ACHP) an opportunity to comment. Under this process, the Federal agency evaluates the NRHP eligibility of resources within the proposed undertaking's Area of Potential Effect (APE) and assesses the possible effects of the proposed undertaking on historic resources in consultation with the State Historic Preservation Officer (SHPO) and other parties. The APE 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 establish programs to inventory and nominate cultural resources under their purview to the NRHP.

3.8.2 Existing Conditions

The prehistoric era in Maryland is generally divided into three periods: Paleoindian (12,000 – 9500 BC), Archaic (9500 – 1000 BC), and Woodland (1000 BC – AD 1600). These periods cover the time from the region's earliest definitive occupation by humans until contact with people from Europe and Africa in the middle of the 16th century. Although evidence of human occupation before 12,000 BC is slowly emerging from archaeological sites such as Cactus Hill in Virginia, Topper in South Carolina, and Meadowcroft Rockshelter in Pennsylvania, no archaeological sites predating the Paleoindian Period have been identified in Maryland. In general, prehistoric occupations along the Patuxent River drainage are poorly represented prior to the major climate change that occurred at the end of the Late Pleistocene. As the climate shifted from glacial to temperate, prehistoric populations appear to have increased significantly. This rapid increase in population is reflected in the archaeological record by an exponential increase in prehistoric sites until contact with Europeans in the 16th century.

The English colony of Maryland was established in 1634 by Lord Baltimore and by the mid-17th century the area around the Chesapeake Bay and the Patuxent River and its tributaries were occupied by European settlers. The Fort Meade area in Anne Arundel County was initially settled by Quakers. Early on, the region prospered as Maryland became an important tobacco-producing and slave-importing colony. Agriculture based on the plantation system remained the economic mainstay in the county throughout the 18th century, although other crops were incorporated and small-scale industry developed to offset the declining yields from tobacco production.

Maryland did not secede from the Union during the Civil War; however, it was a border state with mixed allegiances. Although no military engagements took place in the project area, many troops passed through the county on their way to the District of Columbia, Virginia, or farther south. Significant socio-cultural changes occurred during the war. Many slaves fled to the District of Columbia, which abolished slavery in 1862, or to Alexandria, Virginia, where the occupying Union Army forces offered jobs along the docks as stevedores. On January 1, 1865, the State of Maryland voted to emancipate its slaves, effectively ending the Anne Arundel County plantation system. Overall, throughout much of the 19th century and early 20th century, the state underwent a gradual transformation from agrarian to an industrial-urban base.

The onset of World War I prompted Congress to approve the establishment of 32 new military installations including Fort Meade in 1917. The site chosen for Fort Meade was an area adjacent to Odenton, Maryland. By October 1918, the essential components of the installation were completed including barracks, a hospital complex, headquarters, warehouses, and a remount depot. Before war's end approximately 100,000 soldiers received training at Camp Meade. During the inter-war years, Camp Meade played a significant role in implementing military reorganization under the National Defense Act of 1920. These new roles included training for the National Guard, Officers Reserve Corps, the Reserve Officers' Training Corps (ROTC), the Citizens' Military Training Camp (CMTC), and the newly established tank school. To implement these new functions, a new phase of construction was ushered in to replace many of the World War I-era temporary buildings that were in poor condition. Among the newly constructed permanent buildings were family housing units, troop support buildings, and general administrative buildings.

Construction continued during the inter-war period and dramatically increased during World War II with the construction of a temporary cantonment to accommodate increased troop mobilization. New construction included the addition of 251 permanent brick buildings and 218 temporary wooden buildings. This period would also result in the acquisition of 6,137 acres and further construction programs to support the changing mission of the installation. In addition to an expanded role in infantry, artillery, and tank training, Camp Meade would also serve as a Troop Replacement Depot for the European Theater of Operations, a prisoner-of-war camp, a Cooks and Bakers school, and a demobilization center.

During the post-war years, Camp Meade underwent a series of administrative changes and command reorganization and, by 1947, became the headquarters of The United States Second Army Command. Various crises prompted Camp Meade to revert to wartime operations and resume its role as a primary processing center for new soldiers. Development continued at Fort Meade throughout the latter half of the 20th century including the construction of two major family housing units at Meade Heights in 1952 and Argonne Hills in 1959. It should be noted that post-war construction was guided not by a master plan but by functional needs. This is evident in the cinder block construction and minimal stylistic detail that characterizes much of the buildings on the installation.

During the Cold War Era, Camp Meade became the first military installation to employ the Nike-Ajax air defense unit. The air defense unit became operational under the 36th Antiaircraft Artillery Missile Battalion (AAMB), which, as part of the 35th Antiaircraft Brigade, was responsible for the defense of Washington, D.C. In 1954, Fort Meade became the headquarters of the NSA, which was established by an EO in 1952 and the National Security Act of 1947. Additionally, several government and military tenants have a presence at Fort Meade including the Defense Information School, the headquarters of the Defense Courier Service, the United States Army Field Band, and the USEPA.

Archaeological Resources

Numerous cultural resources investigations have been conducted at Fort Meade; however, prior to the development and implementations of the installation's Cultural Resources Management Plan (CRMP) in 1994, cultural resources investigations were conducted on an as-needed basis. A critical component of the CRMP was the development of an archaeological sensitivity model that designated areas of high and low potential for containing archaeological sites. Areas of previous disturbance were also delineated. The CRMP recommended 2,710.6 acres for survey whereas no additional effort was recommended for 1,852.9 acres. Subsequent testing of the model on 407 acres identified six archaeological sites (USACE Baltimore District 2006). In 1995, an additional 2,210 acres were surveyed, which resulted in the documentation of 29 archaeological sites (USACE Mobile District 2007). Since the completion of these baseline surveys, three additional cemeteries have been identified and Phase II site evaluations have been conducted at 20 archaeological sites (USACE Baltimore District 2006).

To date, 40 archaeological sites have been documented at Fort Meade (see **Table 3.8-1**). Of these, 19 contain prehistoric cultural components, 11 contain historic cultural components, 3 contain both historic and prehistoric components, and 7 are historic cemeteries. NRHP eligibility status for all 40 sites has been determined through consultation with the Maryland Historical Trust (MHT), which serves as Maryland's SHPO. One site (18AN1240) has been determined eligible for the NRHP under Criterion D. The site consists of a Late Archaic subperiod base camp containing stratified cultural deposits. The remaining 39 sites did not meet the criteria for eligibility and have been determined not eligible for the NRHP.

1 **Table 3.8-1. Previously Recorded Archaeological Sites on Fort Meade**

Site No.	Survey Level	Type of Site	Recommendation
18AN51	Phase II	Prehistoric	Not Eligible
18AN234	Phase II	Prehistoric	Not Eligible
18AN398	Phase II	Prehistoric/Historic	Not Eligible
18AN399	Phase II	Prehistoric	Not Eligible
18AN762	Phase II	Prehistoric	Not Eligible
18AN929	Phase II	Prehistoric	Not Eligible
18AN930	Phase II	Prehistoric	Not Eligible
18AN931	Phase II	Prehistoric	Not Eligible
18AN932	Phase II	Historic	Not Eligible
18AN970	Phase I	Watts Cemetery	Not Eligible
18AN971	Phase I	Sulphur Spring Cemetery	Not Eligible
18AN972	Phase I	Friedhofer Cemetery	Not Eligible
18AN973	Phase I	Downs Cemetery	Not Eligible
18AN974	Phase II	Prehistoric	Not Eligible
18AN975	Phase II	Prehistoric	Not Eligible
18AN976	Phase I	Prehistoric/Historic	Not Eligible
18AN977	Phase I	Historic	Not Eligible
18AN978	Phase II	Prehistoric	Not Eligible
18AN979	Phase I	Historic	Not Eligible
18AN980	Phase I	Historic	Not Eligible
18AN981	Phase I	Historic	Not Eligible
18AN982	Phase II	Historic	Not Eligible
18AN983	Phase II	Historic	Not Eligible
18AN984	Phase I	Historic	Not Eligible
18AN985	Phase I	Prehistoric	Not Eligible
18AN986	Phase II	Prehistoric	Not Eligible
18AN987	Phase II	Historic	Not Eligible
18AN988	Phase II	Historic	Not Eligible
18AN989	Phase II	Prehistoric	Not Eligible
18AN990	Phase II	Historic	Not Eligible
18AN991	Phase I	Prehistoric/Historic	Not Eligible
18AN992	Phase I	Prehistoric	Not Eligible
18AN993	Phase I	Prehistoric	Not Eligible
18AN994	Phase I	Prehistoric	Not Eligible
18AN995	Phase I	Prehistoric	Not Eligible
18AN996	Phase I	Prehistoric	Not Eligible
18AN1240	Phase II	Prehistoric	**Eligible**
[To be Assigned]	Phase I	Meeks Cemetery	Not Eligible
[To be Assigned]	Phase I	Phelps Cemetery	Not Eligible
[To be Assigned]	Phase I	Warfield/Clark Cemetery	Not Eligible

Source: USACE Baltimore District 2006

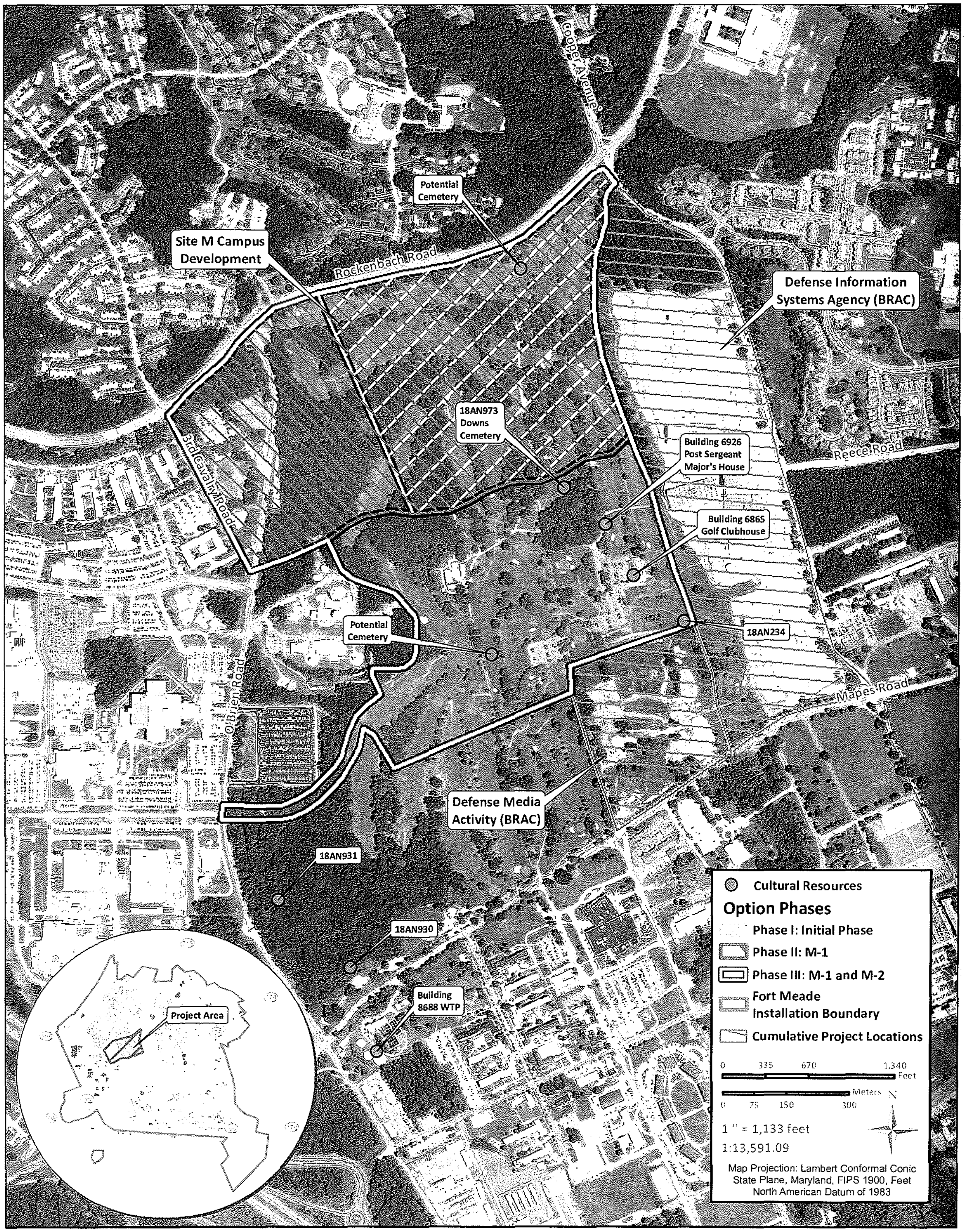
The APE under consideration in this EIS consists of approximately 227 acres proposed for campus development at Fort Meade (see **Figure 3.8-1**). The area presently serves as a portion of Fort Meade's Applewood and Parks golf courses. The northern portion, fronting on Rockenbach Road and comprising approximately 137 acres, is referred to as Site M-1. The southern portion, encompassing approximately 90 acres, is referred to as Site M-2. The APE for archaeological resources consists of the eastern half of Site M-1.

Two previously recorded archaeological sites (18AN234 and 18AN973) lie within the APE. Site 18AN234 consists of a small Late Archaic/Early Woodland artifact scatter and appears to occur along the boundary of the southeastern corner of Site M-2 (see **Figure 3.8-1**). The site was subjected to further Phase II site evaluation in 2003 and was found to contain disturbed cultural deposits. In light of these findings, the site was recommended eligible but later determined not eligible for the NRHP by MHT. Site 18AN973 is the Downs Cemetery and Farmstead. Downs Cemetery is a small historic cemetery dating to the late 19th century based on the presence of two grave markers dating from 1875 and 1883. The cemetery is on a wooded knoll and is demarcated by a chain-link fence. The site has been recommended as not eligible for the NRHP as it does not contain the graves of any persons of transcendent importance, is not associated with historic events, does not possess distinctive design features, and is not of significant age (USACE Baltimore District 2006). The associated farmstead component, however, has not been evaluated and remains potentially eligible for the NRHP. As stated in a letter received during the EIS public scoping period (see **Appendix B**), MHT has recommended Phase II testing to fully evaluate the NRHP eligibility of site 18AN973, should the site be considered for development.

In addition to the Downs Cemetery at Site 18AN973, historical map data suggest a strong potential for the existence of two undocumented cemeteries in the APE (see **Figure 3.8-1**). The first occurs approximately 360 meters east of the present Golf Course Clubhouse, encompassing approximately 0.11 acres in the southern portion of Site M-2. The second area lies south of the intersection of Rockenbach Road and Cooper Avenue in the northeastern quadrant of Site M-1 and encompasses approximately 0.09 acres. The map shows that the two cemeteries were situated on the present-day fairways on the 5th hole of the Applewood course and the 3rd hole of the Parks course. The 1977 topographic map designates 5th and 3rd holes as 13A and 4B, respectively (see **Figure 3.8-2**). At present, information pertaining to these cemeteries is limited and purported attempts to identify their locations have been unsuccessful. This might be the case for any number of reasons (USACE 2005a). Often, ground-breaking disturbances, disturbances to vegetation, and secondary vegetation growth can obscure or destroy cemetery boundaries, original landscape features, and grave markers. However, if such disturbances were above ground or surficial, the potential exists for the preservation of subsurface human remains.

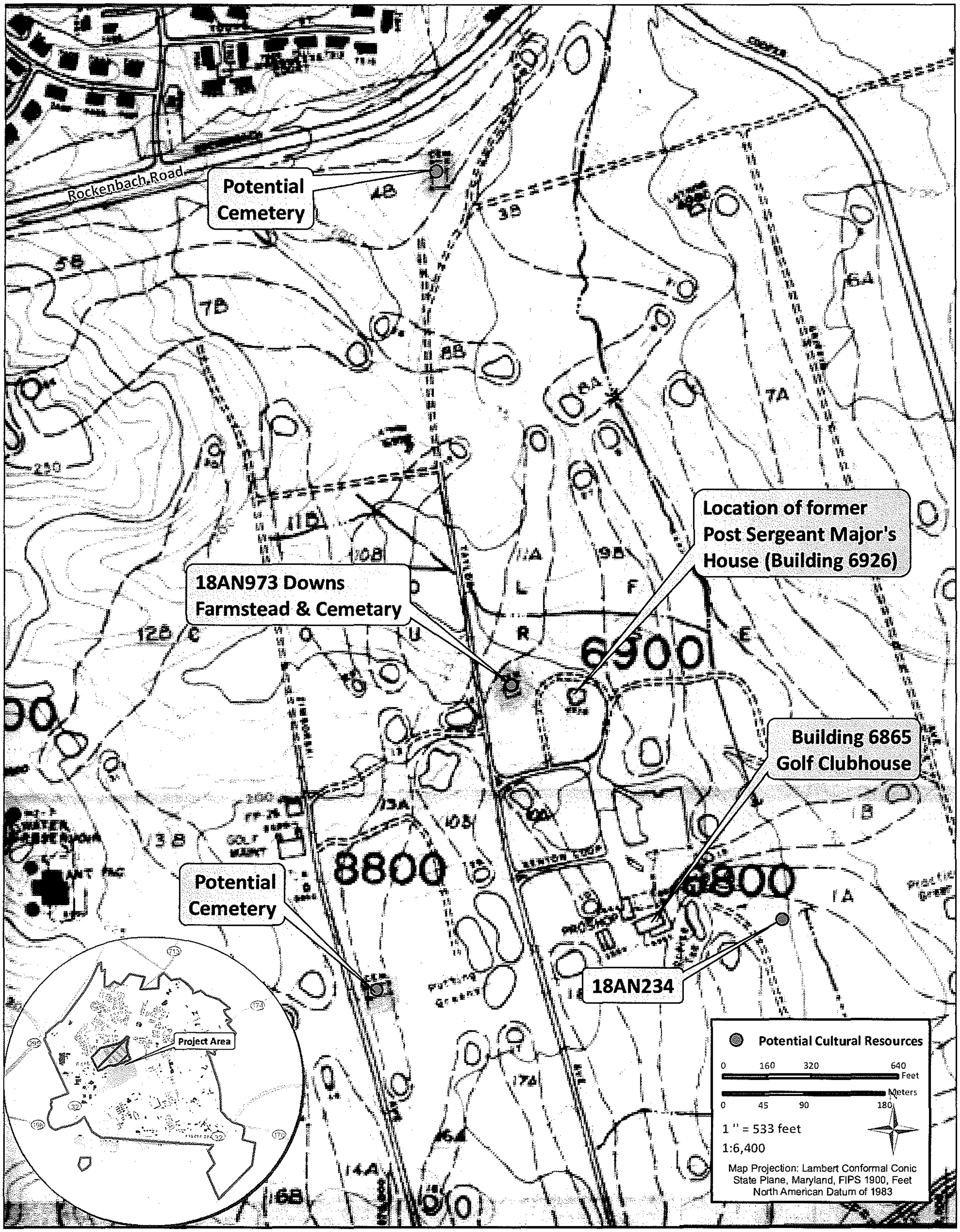
Architectural Resources

The systematic inventory and assessment of architectural resources at Fort Meade began in 1994 with the development and implementation of the CRMP (USACE Baltimore District 2006). In preparation of the CRMP, an architectural survey was undertaken and all structures and buildings constructed prior to 1954 were evaluated for NRHP eligibility. This survey documented 501 buildings. Among these, 23 World War I-era and 62 World War II-era buildings were recommended for additional investigation to determine NRHP eligibility. A Phase II architectural survey of these buildings was conducted by R. Christopher Goodwin & Associates in 1996. The remaining 416 buildings identified during the baseline 1994 study were determined ineligible for the NRHP. In preparation of the 2001 Integrated Cultural Resources Management Plan (ICRMP), the USACE evaluated all pre-1960 Cold War-era buildings. The results from the 1994, 1996, and 2001 architectural surveys were submitted to MHT for review and concurrence (USACE Baltimore District 2006, USACE Mobile District 2007).



Sources: Potential Project Actions: HDR | e²M, Inc 2010; Cultural Resources: Fort Meade 1977 and Fort Meade GIS 2009; Aerial Photography: USDA-APFO NAIP 2009.

Figure 3.8-1. Project Location Map Showing Cultural Resources



Sources: Cultural Resources: Fort Meade 1977 and Fort Meade GIS 2009

Figure 3.8-2. 1977 Topographic Map, Fort Meade (Not to Scale)

Currently, no buildings and structures at Fort Meade are listed on the NRHP; although the Fort Meade Historic District and a Water Treatment Plant (WTP) (Bldg. 8688) have been determined eligible through consultation with MHT (see **Table 3.8-2**) (USACE Baltimore District 2006, USACE Mobile District 2007). The Fort Meade Historic District contains 13 contributing Georgian Revival brick buildings constructed between 1928 and 1940 within the planned portion of the original post. Buildings within the Fort Meade Historic District are significant under the National Register Areas of Significance for architecture and military history. These Areas of Significance are associated with the development of Fort Meade as a permanent Army installation in the 1920s through 1940s. The district originally consisted of 132 buildings and structures; however, with the privatization of several military housing units, many of the contributing elements of the original district are no longer under Army jurisdiction. The WTP (Building 8688) was built in 1941 in the Art Moderne style. The building is constructed of concrete and brick and retains most of its original architectural features. The building is significant under National Register Criterion C as an outstanding example of Art Moderne design.

Table 3.8-2. NRHP Eligible Buildings on Fort Meade

Building Number	Building Name	Construction Date	Original Use	Current Use	Quartermaster Plan
4215	Meade Hall	1928	Barracks	Administrative	621-540
4216	Pulaski Hall	1928	Barracks	Administrative	621-530
4217	Post Headquarters	1928	Barracks	Administrative	621-550
4230	Fire Station	1934	Fire Station	Vehicle Storage	634-125
4411	Old Post Hospital	1930	Hospital	Administrative	6118-700
4413	Garage	1931	Ambulance Garage	Vehicle Storage	6118-676
4415	Kuhn Hall	1931	Nurse's Quarters	Military Officer Housing	6118-745
4419	Chapel	1934	Chapel	Chapel	6118-820
4431	Theater	1933	Theater	Theater	608-200
4551	Hodges Hall	1934	Administrative	Administrative	6118-761-774
4552	Van Deman Hall	1940	Barracks	Administrative	621-1900
4553	Benjamin Tallmadge Hall	1929	Barracks	Administrative	Unknown
4554	Nathan Hale Hall	1929	Barracks	Administrative	621-640 (5008)
8688	WTP	1941	WTP	WTP	6118-1076

Source: USACE Baltimore District 2006

In conjunction with preparation of the 2006 ICRMP, five water towers and three bridges were evaluated for NRHP eligibility. The water towers (WT001, WT002, WT003, WT004, and WT008) were constructed between 1928 and 1955 and were associated with various periods in the historical development of Fort Meade. All five water towers were considered for eligibility under National Register

Criteria A and C. The evaluations found that the water towers were not associated with events that have made a significant contribution in American history, that the water towers do not represent the work of a master, and lack distinctive characteristics. Accordingly, all five water towers were recommended not eligible for the NRHP.

Additionally, three stone bridges (Llewellyn Avenue Bridge, Redwood Avenue Bridge, and Leonard Wood Avenue Bridge) built on the installation by German Prisoners-of-War (POWs) between 1944 and 1946 were evaluated for NRHP eligibility under Criterion A. During World War II, many POWs were detained in Maryland and, due to labor shortages, put to work in agriculture and industry. At Fort Meade, approximately 1,632 Italian and 2,000 German POWs were housed for the remainder of the war in temporary structures and tents. During their detainment at Fort Meade, German POWs operated the post laundry and were used as laborers in the construction of three bridges. The evaluation found that the stone bridges are historically significant for their association with German POWs in Maryland during World War II. As such, Llewellyn Avenue Bridge, Redwood Avenue Bridge, and Leonard Wood Avenue Bridge were recommended eligible for the NRHP under Criterion A (USACE Baltimore District 2006).

In its public scoping letter (see **Appendix B**), MHT identified four additional cultural resources within the footprint of the proposed Fort Meade Campus Development. These include Building 6926/Post Sergeant Major's House and Building 6865/Golf Course Clubhouse, two possibly eligible architectural resources. The Post Sergeant Major's House was built ca. 1910 and the Golf Course Clubhouse was built in 1940. The Post Sergeant Major's House, which was previously used as a tenant farm, was the oldest standing structure at Fort Meade. Buildings 6926 and 6865 were inventoried to the MIHP in December 1991. MHT has requested that they be formally evaluated for NRHP eligibility and that appropriate Determination of Eligibility (DOE) forms be submitted to assist in reaching a consensus on eligibility determinations for these resources. However, the Post Sergeant Major's House and the Golf Course Clubhouse were demolished in the mid-1990s. A replacement clubhouse (Building 6800) was constructed adjacent to the site of Building 6865. Demolition of these buildings precludes further study of these former architectural resources. A parking lot is present in the location of the former Golf Course Clubhouse, while the general area of the former Post Sergeant Major's House has grown over with vegetation. Given these current site conditions, the potential for archaeological deposits associated with use of the Post Sergeant Major's House is high. However, disturbances associated with parking lot construction may have already had an adverse impact on archaeological deposits associated with the Golf Course Clubhouse, such that site integrity and research potential is low.

Additionally, a large portion of the project area lies within Fort Meade's Applewood and Parks golf courses. The Applewood course was built in 1950 and the Parks course was built in 1956. Neither golf course has been previously identified as a cultural resource; however, both may be eligible for the NRHP as historic landscape(s). MHT requested that the Applewood and Parks golf courses be inventoried and evaluated for NRHP eligibility. A subsequent evaluation of the golf courses conducted by DOD concluded that they did not meet the criteria for NHRP eligibility and recommended them as ineligible for listing on the NRHP (HDR|e^{2}M 2010b).

Lastly, in order to assess potential visual impacts to nearby or adjacent historic buildings, a visual APE (Area of Potential Effects) was established and all architectural resources within an approximate one-quarter (0.25) mile radius of Site M were identified. No architectural resources occur within the visual APE. The closest architectural resource is a Water Treatment Plant (Building 8688) 0.41 miles south of Site M. As previously described, the Water Treatment Plant was built in 1941 and has been determined eligible for the NRHP.

Resources of Traditional, Religious, or Cultural Significance to Native American Tribes

At present, no known traditional cultural properties or American Indian sacred sites occur within or near the Proposed Action. Additionally, no traditional cultural properties or American Indian sacred sites have been recorded at Fort Meade. While there are no federally recognized Indian tribes present in Maryland, seven federally recognized tribes elsewhere in the United States are believed to have a historical affiliation. Accordingly, the Cultural Affairs Manager for Fort Meade has initiated consultation in accordance with American Indian Religious Freedom Act and NAGPRA to ascertain their interest in Fort Meade matters (USACE Baltimore District 2006).

3.9 Infrastructure and Sustainability

3.9.1 Definition of the Resource

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function and includes utility. 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 components discussed in this section include water supply, sanitary sewer and wastewater system, storm water drainage, power supply, natural gas supply, solid waste management (i.e., nonhazardous waste), communications, security systems, liquid fuel supply, heating and cooling system, and pavements. This section has been prepared to protect sensitive information pertaining to infrastructure systems and only discusses those points considered directly relative to the Proposed Action.

3.9.2 Existing Conditions

Water Supply

Potable Water. Fort Meade maintains a Water Appropriation and Use Permit (Permit No. AA1969G021 [5]) that allows an average withdrawal of approximately 3.3 mgd from six groundwater wells on the south side of the installation. During peak demand, the permit allows a withdrawal of approximately 4.3 mgd from the wells (Fort Meade 2009b). Fort Meade currently withdraws approximately 3.3 mgd from the wells (DOD 2009a).

Water Treatment Plant and Distribution System. Potable water is pumped from wells to the Fort Meade WTP. The WTP is in the southwestern quadrant of the cantonment area, near the intersection of Mapes Road and O'Brien Road, adjacent to the Little Patuxent River. It was constructed in 1919 and has undergone upgrades in 1942, 1956, 1968, 1984, and 1986. The WTP is a multi-media filtration plant that contains three aboveground clearwell storage tanks that have a combined capacity of 2.3 million gallons and seven active water storage tanks that have capacities ranging from 200,000 to 600,000 gallons (USACE Mobile District 2007). The present day WTP design capacity is 7.2 mgd. For the past 10 years, the WTP produced an average of 3.4 mgd (URS/LAD 2009). Water is treated for turbidity, iron, and manganese, and fluoride is added to the water before it is distributed by pump stations and storage tanks to the entire installation. NSA receives approximately 1.2 mgd from the WTP. Additionally, there are two water supply wells adjacent to the NSA campus that serve the National Cryptologic Museum and are permitted for withdrawal of an annual average of 0.018 mgd (DOD 2009a, URS/LAD 2009). The water system, including the WTP and associated piping infrastructure, at Fort Meade is currently being privatized.

High Lift Pump Stations. Treated water is pumped from the clearwell storage tanks into the potable water distribution system through two High Lift Pump Stations (HLPSs). The HLPSs have a combined pumping capacity of approximately 17.1 mgd. The distribution system contains approximately 90 miles of 4- to 20-inch-diameter water mains, 10 pumps, 556 main valves, 634 fire hydrants, and approximately 1,200 building connections (USACE Mobile District 2007).

HLPS No. 1 (Building 8698) contains six pumps. Pump No. 1 is a backwash pump used solely to backwash the rapid-flow sand filters in the WTP. Pump No. 1 is the only pump capable of providing backwash water. Pumps No. 2 through No. 6 serve as the potable water distribution system. Pumps No. 2 and No. 5 each have a capacity of 1.44 mgd and Pumps No. 3 and No. 4 each have a capacity of 1.0 mgd. Pump No. 6 is a diesel-powered pump with a capacity of 3.0 mgd. Pump No. 6 is currently nonoperational and is reserved for power outages to supply water to the potable water distribution system. The combined capacity of HLPS No. 1, when Pump No. 6 is operational, is approximately 7.92 mgd.

HLPS No. 2 (Building 8699) contains four pumps. Pumps No. 1 and No. 2 each have a capacity of 1.73 mgd. One of these pumps can operate either electrically or by diesel fuel. Pump No. 3 has a capacity of 2.16 mgd and Pump No. 4 has a capacity of 3.60 mgd. The combined pump capacity of HLPS No. 2 is 9.2 mgd.

The potable water distribution system is divided into four sections: two high-level systems (above 57.9 meters [190 feet]) and two low-level systems (below 51.8 meters [170 feet]). The existing primary distribution system consists of 16-, 12-, 10-, 8-, 6-, and 4-inch mains looped and cross connected throughout the installation. Water mains are constructed of cast iron, transite, and ductile iron (USACE Mobile District 2007).

Site M is in the Upper Pressure Zone (UPZ) and the remainder of the NSA campus is in the Lower Pressure Zone (LPZ). HLPS No. 1 provides water to the Annapolis Hill booster station (Building 1957) and storage tank. The Annapolis Hill booster station and storage tank provide water to the Hunt Hill storage tank. The Hunt Hill storage tank provides water to the UPZ. HLPS No. 2 and the Chaffee Hill storage tanks provide water to the LPZ by way of four interconnected water mains. The Chaffee Hill storage tanks also provide water to the UPZ by way of a booster station (Building 8900) (URS/LAD 2009).

Sanitary Sewer and Wastewater System

Wastewater Treatment Plant. The Fort Meade Wastewater Treatment Plant (WWTP) is adjacent to the Little Patuxent River, near the intersection of MD 198 and MD 32. It is a modified, activated sludge WWTP that has been operating for approximately 16 years (USACE Baltimore District 2004a, USACE Mobile District 2007). The WWTP was originally designed with an average flow of 4.6 mgd; however, the operation and configuration of the WWTP has significantly changed since its original design. Currently, the flow to the WWTP is 2.2 mgd, which is approximately 50 percent of the original design capacity. Similarly, the maximum observed flow was 4.18 mgd, compared to the maximum design flow of 12.3 mgd. The WWTP capacity is limited due to the existing treatment process necessary for compliance with the current NPDES permit (Permit No. 07-DP-2533) (URS/LAD 2009). The permit requires the installation to operate a biological nitrogen removal process year-round. The NPDES permit established an annual maximum loading rate for nitrogen and phosphorus at 54,820 and 4,112 pounds per year, respectively, based on flow equal to or less than 3.0 mgd. The NPDES permit also includes maximum loading rates based on flow greater than 3.0 mgd and up to 4.5 mgd. The loading rates were established to prevent the nitrogen and phosphorus loads on the Chesapeake Bay from increasing as the flow to the WWTP increases (MDE 2008c).

The WWTP is composed of a headworks, chemical flocculation, primary clarification, activated sludge process with nitrification/denitrification, tertiary filtration, chlorination/dechlorination, reaeration tanks, sludge storage, and surge basins. The WWTP differs from a traditional activated sludge process in the following ways:

- Lime, coagulant, and polymer are added upstream of the clarifiers to increase efficiency in removing biological oxygen demand and total suspended solids (TSS)
- The modification of the second stage aeration basins to mix, but not aerate, allows for the denitrification of the oxidized nitrogen compounds
- Filtering the effluent in the tertiary filtration process results in a lower TSS concentration compared to most conventional plants (USACE Mobile District 2007).

Wastewater Collection and Pumping System. The sanitary sewer collection and pumping system at Fort Meade is composed of 58 miles of piping on and around the NSA campus, 55 miles of gravity sewers, 3 miles of force mains, and 9 pumping stations. **Figure 3.9-1** shows the locations of the sanitary sewer lines in the vicinity of Site M. The pipe diameter of the gravity sewers, installed between 1941 and 1987, range from 4 to 30 inches. The force mains have pipe diameters that range from 3 to 24 inches. Wastewater from the gravity sewers and force mains flow to two major pump stations, the Leonard Wood and the East Side pump stations (USACE Mobile District 2007). There are also seven other pump stations found throughout Fort Meade (Fort Meade 2006c). **Table 3.9-1** presents the capacities of all nine pump stations at Fort Meade.

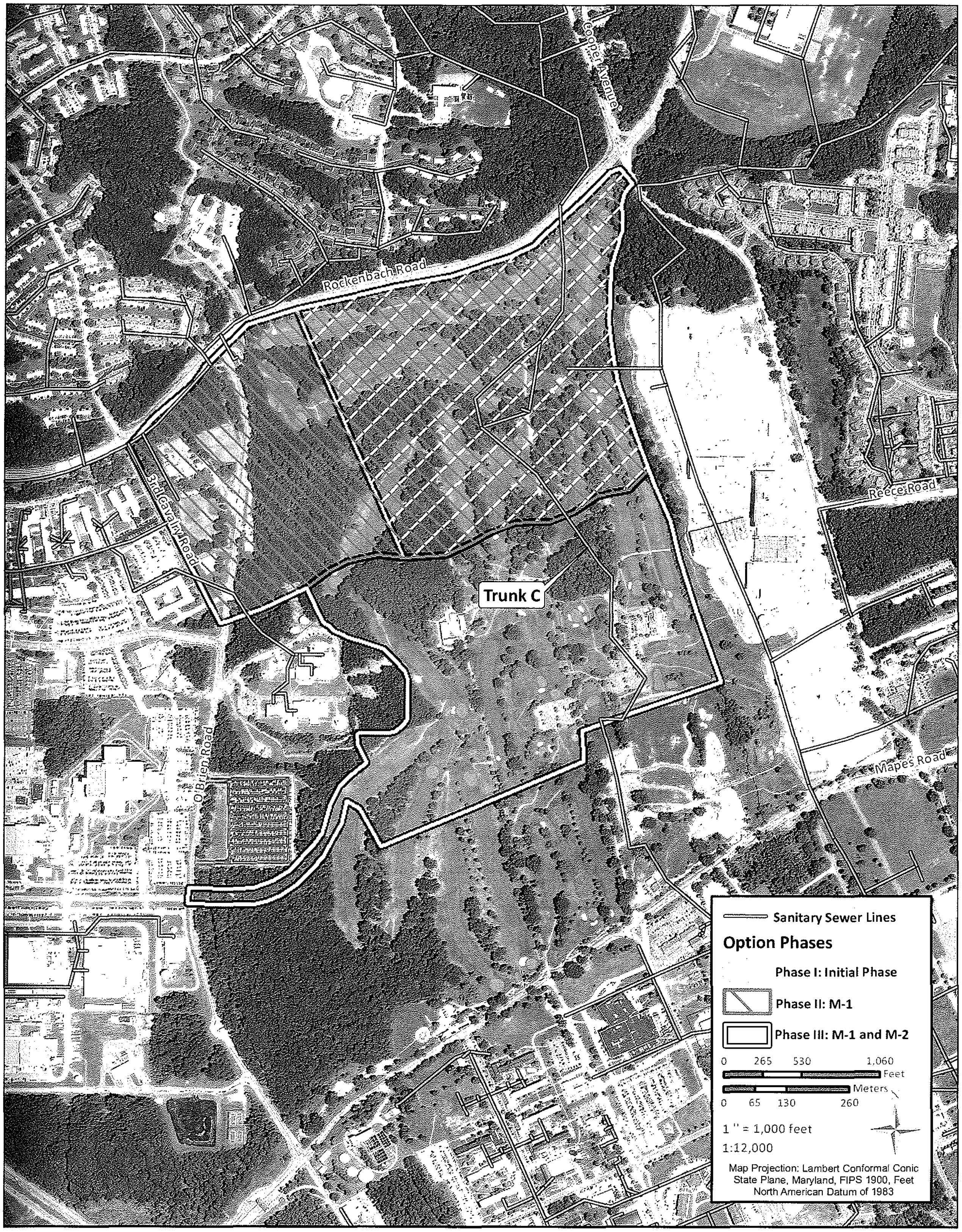
Table 3.9-1. Summary of Capacities of Pump Stations at Fort Meade

Pump Station	Capacity*
No. 1	30 gallons per minute (gpm)
No. 2	60 gpm
No. 3	60 gpm
No. 4 (East Side)	1,500 gpm
No. 5	150 gpm
No. 6	120 gpm
No. 7	3 hp
No. 8	120 gpm
No. 9 (Leonard Wood)	3,450 gpm

Source: Fort Meade 2006c

Note: * Pump station capacities presented are based on the latest available data provided by Fort Meade staff

There are no sewage treatment activities or equipment at Site M; however, treated effluent has been used to irrigate the golf courses on Site M since 1984. Fort Meade maintains an NPDES permit (Permit No. 95-DP-2634) that regulates the use of wastewater treatment effluent for irrigation purposes at the golf course (DOD 2007). Buildings at Site M are tied into the WWTP. Site M is in the Midway Branch West Trunk Area sewage collection system. An 18-inch gravity main (line 'C' shown on **Figure 3.9-1**) runs north to south through the site and golf courses. A 12-inch gravity main east of Site M runs north to south for the DISA campus (URS/LAD 2009).



1 Sources: Potential Project Actions: HDR | e²M, Inc 2010; Sanitary Sewer Lines: Fort Meade GIS 2009; Aerial Photography: USDA-APFO NAIP 2009.

2 **Figure 3.9-1. Sanitary Sewer Lines in the Vicinity of the NSA Campus**

Wastewater System Evaluation. The Chesapeake Bay has experienced a decline in water quality from excessive nutrient enrichment (i.e., phosphorus and nitrogen). The Chesapeake Bay Agreement of 1983, signed by Maryland, Virginia, Pennsylvania, and the District of Columbia, specified a nutrient reduction goal of 40 percent by the year 2000. The MDE developed a strategy for achieving the desired reduction by the upgrade of the major 66 WWTPs to remove nitrogen through a process known as biological nutrient removal (BNR). Regulatory agencies expect that by using the BNR process, more than 90 percent of pollutants are removed, while achieving a total nitrogen concentration below 8 milligrams per liter (mg/L) (USACE Mobile District 2007).

The Chesapeake Bay 2000 Agreement requires further reduction of nitrogen and phosphorus entering the bay by approximately 20 million pounds and 1 million pounds per year, respectively. In the future, MDE might require the use of enhanced nutrient removal technologies. WWTPs using these technologies are expected to reduce nitrogen and phosphorus in the wastewater down to 3.0 mg/L total nitrogen and 0.3 mg/L total phosphorus (USACE Mobile District 2007).

A Wastewater Systems Report for Fort Meade completed in June 2007 identified the following actions that should take place to increase the capacity of the WWTP and wastewater collection system (URS/LAD 2009):

- Retrofit the WWTP treatment process and replace filters to meet the NPDES biological nitrogen removal and the Chesapeake Bay initiative
- Upgrade site safety and security at the WWTP
- Upgrade instrumentation and controls at the WWTP
- Upgrade wastewater collection Pump Stations
- Inflow/infiltration control.

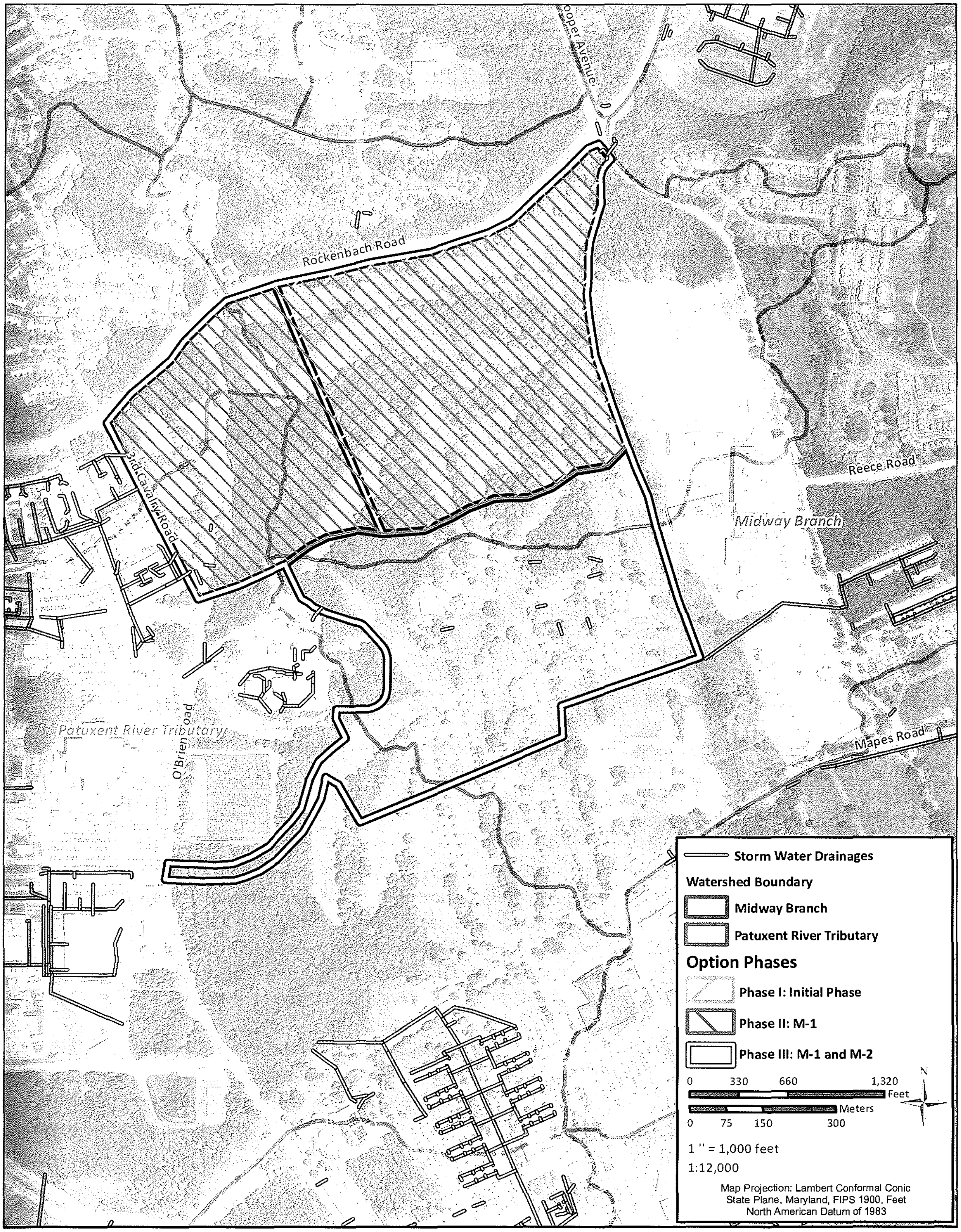
The wastewater system, including the WWTP and associated piping infrastructure, at Fort Meade is currently being privatized.

Storm Water Drainage System

The storm water drainage system at Fort Meade is composed of two major defined watersheds and one minor undefined watershed. These three watersheds are supplemented with an extensive network of storm drain pipes and attendant drainage structures that are supplemented by swales, ditches, other drains, and retention ponds. These drainage areas are generally north-south-oriented, emanate in the northern portion of the installation, and ultimately discharge into the Little Patuxent River (USACE Mobile District 2007). **Figure 3.9-2** shows the locations of the storm water drainages in the vicinity of Site M.

The eastern portion of Fort Meade is drained by the Franklin Branch, the central portion is drained by Midway Branch, and the western portion is drained by several unnamed tributaries. Construction of retention ponds at Fort Meade has been ongoing for the past several years. These retention ponds reduce the concentrated flow into the main branch channels, thereby preventing back overflow and flooding (USACE Mobile District 2007).

The NSA campus is topographically divided into three natural drainage sub-basins that cover the northern, eastern, and western areas of the NSA campus. Site M can be divided into two major drainage basins. The northern half of Site M flows into the 9800 Area, and then flows south through the South Campus to the storm water management area (SWMA). The eastern three-quarters of Site M drains east



Sources: Potential Project Actions: HDR | e²M, Inc 2010; Storm Water Drainages: Fort Meade GIS 2009; Aerial Photography: USDA-APFO NAIP 2009.

Figure 3.9-2. Storm Water Drainages and Watershed Boundaries in the Vicinity of the NSA Campus

and southeast directly into Midway Branch, a tributary of the Patuxent River. A ridge line bisects the northeastern corner of the drainage area, creating two separate outlet points to Midway Branch. The southern half of Site M flows through the existing research and engineering (R&E) overflow parking area and joins flows from the northern area, in the South Campus. The western one-quarter of Site M drains west and southwest across existing developed land to a SWMA near Perimeter Road and MD 32 (URS/LAD 2009).

Based on the provisions of COMAR 26.17.01 and 26.17.02, all jurisdictions within Maryland must implement a storm water management program to control the quality and quantity of storm water runoff resulting from any new development. Under the regulations, the release rate from newly developed areas cannot exceed the rate generated by the site under undeveloped conditions (USACE Mobile District 2007).

Electrical System

Electrical power is supplied to Fort Meade by BGE via four distribution substations; three of which serve the NSA campus and one of which serves Fort Meade (URS/LAD 2009).

Currently BGE uses several energy sources to generate electricity. The sources used are detailed in **Table 3.9-2**. BGE also offers a mix of power purchase options to commercial users. The options allow users to specify different mixes of generating sources if more renewable power than is offered by the baseline generation mix is desired.

Table 3.9-2. Fuel Sources Used to Produce Electricity by BGE

Fuel Source	Percent
Coal	51.2
Oil	0.3
Natural Gas	6.4
Nuclear	33.2
System Mix*	4.3
Renewable	4.7
Captured Methane Gas	*0.3*
Geothermal	*0.0*
Hydroelectric	*2.8*
Solar	*0.0*
Solid Waste	*0.1*
Wind	*0.0*
Wood or Biomass	*1.5*
Total	**100.1**

Source: BGE 2009

Note: * BGE Supply Mix represents the Maryland Renewable Portfolio Standard (RPS) requirement of 4.5% (2.0% Tier I, 2.5% Tier II) and the balance of 95.5% is simply the PJM "Residual Mix."

The three substations at the NSA campus are near full capacity. In various locations beyond the three substations, the ductbank infrastructure and building distributions pose limits on how the power can be utilized. The NSA campus substations are within the 300-foot Anti-Terrorism/Force Protection (AT/FP) standoff and need to be relocated. In addition, the substations are outdated and unreliable. The electrical power infrastructure is aging, in need of maintenance, and has experienced outages (both internal to the system and weather-induced). The constantly changing mission of the facility load centers, which distributes power inside the buildings, requires a more flexible power system distribution to meet the demand. The power distribution system needs to be able to redirect power to the buildings in response to evolving mission requirements or unexpected system failure conditions. There are several secondary sources of electrical power composed of 18 engine-driven emergency standby generators at 15 locations at Fort Meade (USACE Mobile District 2007). The existing backup generators are diesel powered. In May 2009, NSA approved a plan to upgrade and modernize aging utilities infrastructure on the original campus through the construction and operation of a North Utility Plant, a South Generator Facility, a Central Boiler Plant, and associated infrastructure to upgrade and modernize aging utilities infrastructure (DOD 2009a).

There is no electrical power generated at Site M. There are seven transformers on Site M; three are south of the maintenance area, along Zimborski Avenue on a utility pole; three are pole-mounted transformers south of the golf course, at the entrance along Mapes Road; and one is a pole-mounted transformer east of the baseball field on Mapes Road (USACE Mobile District 2007).

Natural Gas System

Natural gas is supplied by BGE to the Defense Energy Support Center, a DOD agency, which in turn provides it to Fort Meade and NSA. Natural gas is supplied to Fort Meade via high-pressure (100 pound-force per square inch gauge [psig]) mains (USACE Mobile District 2007). Natural gas is supplied to the NSA campus by a 4-inch gas main. An extensive natural gas distribution system, loops the entire campus and provides natural gas to a majority of the facilities. The gas delivery pressure is 88 psig per the existing pressure gages in the gas meter building. The current natural gas capacity is 445,000 cubic feet per hour (ft^3/hr), which is supplied by seven BGE meters. Current demand is approximately 139,060 ft^3/hr (33 percent of the capacity). Studies confirm that the system capacity can be exceeded by 25 percent (URS/LAD 2009).

Currently, there are no natural gas sources at Site M. Three natural gas lines run adjacent to Site M; one 8-inch gas line is along Rockenbach Road to the north, one 6-inch gas line is along Mapes Road to the south, and one 8-inch gas line is along O'Brien Road to the west (URS/LAD 2009).

Solid Waste

In 2009, Fort Meade generated approximately 3,763 tons of household, commercial, and industrial waste. In 2009, NSA generated approximately 3,689 tons of municipal solid waste. Solid waste is ultimately transported by the Directorate of Public Works staff to local landfills and transfer stations. Fort Meade does not currently operate a landfill. There are numerous other rubblefills and landfills in the greater Baltimore area (DOD 2009a).

Recyclable materials at Fort Meade are collected by a licensed contractor and processed at the Fort Meade Recycle Center (Building 2250) under a Qualified Recycling Program. Recyclables include cardboard, white paper, newspaper, paper pulp, aluminum cans, and scrap metal. In 2009, Fort Meade recycled 5,085 tons of recyclable materials. NSA operates its own recycling program, and in 2009 NSA recycled 10,763 tons of recyclable materials, with a waste diversion rate of 74 percent (DOD 2009a, USACE Mobile District 2007). The Automatic Waste Collection System on the NSA campus receives classified waste through a system of chutes, pipes, and valves. Classified waste is declassified at the Paper Destruct Building, where it is converted into paper pulp and recycled (URS/LAD 2009).

Communication System

The Network Enterprise Center (NEC) has oversight for the communication system at Fort Meade. Fiber-optic cable is used exclusively on-installation and all new buildings have Category 5 telephone cable installed. There are 24 authorized Integrated Services Digital Network users. Each Directorate has their own Local Area Network. The NSA has its own communications and signal support (Fort Meade 2005b).

A nontactical radio trunking system that uses hand-held Motorola radios is managed by the NEC. Cellular service is available; however, it is strictly controlled, and very limited authorized government users are on- installation. Fort Meade and NSA have different controls for cellular service on-installation. There is also a High Frequency Military Affiliated Radio System station that is maintained on-installation by the NEC. Telephone service is provided by Verizon (USACE Mobile District 2007).

Security Systems

Currently, there are no discrete security systems (i.e., Vehicle Control Points [VCPs], gates, or fence lines) at Site M. Security for the NSA campus is based on Director of Central Intelligence Directives; UFC 4-010-01, *DOD Minimum Anti-terrorism Standards for Buildings*; and UFC 4-022-01, *DOD Security Engineering: Entry Control Facilities/Access Control Points*. In addition, the following strategies, derived from Fort Meade's Installation Design Guide (IDG), are considered for the orientation of facilities:

- Deny aggressors a clear "line of sight" to the facility from on or off the site where possible. Protect the facility against surveillance by locating the protected facility outside of the range or out of the view of vantage points.
- Protect against attack by selecting perimeter barriers to block sightlines such as obstruction screens, trees, or shrubs. Noncritical structures or other natural or man-made features can be used to block sightlines.
- Create "defensible space" by positioning facilities to permit building occupants and police to clearly monitor adjacent areas.
- If roads are nearby, orient a building so the sides of the building are not parallel to vehicle approach routes.
- Design vehicular flow to minimize vehicle bomb threats; avoid high-speed approach into any critical or vulnerable area.
- Avoid siting the facility adjacent to high surrounding terrain, which provides easy viewing of the facility from nearby nonmilitary facilities (URS/LAD 2009).

MD 175 and MD 32 are important perimeter highways that provide access to the Fort Meade entry/exit gates. The installation, including the current NSA areas, uses ten ACPs; eight of which are actively in-use to connect with the surrounding road network. Three of the externally controlled-access points are dedicated to the NSA campus: VCP No. 1 (MD 32 and Canine Road), VCP No. 6 (MD 32 and Samford Road), and VCP No. 2 (the exit from MD 295 South) (URS/LAD 2009).

Liquid Fuel Supply

The NSA operations involving liquid fuel are limited to the use of No. 2 fuel oil for heating and diesel fuel for running emergency generators. The NSA also operates truck-mounted fuel tanks (50 gallons each) for refueling forklifts and other mobile equipment. The Central Boiler Plant uses two 200,000-gallon aboveground storage tanks (ASTs), which contain No. 2 fuel oil used for steam generation. The Central Boiler Plant also uses a 10,000-gallon diesel day tank for an emergency diesel generator (DOD 2009a). Information on the Central Boiler Plant on the NSA campus is provided below in the *Heating and Cooling System* section below. NSA has 13 underground storage tanks (USTs) and 42 ASTs that have a combined total capacity of 964,000 gallons.

Building 8880 on Site M is divided into a maintenance area and an equipment storage area. There is a 1,000-gallon gasoline/diesel AST and a 550-gallon fuel oil UST at Building 8880 that were installed in the 1990s. There are two 1,000-gallon fuel oil ASTs at Site M; one at Building 8870 and one at Building 8890. In addition, there is a 525-gallon gasoline AST at the club house on Site M, which is used for refueling the golf carts (USACE Baltimore District 2004a).

Heating and Cooling System

The Central Boiler Plant (Building 9807) on the NSA campus provides high-pressure steam for heating, domestic water generation, and humidification for the majority of the NSA campus (URS/LAD 2009). The Central Boiler Plant is composed of four dual-fuel natural gas/fuel oil-fired boilers, pumps, piping, and two 200,000-gallon ASTs that store backup fuel (No. 2 fuel oil) for the boilers. The plant also contains a small pump station in a closed pit that houses return lines and fuel lines. The plant operates continuously; however, the number of boilers in operation depends on the demand and time of year. The boilers primarily operate on natural gas but use No. 2 fuel oil for backup. Contractors service the boiler plant, but employees monitor the feed and perform the daily chemical analysis (DOD 2009a). The steam and condensate distribution system is a direct burial system that is accessed by manholes. Most of the steam piping is along Samford, Canine, and Emory Roads. Sections of the steam pipe and buildings can be isolated through valves in the manholes. A steam piping replacement project was performed from 1993 through 2001 (URS/LAD 2009). There are some individual chillers associated with buildings on the NSA campus, but currently there is no central chilled water distribution system to provide air conditioning (DOD 2009a).

Pavements

Parking Facilities. There are approximately 112 acres of surface parking space and one small two-level parking structure on the NSA campus. Parking is provided throughout the NSA campus on surface lots adjacent to most buildings. Parking spaces fall into one of four groups: (1) "General" spaces, available for use by NSA employees or visitors; (2) "Reserved" spaces, restricted on a 24/7 basis to individual senior staff; (3) "Handicap" spaces, restricted to NSA employees or visitors whose vehicles display a valid disabled license plate or rearview mirror tag; and (4) "NSA Fleet," areas used by government or private trucks, buses, and other maintenance vehicles that are not available for use by NSA employees or visitors. The parking lots are mostly devoid of green areas and shade trees to articulate the parking areas and provide shade to moderate the thermal heat gain produced by large expanses of paving. Existing parking lots, including overflow parking, are at nearly 100 percent capacity on most weekdays during normal business hours. Ample parking capacity is available during off hours, weekends, and holidays (DOD 2009a, URS/LAD 2009).

Sidewalks. There are sidewalks between parking lots and adjacent to most facilities on Fort Meade and the NSA campus; however, the sidewalks adjacent to most facilities are limited and not interconnected throughout Fort Meade and the NSA campus in a manner to facilitate walking or biking as alternatives to driving around the installation. In addition to the limited number of sidewalks between major facilities, pedestrian flow is severely restricted by security checks that occur at internal NSA fence lines around many of the buildings (URS/LAD 2009).

3.10 Hazardous Materials and Wastes

3.10.1 Definition of 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 173. Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations within Title 49 CFR.

Hazardous substances are defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at 42 U.S.C. 9601(14), as amended by the Superfund Amendments and Reauthorization Act. The definition of hazardous substances includes (A) any substance designated pursuant to 33 U.S.C. 1321(b)(2)(A); (B) any element, compound, mixture, solution, or substance designated pursuant to 42 U.S.C. 9602; (C) any hazardous waste having the characteristics identified under or listed pursuant to Section 3001 of the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, (42 U.S.C. 6921); (D) any toxic pollutant listed under 33 U.S.C. 1317(a); (E) any hazardous air pollutant listed under Section 112 of the Clean Air Act (CAA) (42 U.S.C. 7412); and (F) any imminently hazardous chemical substance or mixture with respect to which the Administrator of the USEPA has taken action pursuant to 15 U.S.C. 2606. The term hazardous substance does not include petroleum products and natural gas.

Hazardous wastes are defined by the 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 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.

Toxic substances are regulated under the Toxic Substances Control Act (15 U.S.C. 2601 et seq.), which gives the USEPA the ability to track industrial chemicals produced or imported into the United States. USEPA reviews manufacturer specifications for these chemicals and can require reporting or testing of those that might pose an environmental or human-health hazard. USEPA can ban the manufacture and import of those chemicals that pose an unreasonable risk. Asbestos-containing materials (ACMs), polychlorinated biphenyls (PCBs), and lead-based paint (LBP) are among the chemicals regulated by the Toxic Substances Control Act.

ACMs at U.S. Army facilities are regulated by Army Regulation (AR) 200-1 and AR 420-70, *Buildings and Structures*. AR 200-1 contains the environmental policy for the Army's Asbestos Management Program, and it requires the development and execution of an Asbestos Management Plan. AR 420-70 contains the facilities engineering policy for the U.S. Army's Asbestos Management Program. It consists of requirements for facility surveys, monitoring, training, and facility disposition. AR 420-70 excludes ACMs from all procurements and uses where asbestos-free substitute materials exist. Fort Meade maintains an Asbestos Management Program (DOD 2008a). Facilities most likely to contain ACMs are those built or remodeled prior to 1978, at a time before friable (crushable) ACMs were banned from use by the USEPA (SBCAPCD 2009); however, facilities constructed in or after 1978 might contain nonfriable asbestos.

In general, hazardous materials, hazardous substances, hazardous wastes, and toxic substances include elements, compounds, mixtures, solutions, and substances which, when released into the environment or otherwise improperly managed, could present substantial danger to the public health, welfare, or the environment.

Evaluation of hazardous materials and wastes focuses on ASTs; underground storage tanks (USTs); and the storage, transport, handling, and use of pesticides, fuels, solvents, oils, lubricants, ACMs, PCBs, and LBP. A storage tank is a vessel and its associated piping that contains a product. From a regulatory perspective, if less than 10 percent of the volume of the storage tank and piping is underground, it is an AST. If at least 10 percent of the volume of the storage tank and piping is underground, it is a UST.

Evaluation might also extend to generation, storage, transportation, and disposal of hazardous wastes when such activity occurs at or near the project site of a proposed action. In addition to being a threat to humans, the improper release of hazardous materials and wastes can threaten the health and well-being of wildlife species, botanical habitats, soil systems, and water resources. In the event of a release of hazardous materials or wastes, the extent of contamination varies based on the type of soil, topography, and water resources.

3.10.2 Existing Conditions

Hazardous Materials and Petroleum Products. AR 200-1, *Environmental Protection and Enhancement* identifies the requirements for managing hazardous materials on U.S. Army facilities, including guidance for the proper use, generation, transportation, storage, and handling of hazardous materials and petroleum products.

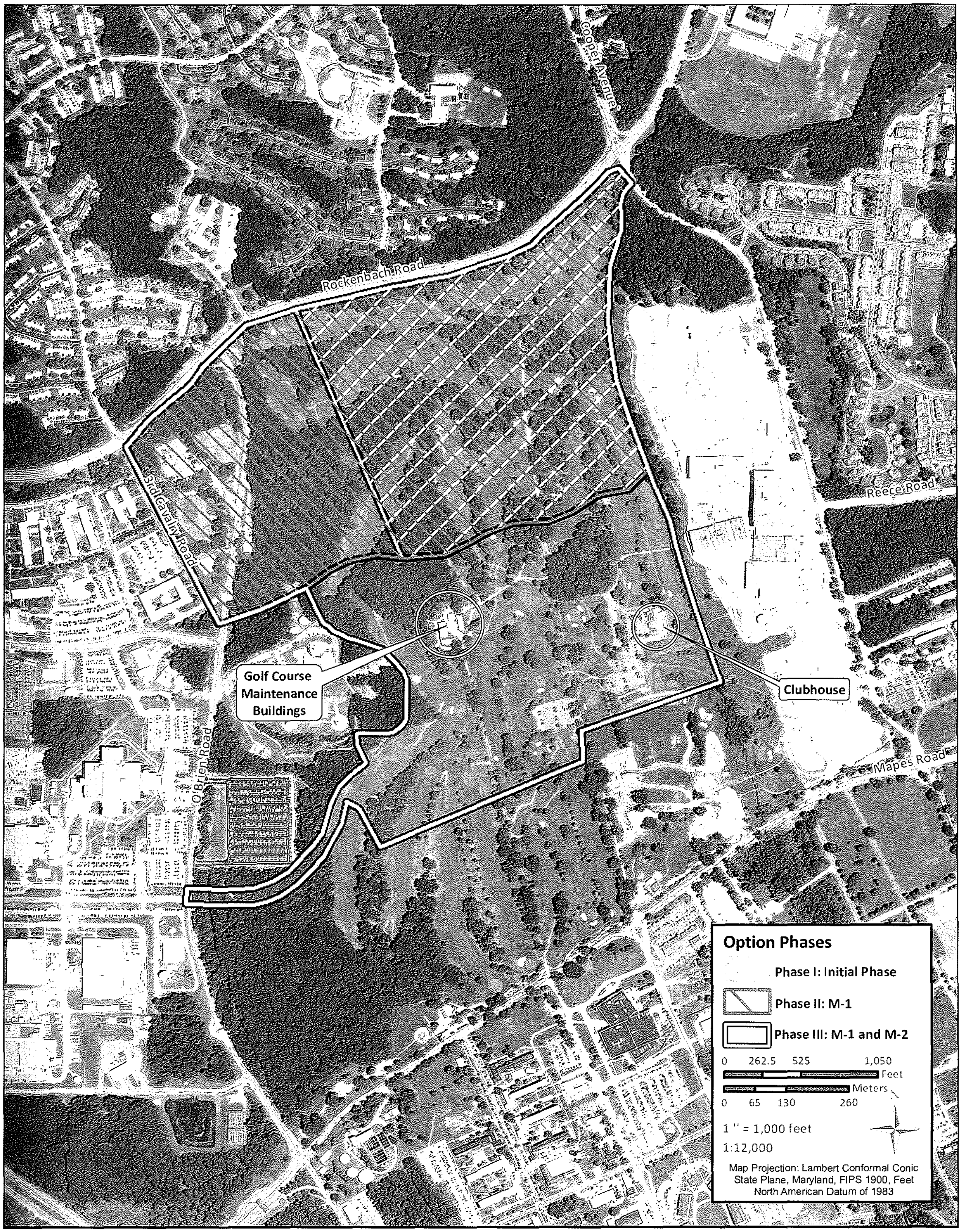
Fort Meade uses, handles, and stores hazardous materials and petroleum products, which include pesticides, oils, lubricants, cleaners, hydraulic fluids, and fuels (gasoline and diesel). Common usages of hazardous materials and petroleum products within the areas of the Proposed Action and proposed alternatives include pesticide applications, fuel for heating buildings, and lubricants and fuels for landscaping equipment, golf cart cleaning, and maintenance processes.

No buildings that contain hazardous materials or petroleum products have been documented within Site M-1; however, several buildings that contain hazardous materials and petroleum products have been documented within Site M-2. **Table 3.10-1** identifies the buildings within Site M-2 and includes a brief description of the hazardous materials and petroleum products at each. **Figure 3.10-1** shows the locations of these buildings relative to the areas of the Proposed Action and both proposed alternatives. Several structures have been demolished within Site M-2 that once contained hazardous materials and petroleum products. These structures include a former clubhouse building and two associated structures (approximately 200 feet southwest of the current clubhouse building) that were demolished in the mid-1990s and several former maintenance buildings that were razed between the 1960s and present (USACE Baltimore District 2004a). No evidence of hazardous material or petroleum product spills has been documented at these former buildings.

Table 3.10-1. Current Facilities within Site M that Contain Hazardous and Petroleum Products and Wastes

Building Name, Year Constructed, and Size	Building Construction	Current Building Use	Types of Hazardous Materials and Petroleum Products Present	Types of Hazardous and Petroleum Wastes Present
Clubhouse, 1995, square footage not available	Concrete block and wood frame with concrete slab below basement	Recreation, dining, lounge, and golf cart storage and maintenance	Gasoline, solvents, and cleaners	Used oil (in 55-gallon drums) and spent golf cart batteries
Golf Course Maintenance Area				
21 – Hazardous Waste Storage Locker, 1993, 25 ft^2	Steel building with built-in secondary containment	Hazardous wastes storage	None	Hazardous wastes including spent antifreeze, cleaners, and solvents
8860 – Pumphouse Building, 1949, 225 ft^2	Concrete block frame with wooden roof; concrete slab under portion of building, soil under remainder of building	Pumphouse for water sprinkler system	Oil, grease, lubricants, asphalt roof coating, and wood preservatives	55-gallon drums and cans of used oil; possible former storage location of hazardous waste prior to Building 21
8870 – Maintenance Building, 1989, 4,800 ft^2	Steel frame with metal siding on concrete slab	Maintenance and landscaping storage	Fertilizers, insecticides, herbicides, rock salt, degreasers, and paints	None
8880 – Maintenance Building, 1964, 4,000 ft^2	Steel frame with metal siding on concrete slab	Maintenance and equipment storage	Gasoline cans, grease, paint, hydraulic oil, and herbicides	None
8890 – Maintenance Building, 1989, 4,000 ft^2	Steel frame with metal siding on concrete slab	Office space with lockers, break room, workshop, and maintenance and landscaping storage	Oil and solvents; several flammable material storage cabinets containing solvents, paints, and paint thinners	Used oil in an 800-gallon AST
8890A – Hazardous Materials Storage Building, 1989, 144 ft^2	Concrete block frame on concrete slab with built-in secondary containment	Hazardous materials storage	Fertilizers and herbicides	None

Source: USACE Baltimore District 2004a



1 Source of Potential Project Actions: HDR | e²M, Inc 2010; Source of Aerial Photography: USDA-APFO NAIP 2009.

2 **Figure 3.10-1. Locations of Current Buildings that Contain Hazardous**
3 **and Petroleum Products and Wastes within Site M**

4

Hazardous and Petroleum Wastes. Fort Meade maintains an Installation Hazardous Waste Management Plan, as directed by AR 200-1. This plan describes the roles and responsibilities of all members of Fort Meade with respect to the waste stream inventory, waste analysis planning, 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 hazardous and petroleum waste management (DOD 2004).

Fort Meade is a RCRA Large Quantity Generator and operates a 90-day storage facility. Fort Meade's USEPA identification number is MD9210020567 (USACE Baltimore District 2004a). Large-quantity generators generate more than 1,000 kilograms (kg) of hazardous waste, or more than 1 kg of acutely hazardous waste, per month.

Various activities and operations at Fort Meade generate hazardous and petroleum wastes, which include oils, lubricants, antifreeze, brake fluids, hydraulic fluids, paint and paint thinners, cleaners, degreasers, solvents, and batteries. No buildings that contain hazardous or petroleum wastes have been documented within Site M-1; however, several buildings that contain hazardous and petroleum wastes have been documented within Site M-2. **Table 3.10-1** identifies the current buildings within Site M-2 and includes a brief description of the hazardous and petroleum wastes at each. **Figure 3.10-1** shows the locations of these buildings relative to the areas of the Proposed Action and proposed alternatives. Several former structures within Site M-2, including the former clubhouse buildings and former maintenance buildings, have been documented as once containing hazardous and petroleum wastes. No spills or releases of hazardous or petroleum wastes have been documented at any of these former buildings (USACE Baltimore District 2004a).

Storage Tanks and Oil/Water Separators. There are approximately 100 ASTs and 10 USTs currently at Fort Meade outside of NSA (DOD 2009b, 2009c). There are no ASTs and no USTs within Site M-1. There are, however, 5 ASTs and 1 UST within Site M-2. All of these storage tanks were installed in the mid-1990s, and are described as follows:

- One 525-gallon, gasoline AST with secondary containment near the current clubhouse building
- One 1,000-gallon, double-walled, fuel oil AST (Building 8870)
- One 1,000-gallon, double-walled, gasoline/diesel AST (Building 8880)
- One 1,000-gallon, double-walled, fuel oil AST (Building 8890)
- One 800-gallon, double-walled, waste oil AST (Building 8890)
- One 550-gallon, fuel oil UST (Building 8880) (USACE Baltimore District 2004a).

Approximately 12 USTs were formerly within Site M-1, including at the former clubhouse, in the area of the current maintenance buildings, and at a former farmhouse (approximately 200 feet north of the current clubhouse). These former USTs were removed at various dates between 1990 and 2000. Of the 12 former USTs, 2 (a 550-gallon diesel UST and a 2,000-gallon gasoline UST) were removed from the maintenance area (within Site M-2) due to leaks in 1990 and 1992, respectively. Contaminated soil was excavated from both sites during the UST removal process, and groundwater monitoring was conducted until 1996 when sampling results indicated that groundwater complied with MDE cleanup standards. There are currently no ongoing or planned remediation projects within the areas of the Proposed Action and proposed alternatives resulting from AST or UST leaks (USACE Baltimore District 2004a).

Two oil/water separators (OWSs) are within Site M-2. One of the OWSs was installed in 2003 at an equipment washing station at the golf courses' maintenance area. The second OWS is near the clubhouse building and is used for the washing of golf carts. Both OWSs are reportedly in good condition and serviced on a regular basis. No other OWSs are within Site M-2, and no OWSs are within Site M-1 (USACE Baltimore District 2004a).

Asbestos-Containing Materials. With exception to Buildings 8860 and 8880, all buildings in the areas of the Proposed Action and proposed alternatives were constructed after 1978; therefore, friable ACMs are not expected within these buildings. Because Buildings 8860 and 8880 were constructed in 1949 and 1964, respectively, ACMs might be present in these buildings (USACE Baltimore District 2004a).

Radon. Radon is a naturally occurring colorless, odorless, radioactive gas formed by the natural breakdown or decay of uranium in rock, soil, and water. It has the tendency to accumulate in enclosed spaces that are below ground and poorly ventilated, such as basements. Radon has been determined to increase the risk of developing lung cancer. In general, the risk increases as the level of radon and the 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 accumulations greater than 4 pCi/L are considered to represent a health risk to occupants.

The USEPA-designated radon potential in Anne Arundel County, Maryland, is Radon Zone 2, which has an average indoor radon level between 2 and 4 pCi/L (USEPA 2009c). The U.S. Army conducted radon monitoring at Fort Meade in 1990. All indoor radon concentrations were below 4.0 pCi/L (USACE Baltimore District 2004a).

Lead-Based Paint. In 1978, the United States Consumer Products Safety Commission banned the use of LBP for residential use. Under the LBP Poisoning Prevention Act (42 U.S.C. 4822), as amended, LBP hazards equal to or greater than 1 microgram per cubic centimeter must be abated.

LBP at Fort Meade is managed according to their Lead Hazard Management Plan. The purpose of the plan is to implement a management program for the identification and risk assessment of lead and LBP hazards (DOD 2006).

Within Site M, only Buildings 8860 and 8880 were constructed prior to 1978 (USACE Baltimore District 2004a). As such, these buildings are assumed to contain LBP.

Pesticides. AR 200-5, *Pest Management*, promulgates policies, responsibilities, and procedures to implement the Army Pest Management Program. Fort Meade's pest management practices are covered in its Integrated Pest Management Plan, which notes pesticide application procedures, storage management, and safety concerns (DOD 2005).

Numerous pesticides are used at Fort Meade. These products include herbicides (such as dithiopyr and oxadiazon), fungicides (such as chlorothalonia and mancozeb), and insecticides (such as lambda-cyhalothrin and carbaryl). Many of these products are used in the maintenance of the two golf courses in Site M. As noted in **Table 3.10-1**, pesticides are stored in Buildings 8870, 8880, and 8890A (all within Site M-2). All pesticide storage facilities are subject to periodic inspection by the Maryland Department of Agriculture (MDA). Prior MDA inspections found that pesticides are being used and stored properly at Site M. Current applications of pesticides within Site M are conducted within the guidelines established by the manufacturer and as specified in the Integrated Pest Management Plan (USACE Baltimore District 2004a). There is no documentation to indicate any misuse or spills of pesticide products within Site M.

Soil sampling investigations were conducted as part of a 2004 Environmental Baseline Survey (EBS) of Site M to determine if environmental contamination from pesticide use at the golf courses was present. Sampling results determined that pesticides, including heptachlor epoxide, alpha chlordane, gamma chlordane, and dieldrin, were in excess of MDE soil cleanup standards at several sampling locations within Site M. The soil sampling locations included the maintenance area and five of the 36 golf course greens. The sampling investigation did not test for arsenic and lead, which were commonly used as pesticides in the past, and it did not include groundwater sampling. Based on these results, it was determined that pesticide contamination from former pesticide applications at the golf courses was present within portions of Site M. Places where pesticides are commonly applied, such as golf course greens, fairways, and tee boxes, and places where pesticides are stored and mixed, such as maintenance buildings, were the most likely to be contaminated (USACE Baltimore District 2004a).

Prior to use as a military reservation, portions of Site M were used for farming until at least 1917. Although there is no indication of such, there is the potential for pesticide contamination within Site M from improper former pesticide use to support farming operations. There are currently no ongoing or planned pesticide remediation projects within Site M. The EBS noted that the level of contamination was not significant enough to impact the future use of Site M and would not require remedial action (USACE Baltimore District 2004a).

Polychlorinated Biphenyls. PCBs are mixtures of synthetic organic chemicals that range from oily liquids to waxy solids. PCBs were primarily used in dielectric fluids for industrial electrical equipment, but were also used in hydraulic fluids, fluorescent lamp ballasts, paints, inks, cutting oils, plasticizers, fire retardants, and heat exchange fluids. The USEPA banned most production and use of PCBs in 1979. 40 CFR 761 regulates the manufacture, processing, distribution in commerce, use, disposal, storage, and marking of PCBs and PCB items.

AR 200-1 states that U.S. Army policy is to manage PCBs in place unless operational, economic, or regulatory considerations justify removal. The use, management, disposal, and cleanup of PCBs at Army installations must comply with 40 CFR 761.

Seven electrical transformers were previously observed during the EBS site visit; however, all were labeled as not containing PCBs (USACE Baltimore District 2004a). Other possible sources of PCBs within Site M include electrical light ballasts, capacitors, and electrical surge protectors within buildings. No PCB contamination has been documented within Site M; however, an area of PCB-contaminated groundwater (Site M, Parcel 6 [formerly known as Area of Interest (AOI) 13]) has been documented approximately 250 feet southeast of the area of the Proposed Action and proposed alternatives (USACE Baltimore District 2004a).

Environmental Restoration Program. The Defense Environmental Restoration Program (DERP) was formally established by Congress in 1986 to provide for the cleanup of DOD property at active installations, BRAC installations, and formerly used defense sites throughout the United States and its territories. The three restoration programs under the DERP are the Installation Restoration Program (IRP), Military Munitions Response Program (MMRP), and Building Demolition/Debris Removal. The IRP requires each installation to identify, investigate, and clean up contaminated sites. The MMRP addresses nonoperational military ranges and other sites that are suspected or known to contain unexploded ordnance (UXO), discarded military munitions, or munitions constituents. Building Demolition/Debris Removal involves the demolition and removal of unsafe buildings and structures. Eligible DERP sites include those contaminated by past defense activities that require cleanup under CERCLA and certain corrective actions required by RCRA. Non-DERP sites are remediated under the Compliance-Related Cleanup Program.

Fort Meade was placed on the USEPA's National Priority List of contaminated sites in July 1998, based on the evaluation of four locations, which have been identified as past storage or disposal sites for hazardous materials or hazardous wastes and where environmental contamination likely occurred. These four sites include the Defense Reutilization and Marketing Office, the Closed Sanitary Landfill, the Clean Fill Dump (closed), and the Post Laundry Facility (INSCOM 2007). All four sites are outside of Site M.

There are 33 active IRP sites and 2 response complete (no further action required) IRP sites at Fort Meade (Fluck 2010a). Of these sites, one active IRP site (FGGM 95) and one response complete site (FGGM 101) are within the area of the Proposed Action and the proposed alternatives (see **Figure 3.10-2**).

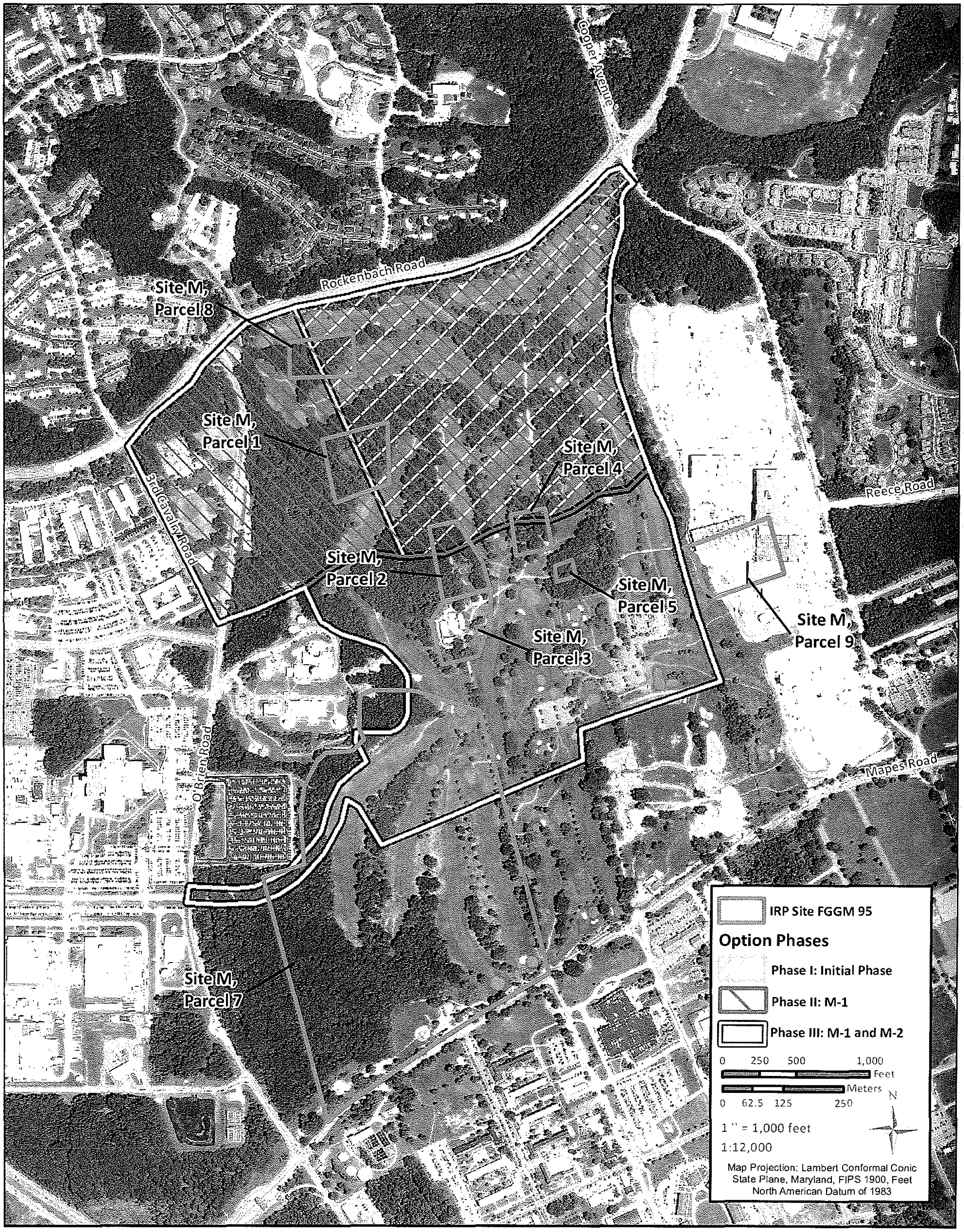
Active IRP Site FGGM 95 is a compilation of 23 nearby landfills. Of the 23 landfills, 8 (Site M, Parcels 1 through 5 and 7 through 9) are within Site M and are shown in **Figure 3.10-2**. The 8 former landfills sites are discussed as follows:

- Site M, Parcel 1 (formerly known as AOI 1) is within Site M-1, approximately 700 feet southeast of the intersection of Rockenbach and O'Brien Roads. Historical aerial photographs indicate that Site M, Parcel 1 appears to have been a possible dump site in 1938 (URS 2009). Several deteriorated 55-gallon drums, tires, and unidentifiable metal remains were observed at Site M, Parcel 1 during the 2004 EBS of Site M (USACE Baltimore District 2004a). A 2004 geophysical study revealed the presence of buried metallic objects, possibly including scrap metal, automobile frames, axles, pipes, and household appliances. Soil sampling conducted during a 2007 Preliminary Assessment/Site Investigation (PA/SI) of Fort Meade detected arsenic, lead, and mercury in the soil above respective action levels. Aluminum, iron, and manganese were detected in groundwater above respective action levels (URS 2009). Risk analysis was performed on the site in 2009 and it was determined that there was no soil risk and a minimal hazard to groundwater. Future groundwater monitoring is to be conducted at Site M, Parcel 1 to determine appropriate remedial actions (URS 2010a).

- Site M, Parcel 2 (formerly known as AOIs 2 and 3) is within Sites M-1 and M-2, approximately 50 feet north of the maintenance area for the golf courses. Historical aerial photographs show a solid waste landfill in operation at this area in 1943 (URS 2009). Metal scraps and 55-gallon drums were observed at Site M, Parcel 2 during the EBS site visit (USACE Baltimore District 2004a). The 2004 geophysical survey found evidence of a landfill with disturbed soil to 8 feet below the ground surface. Soil sampling conducted during the 2007 PA/SI detected concentrations of arsenic and benzaldehyde in excess of MDE clean-up standards. Aluminum, iron, lead, and manganese were detected in groundwater samples at concentrations that exceed MDE clean-up standards (URS 2009). Future soil and groundwater monitoring efforts are proposed at Site M, Parcel 2 to determine appropriate remedial actions (URS 2010a).

- Site M, Parcel 3 (formerly known as AOI 5) is at the maintenance area for the golf courses. This site was identified when soil samples collected in 1999 and 2004 exhibited concentrations of pesticides above MDE clean-up standards. Additionally, during the EBS site visit, a ground-surface soil stain on the dirt floor of the western portion of Building 8860 at the golf courses' maintenance area was noted. The age, source, size, and depth of this soil stain are not known. Soil samples collected from the area of the soil stain during the EBS site visit indicated that arsenic, mercury, and diesel range organics exceeded MDE soil clean-up standards and anticipated typical concentrations (ATCs) for the region (USACE Baltimore District 2004a). Additional groundwater and soil sampling has occurred and determined that there is no apparent hazard/risk at Site M, Parcel 3. Pending approval from the USEPA, the site is to be classified as no further action required (URS 2009, URS 2010b).

- Site M, Parcel 4 (formerly known as AOI 7) is in the south-central portion of Site M-1 and the north-central part of Site M-2. Site M, Parcel 4 is a former training area. Groundwater sampling, conducted as part of the EBS, detected aluminum, iron, and manganese at concentrations in excess of MDE clean-up standards (USACE Baltimore District 2004a). Subsequent sampling has determined that there is no apparent hazard/risk at Site M, Parcel 4. Pending approval from the USEPA, the site is to be classified as no further action required (URS 2009, URS 2010b).



1 Sources: Site M Parcels: URS 2009; Aerial Photography: USDA-APFO NAIP 2009.

2 **Figure 3.10-2. Location of IRP Site FGGM 95**

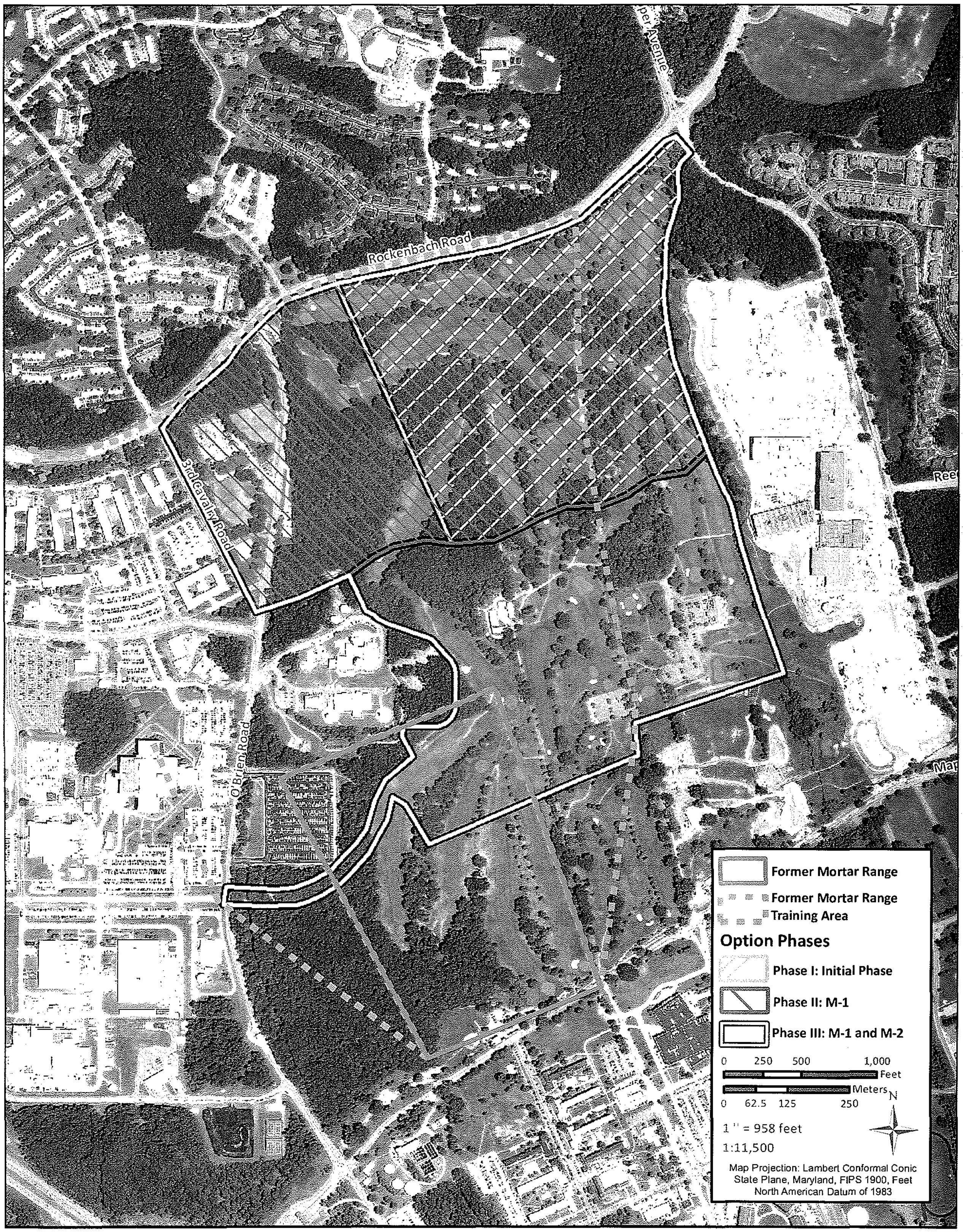
- Site M, Parcel 5 (formerly known as AOI 11) is within Site M-2, approximately 500 feet northwest of the current golf course clubhouse building. Concrete debris was observed at Site M, Parcel 5 during the EBS site visit. Soil sampling, taken as part of the EBS, determined that concentrations of aluminum, arsenic, chromium, and iron exceed MDE clean-up standards and ATC for the region. Groundwater contamination at Site M, Parcel 5 was not reported. A geophysical survey and review of historical aerial photographs did not indicate former solid waste disposal concerns at Site M, Parcel 5 (USACE Baltimore District 2004a). Because no evidence of release has been documented at Site M, Parcel 5, the site is to be classified as no further action required, pending USEPA approval (URS 2010b).

- Site M, Parcel 7 (formerly know as AOIs 6 and 8) is immediately east of the western boundary of the area of Alternative 2. The site includes a former training area, portions of a former mortar range, and a possible former landfill. (The mortar range portion of Site M, Parcel 7 is discussed in the *Ordnance* subsection.) Metal cans, piping, and a fire hydrant were observed at the suspected former landfill portion of Site M, Parcel 7 during the EBS site visit. Historical aerial photographs show scarred ground at Site M, Parcel 7 from 1938 to 1957. Sampling conducted at Site M, Parcel 7 during the EBS indicated that aluminum, iron, manganese, and cobalt were detected in groundwater, and arsenic was found in soil (USACE Baltimore District 2004a). Future groundwater monitoring efforts are proposed at Site M, Parcel 7 to determine appropriate remedial actions (URS 2010a).

- Site M, Parcel 8 (formerly known as AOI 16) is in the northwestern corner of the golf course area within Site M-1 and is a suspected former landfill and former training area. Historical aerial photographs show disturbed ground at Site M, Parcel 8 from 1938 to 1957. No surface solid waste was observed at Site M, Parcel 8 during the EBS site visit; however, a geophysical study identified magnetic anomalies, suggesting the presence of buried metallic wastes (USACE Baltimore District 2004a). Sampling conducted as part of the 2007 PA/SI detected concentrations of antimony, arsenic, iron, and lead in soil samples above MDE clean-up standards, and aluminum, iron, and manganese in groundwater samples above MDE clean-up standards (URS 2009). Future soil and groundwater monitoring efforts are proposed at Site M, Parcel 8 to determine appropriate remedial actions (URS 2010a). This site was formerly referred to as IRP Site FGGM 101; however, Site FGGM 101 was closed and integrated into FGGM 95 (Fort Meade 2009c).

- Site M, Parcel 9 (formerly AOI 14) is within Site M-2, approximately 200 feet east-northeast of the current clubhouse building. Historical aerial photographs show scarred ground at Site M, Parcel 9 from 1938 to 1943. Soil sampling taken during the EBS determined that concentrations of arsenic exceed MDE clean-up standards and ATC for the region. Groundwater sampling detected concentrations of iron and manganese that exceed MDE clean-up standards but not ATC. No surface solid waste was observed at Site M, Parcel 9 during the EBS site visit; however, a geophysical study identified an 8-foot-by-8-foot, unknown, physical anomaly (USACE Baltimore District 2004a). The physical anomaly was excavated in 2007 and determined to be a naturally occurring combination of natural features. No solid waste was discovered. Subsequent sampling has determined that there is no apparent hazard/risk at Site M, Parcel 9. Pending approval from the USEPA, the site is to be classified as no further action required (URS 2009; URS 2010b)

Ordnance. Historically, portions of Fort Meade, including much of Site M, were used for military training purposes from World War I through World War II. The Fort Meade MMRP, which is a part of the Fort Meade IAP, identifies two active MMRP sites and three response complete (no further action required) MMRP sites at Fort Meade. Of these sites, one active MMRP site (FGGM-003-R-01), which is also identified as "Mortar Range," is within Sites M-1 and M-2 (see **Figure 3.10-3**). FGGM-003-R-01 is



Sources: Mortar Range Boundaries: USACE Baltimore District 2009; Aerial Photography: USDA-APFO NAIP 2009.

Figure 3.10-3. Former Mortar Range (Site FGGM-003-R-01) Boundaries

divided into two components: the former mortar range and the adjoining mortar range training area (Fort Meade 2009c).

The U.S. Army currently is conducting a remedial investigation for UXO, munitions debris, munitions constituents, and munitions and explosives of concern at FGGM-003-R-01. The primary purpose of this investigation is to characterize surface and subsurface conditions for explosive safety hazards including munitions, explosives of concern, and munitions constituents (USACE Baltimore District 2009). To date, over 6,000 anomalies have been detected at the former mortar range and former mortar range training area, and more than 1,300 of them have been investigated. Most of the material investigated has been determined to be non-munitions related scrap metal; however, some munitions debris, including 60 millimeter (mm) rounds, 81 mm rounds, a practice landmine, 3-inch Stokes practice mortars rounds, flares (expended), practice grenades, a dummy grenade, and discarded small arms ammunitions and casings have been detected. With the exception of the discarded small arms ammunition found south of the Proposed Action and alternatives, all munitions debris has been determined to be practice (Fluck 2010b). No explosives and no propellants have been detected in soil samples collected from the former mortar range (Tegtmeyer 2010). All munitions debris and small arms ammunition discovered during the MMRP investigation thus far have been disposed of in accordance with Federal and U.S. Army regulations (Brundage 2009b). Based on the available data to date, the Army intends to move the remedial investigation of the former mortar range into the feasibility study phase to address any ordnance constituents discovered during the remedial investigation (Fluck 2010b).

3.11 Socioeconomics and Environmental Justice

3.11.1 Definition of Resource

Socioeconomics. Socioeconomics is the relationship between economies and social elements such as population levels and economic activity. Factors that describe the socioeconomic environment represent a composite of several interrelated and nonrelated attributes. There are several factors that can be used as indicators of economic conditions for a geographic area, such as demographics, median household income, unemployment rates, percentage of families living below the poverty level, employment, and housing data. Data on employment identifies gross numbers of employees, employment by industry or trade, and unemployment trends. Data on personal income in a region is used to compare the before and after effects of any jobs created or lost as a result of a proposed action. Data on industrial, commercial, and other sectors of the economy provide baseline information about the economic health of a region.

The Proposed Action addressed in this EIS has the potential to affect the construction and real estate industries the most; therefore, this section focuses primarily on the construction and real estate industries to provide a baseline level of data to evaluate potential impacts.

Environmental Justice. EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, pertains to environmental justice issues and relates to various socioeconomic groups and the disproportionate effects that could be imposed on them. 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 enacted 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. Consideration of environmental justice concerns includes race, ethnicity, and the poverty status of populations in the vicinity of a proposed action.

3.11.2 Existing Conditions

Fort Meade's work force currently consists of approximately 40,000 employees, composed of military, civilian, and contractor personnel. The installation has the fourth largest workforce and one of the largest joint service centers of all installations in the continental United States (U.S. Army IMCOM 2008). Fort Meade's close proximity to the Baltimore Metropolitan Area and the Washington, D.C. Metropolitan Area allows workers to commute from a large number of communities with varying socioeconomic characteristics. For purpose of this analysis three spatial levels will be used: (1) Anne Arundel County Census District 4, (2) a Region of Influence (ROI), and (3) the State of Maryland. Anne Arundel County Census District 4 includes Fort Meade and three neighboring communities, Jessup, Severn, and Odenton, providing an overview of the installation and adjacent communities (see **Figure 3.11-1**). For this socioeconomic analysis, the distribution of Fort Meade employee's place of residence was used to determine the ROI (see **Table 3.11-1**) (Friedberg 2009). Included in the ROI are Anne Arundel County, Carroll County, Baltimore City, Baltimore County, Howard County, and Prince George's County. This ROI represents baseline levels for where the majority of the economic impacts would occur. The State of Maryland is included to compare the previous two spatial levels to a larger scale. Additional counties from the area around Fort Meade (e.g., Calvert, Montgomery, Talbot) were not included as part of the ROI because a relatively small portion of Fort Meade employees live in these counties (Friedberg 2009).

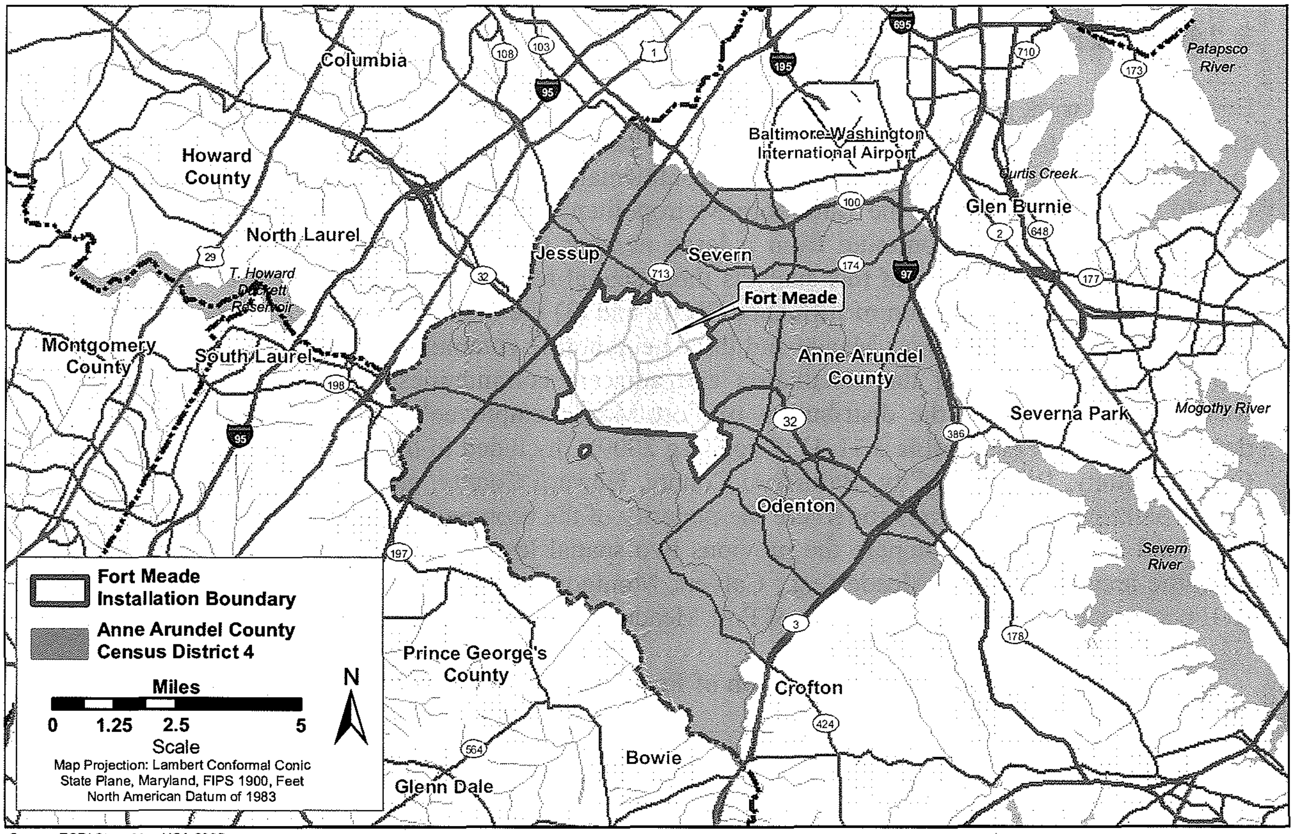
Table 3.11-1. Distribution of Fort Meade Workforce by County/City

County in Maryland	Percentage of Workforce
Anne Arundel County	39%
Howard County	22%
Baltimore County/City	14%
Carroll County	7%
Prince George's County	5%
Other	13%

Source: Friedberg 2009

Demographic and Housing Characteristics. **Table 3.11-2** includes the populations for Anne Arundel County District 4, the ROI, and the State of Maryland for 1990, 2000, and 2008 (U.S. Census Bureau 1990; 2000; 2008). The State of Maryland experienced an 11 percent increase in population from 1990 to 2000 and a 6 percent increase in population from 2000 to 2008. The ROI grew slower than Maryland over the two time periods, but Baltimore City skews the results downward. Looking at the individual counties that make up the ROI Howard County grew the fastest from 1900 to 2000 and Carroll County grew the fastest from 2000 to 2008 as the suburban reaches of Baltimore, Maryland and Washington, D.C. expanded. Baltimore City experienced negative growth from 1990 to 2008. The area around Fort Meade, identified as Anne Arundel County Census District 4, grew by 30 percent from 1990 to 2000. Data for Anne Arundel County Census District 4 are not available for 2008 as the U.S. Census Bureau's smallest geographic level for population estimates between decennial censuses is county level data.

The number of vacant housing units in the ROI increased by approximately 28,000 units during a 7-year time period ending in 2007, with similar increases occurring in the State of Maryland. Data for Anne Arundel County Census District 4 were not available in 2007 as the U.S. Census Bureau's smallest geographic level for estimates between decennial censuses is county level data. **Table 3.11-3** contains Vacant Housing data for Anne Arundel Census District 4, the ROI, and the State of Maryland.



Source: ESRI StreetMap USA 2005

Figure 3.11-1. Location of Anne Arundel County Census District 4

Table 3.11-2. Population Summary, 1990 to 2008

Location	1990	2000	2008	Percentage Change	
				1990 to 2000	2000 to 2008
Anne Arundel County District 4	76,611	99,265	N/A	29.6%	N/A
ROI	2,895,355	3,095,356	3,200,527	6.9%	3.4%
Anne Arundel County	427,239	489,656	512,790	14.6%	4.7%
Baltimore City	736,014	651,154	636,919	-11.5%	-2.2%
Baltimore County	692,134	754,292	785,618	9.0%	4.2%
Carroll County	123,372	150,897	169,353	22.3%	12.2%
Howard County	187,328	247,842	274,995	32.3%	11.0%
Prince George's County	729,268	801,515	820,852	9.9%	2.4%
State of Maryland	4,781,468	5,296,486	5,633,597	10.8%	6.4%

Source: U.S. Census Bureau 1990; 2000; 2008

Note: ROI calculated by summing the 5 counties and Baltimore City.

Table 3.11-3. Vacant Housing Units, 2000 and 2007

Location	2000			2007		
	Total Units	Vacant Units	Percentage Vacant	Total Units	Vacant Units	Percentage Vacant
Anne Arundel County District 4	33,949	1,463	4.3%	N/A	N/A	N/A
ROI	1,250,604	84,905	6.8%	1,302,924	112,395	8.6%
Anne Arundel County	186,937	8,267	4.4%	201,205	11,377	5.7%
Baltimore City	300,477	42,481	14.1%	294,631	58,897	20.0%
Baltimore County	313,734	13,857	4.4%	326,104	16,296	5.0%
Carroll County	54,260	1,757	3.2%	60,966	2,171	3.6%
Howard County	92,818	2,775	3.0%	102,745	4,652	4.5%
Prince George's County	302,378	15,768	5.2%	317,273	19,002	6.0%
State of Maryland	2,145,283	164,424	7.7%	2,296,973	214,400	9.3%

Source: U.S. Census Bureau 2000, U.S. Census Bureau 2007

Notes: ROI calculated by summing the 5 counties and Baltimore City. Percentages rounded to nearest tenth.

Employment Characteristics. **Table 3.11-4** contains employment data for the three areas of analysis and includes the percentage of the workforce employed within each industry. Anne Arundel County Census District 4 has a higher percentage of the workforce employed in the Armed Forces; 7 percent versus approximately 1 percent for the ROI and State of Maryland. Fort Meade is located within Census District 4 and which accounts for the higher percentage of employment within the Armed Forces. For all areas identified, the educational, health, and social services industries employ the greatest number of people. The construction industry accounts for approximately 6 percent of the workforce in Anne Arundel County Census District 4, ROI, and State of Maryland. General employment characteristics across the three areas of analysis are similar, with no one industry having a stronger presence in any of the three areas.

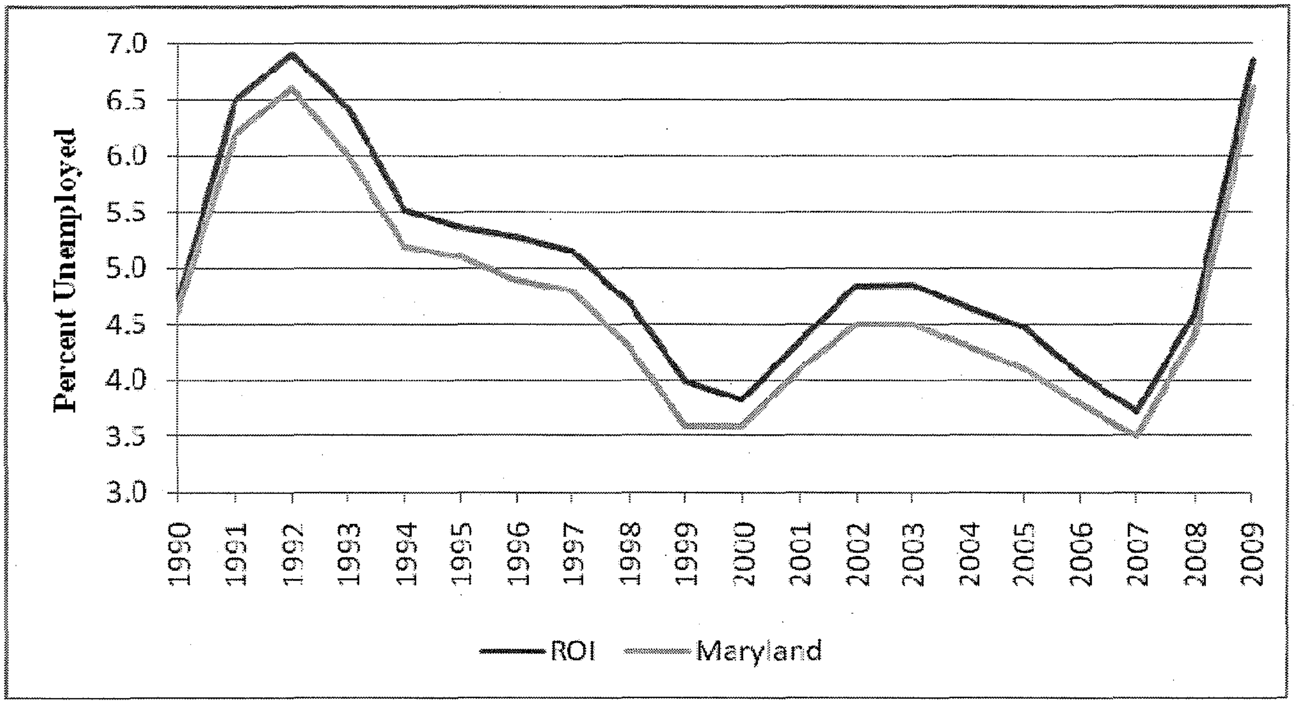
Unemployment in the ROI and the State of Maryland trend together as is seen in **Figure 3.11-2**. The ROI has a slightly lower unemployment level from 1990 to 2009 compared to the State of Maryland. As mentioned, the workforce composition between ROI and Census District 4 are similar in nature. Consequently unemployment levels in Census District 4 would be similar to the ROI's unemployment levels.

Commercial Real Estate Market. The commercial real estate market within Anne Arundel County contains approximately 875 office buildings of which 105 buildings are Class A Office Space. Class A Office Space is generally characterized as large buildings (100,000+ ft^2) close to public transportation and transportation corridors, and with high quality interiors and exteriors. The ROI contains approximately 5,750 office buildings of which 530 buildings are Class A Office Space. Class B and Class C office spaces include smaller one or two story buildings that would not be able to accommodate employees and equipment needed for the Proposed Action. Therefore, Class B and Class C office spaces were excluded from analysis to determine the maximum impact of relocation of NSA employees. Office space is classified in this section as; existing, under construction, or future properties (in planning phases). The offices spaces are furthered classified as being either vacant or occupied. About one third of the NSA staff that would relocate are currently occupying leased properties within Anne Arundel County and the ROI.

1 **Table 3.11-4. Overview of Employment by Industry for Census Year 2000**

	Anne Arundel County Census District 4	ROI							State of Maryland
		Sum of 5 counties and Baltimore City	Anne Arundel County	Baltimore City	Baltimore County	Carroll County	Howard County	Prince George's County	
Percentage of Employed Persons in Armed Forces	6.9	0.9	3.0	0.1	0.1	0.1	0.6	1.1	0.8
Agriculture, forestry, fishing and hunting, and mining	0.2	0.3	0.2	0.1	0.2	1.4	0.3	0.2	0.6
Construction	6.6	6.3	8.1	5.1	5.9	10.4	5.1	5.9	6.9
Manufacturing	7.3	6.9	7.3	7.8	9.0	9.9	6.9	3.4	7.3
Wholesale trade	3.6	3.0	3.8	2.7	3.4	3.7	3.4	2.0	2.8
Retail trade	12.5	10.3	11.7	8.9	11.3	11.3	9.6	9.4	10.5
Transportation and warehousing, and utilities	5.3	5.5	5.7	5.6	4.9	4.4	3.6	6.7	4.9
Information	3.8	3.9	3.6	3.2	3.2	3.9	4.7	5.1	4.0
Finance, insurance, real estate, and rental and leasing	6.1	7.3	6.4	6.8	9.5	7.2	7.5	6.0	7.1
Professional, scientific, management, administrative, and waste management services	12.6	11.8	12.1	10.2	10.5	9.4	16.2	12.6	12.4
Educational, health, and social services	16.7	21.5	17.1	26.8	22.9	19.3	21.7	20.0	20.6
Arts, entertainment, recreation, accommodation, and food services	5.6	6.7	6.6	8.3	6.5	5.7	5.6	6.5	6.8
Other services (except public administration)	4.8	5.4	5.6	5.3	4.9	5.6	4.7	6.3	5.6
Public administration	14.9	11.1	11.9	9.3	7.6	7.9	10.6	15.9	10.5

Source: U.S. Census Bureau 2000



Source: BLS 2009

Figure 3.11-2. ROI and Maryland Unemployment from 1990 to 2009

Currently, 80 percent of existing Class A Office Space in Anne Arundel County is occupied (6.6 million ft^2 of the total 8.3 million ft^2 is vacant) and 82 percent in the ROI (46.4 million ft^2 of the total 56.3 million ft^2 is vacant). The amount of Class A Office Space under construction within Anne Arundel County and the ROI represents a small portion of the total Class A Office Space market, while the future Class A Office Space in Anne Arundel County and the ROI a much larger portion. If all the future properties were constructed, there would be a 102 and 64 percent increase of Class A Office Space in Anne Arundel County and the ROI, respectively (Goodall 2009).

School Characteristics. Within the ROI there are 812 elementary, middle, and high schools. During the 2006–2007 school year, more than 472,000 students in the ROI were enrolled in the school systems. **Table 3.11-5** contains the school data for each county within the ROI (NCES 2007).

In 2008, Anne Arundel County public elementary schools (grades K to 5) were at 94 percent of maximum capacity. Space for approximately 2,224 additional students is available in elementary schools before 100 percent capacity is reached. Middle schools (grades 6 to 8) were at 74 percent of maximum capacity, and space for about an approximately 5,783 additional students is available before maximum capacity is reached in middle schools. Anne Arundel County high schools (grades 9 to 12) were at 92 percent of capacity, and space for about an approximately 2,019 additional students is available before maximum capacity is reached. In total, Anne Arundel County public schools were at 88 percent of maximum capacity in 2008, and space for an approximately 10,026 additional students is available before maximum capacity is reached (AACPS 2009).

Table 3.11-5. School Districts and Enrollment Levels within the ROI, 2006–2007

School District	School Type (number of schools)	Enrollment	Total District Enrollment
Anne Arundel County	Elementary (77)	32,404	73,048
	Middle (22)	16,746	
	High (15)	23,343	
	Other(5)	555	
Baltimore City	Elementary (127)	48,147	85,106
	Middle (29)	12,554	
	High (35)	22,139	
	Other (9)	2,266	
Baltimore County	Elementary (106)	47,727	105,248
	Middle (28)	23,198	
	High (26)	33,823	
	Other (5)	500	
Carroll County	Elementary (23)	11,878	28,013
	Middle (8)	6,224	
	High (9)	9,786	
	Other (4)	125	
Howard County	Elementary (39)	21,671	49,651
	Middle (19)	12,008	
	High (11)	14,880	
	Other (3)	1,092	
Prince George's County	Elementary (146)	66,637	131,014
	Middle (28)	21,982	
	High (30)	40,195	
	Other (7)	2,200	

Source: NCES 2007

Law Enforcement and Fire Protection. The Department of the Army and the U.S. Army Military Police provide emergency and law enforcement services for Fort Meade. Anne Arundel County police also share duties along Maryland State Highways MD 32 and MD 175 (USACE Mobile District 2007). Outside of Fort Meade facilities, police services exist in all counties within the ROI. For example, the Anne Arundel County police department employs more than 1,000 sworn and civilian members; the Baltimore City Police Department employs approximately 4,000 sworn and civilian members in nine separate precincts; and Prince George's County employs 1,420 officers and 260 civilians (City of Baltimore 2009, AACPD 2008, PGCPD 2009).

The Fort Meade Fire Department is located on the installation and consists of two engine companies, a truck company, and a HAZMAT team (USACE Mobile District 2007). Within the ROI there are approximately 210 fire and rescue departments. The number of career and volunteer facilities varies from county to county. For example, in Carroll County many of the fire fighters are volunteer, but in

Baltimore City nearly all of the fire fighters are career fire fighters (CCFD 2009, BCFD 2009). The number of stations also varies between counties; the number of stations in each county is listed in **Table 3.11-6.**

Table 3.11-6. Number of Fire and Rescue Stations in the ROI

County	Number of Stations
Anne Arundel County	30
Baltimore City	41
Baltimore County	58
Carroll County	14
Howard County	11
Prince George's County	56

Source: AACFD 2008, BCFD 2009, CCFD 2009, HCFD 2007, PGCFD 2009

Recreation. A portion of The Courses at Fort Meade, a 27-hole golf facility, is located within Site M. The golf course is open to active-duty military personnel, retired military personnel, and civilian employees. Yearly membership to The Courses is available to active-duty military personnel, retired military personnel, and civilian employees. Persons who do not fall into the aforementioned categories may play on a daily fee basis if an authorized patron accompanies them. In addition to the 9- and 18-hole golf courses, The Courses includes a club house, a dining room, a pro-shop, and a driving range, all available to the patrons. Originally containing 36 holes, The Courses was recently reduced to 27 holes as a result of adjacent BRAC construction. The golf course was profitable from Fiscal Years (FYs) 1998 to 2007, with the exception of FY 2003. During this 10-year span, profits from the golf course ranged from approximately $100,000 to $500,000 per year. In FY 2008, a deficit of $159,000 was reported, and for FY 2009 a deficit of $367,000 is projected. Much of the decline in revenue is due to degradation of services as a result of BRAC construction. Measures are in process to reduce operating costs (e.g., fewer snack bar hours) and provide more targeted marketing to increase revenues (Fort Meade RGMC 2009a). There is also a walking/running trail that passes through Site M. This trail provides those living and working on Fort Meade an on-installation option for exercise.

Environmental Justice. Minority and low-income populations were characterized within Anne Arundel County Census District 4, the ROI, and the State of Maryland. The immediate area around Fort Meade (Anne Arundel County Census District 4) was evaluated for low-income or minority populations in comparison to the ROI and the State of Maryland to determine if impacts would disproportionally affect minority or low-income populations. Census District 4 has an African-American population composing 28 percent of the total population which is less than the ROI (38 percent) and equal to the State of Maryland (28 percent). **Table 3.11-7** contains a detailed breakdown of the racial/ethnic make-up of the census district, the ROI, and the State of Maryland. The percent of families in Census District 4 living below the poverty level is 4 percent, which is lower than both the ROI and the state levels. The Census District reported the highest median household income ($61,903), followed by the State of Maryland ($52,868), and the ROI ($49,658).

1 **Table 3.11-7. Race, Ethnicity, and Poverty Characteristics, 2000**

	Anne Arundel County Census District 4	ROI							State of Maryland
		Sum of 5 counties and Baltimore City	Anne Arundel County	Baltimore City	Baltimore County	Carroll County	Howard County	Prince George's County	
Total Population	99,265	3,095,356	489,656	651,154	754,292	150,897	247,842	801,515	5,296,486
Percent White	63.3	55.2	81.2	31.6	74.4	95.7	74.3	27.0	64.0
Percent Black or African American	28.1	38.1	13.6	64.3	20.1	2.3	14.4	62.7	27.9
Percent American Indian and Alaska Native	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3
Percent Asian	3.8	2.4	2.3	1.5	3.2	0.8	7.7	3.9	4
Percent Native Hawaiian and Other Pacific Islander	0.1	0.0	0.1	0.0	0.0	0.0	0	0.1	0.0
Percent Other Race	1.4	1.4	0.9	0.7	0.6	0.3	1.1	3.4	1.8
Percent Two or More Races	2.8	1.8	1.7	1.5	1.4	0.7	2.2	2.6	2.0
Percent Hispanic or Latino	3.9	3.3	2.6	1.7	1.8	1.0	3	7.1	4.3
Percent Families below poverty	4.1	7.0	3.6	18.8	4.5	2.7	2.5	5.3	6.1
Median Household Income	$61,903	$49,658[1]	$61,768	$30,078	$50,667	$60,021	$74,167	$55,256	$52,868

Source: U.S. Census Bureau 2000

Note: 1. Calculated by averaging each county's weighted Median Household Income

SECTION 4

ENVIRONMENTAL CONSEQUENCES

4. Environmental Consequences

4.1 Land Use

4.1.1 Evaluation Criteria

The evaluation of impacts on land use is based on the degree of land use sensitivity in areas affected by a proposed action and compatibility of proposed actions with existing conditions. Land use can remain compatible, become compatible, or become incompatible. Projected compatibility issues were measured both qualitatively and quantitatively. Effects on land use were assessed by evaluating the following:

- Consistency and compliance with existing land use plans, zoning, or policies
- Alteration of the viability of existing land use
- The degree to which the Proposed Action or alternatives preclude continued use or occupation of an area
- The degree to which the Proposed Action or alternatives conflict with planning criteria established to ensure the safety and protection of human life and property
- The degree to which the Proposed Action or alternatives preclude use of recreational areas.

The significance of potential impacts on visual resources is based on the level of visual sensitivity in the area. Visual sensitivity is defined as the degree of public interest in a visual resource and concern over adverse changes in the quality of that resource. In general, an impact on a visual resource is adverse if implementation of a proposal were to result in substantial alteration to an existing sensitive visual setting.

4.1.2 No Action Alternative

Under the No Action Alternative, DOD would not develop Site M on a phased, multiyear basis and would not construct and operate administrative facilities. NSA/CSS operations, as well as similar or related operations of other Intelligence Community agencies would continue at their present locations. Therefore, no impacts would be expected on land use under the No Action Alternative.

4.1.3 Proposed Action (Phase I)

The Proposed Action would involve the conversion of 82 acres of Site M from current recreational areas that include the golf courses at Fort Meade. Site M consists of approximately 227 acres in the southwestern quadrant of Rockenbach Road and Cooper Avenue, as shown in **Figure 2.1-1**. Phase I would require 1.8 million ft^2 of building footprint on Site M. DOD has considered development of Site M under three discrete phases identified for implementation over a horizon of approximately 20 years. Implementation of Phase I is being addressed in this EIS as the Proposed Action.

On-installation. Short- to long-term, moderate, adverse impacts on land use would be expected from the Proposed Action. Proposed development of Site M is consistent with the Comprehensive Expansion Management Plan for Fort Meade; however, the reclassification and loss of viable open space at Fort Meade would be an adverse impact. Under the Proposed Action, approximately 82 acres would be converted from open space to administrative land use at Fort Meade, which would represent a 3 percent loss in the overall acreage of open space at the installation. Although a 3 percent reduction in open space is a small percentage, conversion of 82 acres of open space land use would represent a permanent loss of recreational areas on-installation. Short-term, minor, adverse impacts on land use would be expected due to an increased presence of construction vehicles and disturbances related to construction activities. However, construction related activities would not affect adjacent land uses, which would continue their current uses unchanged.

Short- to long-term, moderate, direct, adverse impacts on recreation would be expected from the conversion of the golf courses to administrative functions on the installation. The Fort Meade CEMP discussed future development of 800 available acres between Site M and Site S on Fort Meade. BRAC actions reviewed in the 2007 BRAC EIS (USACE Mobile District 2007) have resulted in the use of an 84 acre portion of the existing golf course for administration functions, which resulted in the loss of nine holes of the golf courses. Loss of the remaining holes would represent both a short- and long-term adverse impact on recreation. The two baseball fields in the northwest portion of Site M would remain. The Proposed Action would not affect other MWR programs at the installation as impacts on recreation would be localized to the golf course area.

The areas adjacent to Site M on-installation include the Midway Common MFH neighborhood to the north, the NSA campus to the west, Site G to the south and southwest with industrial/installation support functions, and administration/operations to the east. These surrounding land uses would be compatible with the proposed administrative facilities under the Proposed Action. The proposed administrative uses on Site M include a data center and the supporting associated facilities, including an electrical substation and generator plants; chiller plants; boiler plants; ancillary parking; site improvements; water storage, water, gas, and communications services; paving, sidewalks, curbs, and gutters; storm water management; and security systems. It is assumed that the proposed facilities and site design would meet all AT/FP requirements including the DOD Minimum Antiterrorism Standards for Buildings (UFC 4-010-01). Therefore, the proposed facilities would likely be within safe setback distances making them more compatible with their adjacent uses. Long-term, minor, beneficial impacts are expected from consolidating mission functions of the NSA/CSS into the more secure central portion of Fort Meade from their current location in the NSA campus. Personnel currently in facilities on the NSA campus could be relocated to Site M, thus shifting these sensitive facilities to the interior of the installation, resulting in a beneficial effect on land use and security.

Typically residential areas represent a more sensitive land use; however, it is assumed that because portions of the MFH neighborhoods are already adjacent to the NSA campus and administration type facilities, facilities associated with the Proposed Action would be compatible with adjacent MFH neighborhoods. The NSA Real Property Master Plan is compatible with the Proposed Action, which seeks to place higher security Administration/Operations functions in the central portions of the installation. Less security sensitive land uses, such as open space, should be placed on the perimeter of the installation according to the NSA Real Property Master Plan. No land use conflicts with the 2007 BRAC EIS facilities on Site G and Site F would be expected under the Proposed Action (USACE Mobile District 2007).

Off-installation. All projects would be within the Fort Meade installation boundary. Land use surrounding Fort Meade includes low-medium (2 to 5 dwellings per acre), medium (5 to 10 dwellings per acre), and high density (10 or more dwellings per acre) residential areas along with a mix of industrial, and natural features (i.e., Patuxent Wildlife Research Center). Proposed development of Site M within the central portion of Fort Meade would unlikely affect these adjacent land uses. Although the Proposed Action includes changing land use at Fort Meade, there is little potential to affect adjacent land uses off-installation as Site M is buffered from off-installation areas by the distances involved.

Proposed development of 82 acres and 1.8 million ft^2 of building footprints on Site M would not adversely affect any land use planning functions of Anne Arundel County. Construction activities associated with the Proposed Action would only be short-term in nature and isolated within Site M. Potential noise impacts related to short-term construction noise are discussed in **Section 4.2.2**. The addition of 6,500 personnel to Fort Meade under the Proposed Action would likely result in an increased demand for housing, build-out open space, undeveloped areas, public services, and school enrollments. See **Section 4.11** for further discussion of effects on housing and schools. The adjacent Odenton Growth Management Area was planned as an area of Anne Arundel County to support potential personnel growth of Fort Meade and demand in housing and services. As discussed in **Section 3.1.2**, approximately 45 percent of the developable land is available within this growth management area for expansion. Therefore, the increase in 6,500 personnel at Fort Meade would not be expected to adversely affect developable land in Anne Arundel County. Future land use plans and zoning in Anne Arundel County were designed to accommodate growth around Fort Meade. Anne Arundel County projected that most of the county's 55,000 new jobs over a 25-year period would occur in the western part of the county near Fort Meade, NSA, and Baltimore/Washington International Thurgood Marshall Airport. Anne Arundel County is focusing future commercial and residential growth in the area of the county near Fort Meade (Fort Meade 2005b). Consistency with the CZMA is discussed in **Section 4.7.3**.

Visual Resources. The Proposed Action involves the development of 1.8 million ft^2 of building footprints and would transform the aesthetic characteristic of Site M from a golf course and rolling hills to administration functions. As discussed in **Section 3.1.2**, Site M is within the Western Administrative Zone, which is characterized by administrative uses and includes mature tree lined avenues and formal landscaping. The landscape of Site M would be expected to diminish in visual integrity because of the increased amount of development on Site M; however, development under the Proposed Action is consistent with the Western Administrative Zone. Construction activities and eventual operation would likely result in short-term, minor, adverse impacts on land use as a result of visual impacts. Temporary (e.g., construction equipment) and permanent facilities would be new visual elements introduced into existing viewsheds on Site M.

Views to Site M from the east, south, and west would be permanently affected from the loss of visual integrity because of the increased amount of development. Mature trees would buffer sightlines from the north and it is expected that the Proposed Action area would be buffered with planted trees to help mitigate adverse impacts on land use from visual intrusion. These measures would help prevent establishing unwanted views or establishing aesthetically unpleasing facades.

As discussed in **Section 2.1.2**, the complex would include sustainability features to meet LEED Silver requirements and the facilities would be energy-efficient and use "green" technology. Viewsheds could be impacted from some of the "green" technologies chosen, such as the use of wind turbines. The facilities are currently in the preliminary design stage; therefore, a complete list of technologies and associated manufacturers specifications are not finalized. Potential adverse impacts would be considered during evaluation of these technologies for Site M development.

4.1.4 Alternative 1: Implement Phases I and II

Alternative 1 involves building footprints of approximately 3.0 million ft^2 and includes Phase I and II development of Site M, as shown in **Figure 2.1-1**. Alternative 1 would result in the loss of approximately 134 acres of open space land use at Fort Meade, which would represent a 5 percent decrease in the total open space areas at the installation. Although a 5 percent reduction in open space is a small percentage, conversion of 134 acres of open space land use would represent a permanent loss of recreational areas, including the baseball fields affected by Alternative 1. Short-term, minor, adverse impacts on land use would be expected due to an increased presence of construction vehicles and disturbances related to construction activities. However, construction activities are not expected to disturb surrounding land uses adjacent to the Alternative 1 area. The conversion of open space to administrative land use would represent a short- to long-term moderate adverse impact on land use at Fort Meade. Although development of Site M is consistent with the Comprehensive Expansion Management Plan, the conversion and loss of viable open space at Fort Meade would still represent an adverse impact.

Although Alternative 1 includes a larger footprint area than the Proposed Action, impacts on recreation are expected to be only slightly greater under Alternative 1 than under the Proposed Action. Phases I and II would include the loss of the golf courses and two baseball fields in the northwest corner of Site M under the Proposed Action.

Alternative 1 also includes the addition of approximately 1,500 personnel; therefore, impacts on off-installation areas are assumed to be slightly greater than those under the Proposed Action. Impacts are not expected to be adverse as Anne Arundel County has planned for future development of off-installation areas near Fort Meade. Zoning and planning considerations around Fort Meade have been accounted for in the Anne Arundel County's long-term planning and management strategies.

Impacts on land use as a result of visual impacts under Alternative 1 would be similar, but slightly greater than the Proposed Action because of a larger footprint. Alternative 1 includes building footprints of approximately 3 million ft^2 and would involve similar building types as the Proposed Action. The landscape of Site M would be expected to diminish in visual integrity because of the increased amount of development on Site M; however, development under the Proposed Action is consistent with the Western Administrative Zone. Views to Site M from the east, south, and west would be permanently affected from the loss of visual integrity because of the increased amount of development. Existing mature trees would buffer sightlines from the north and it is expected that the Proposed Action area would be buffered with planted trees to help mitigate adverse impacts on land use from visual intrusion. These measures would help prevent establishing unwanted views or establishing aesthetically unpleasing facades.

4.1.5 Alternative 2: Implement Phases I, II, and III

Alternative 2 involves building footprints of approximately 5.8 million ft^2 and includes Phases I, II, and III of development of Site M, as shown in **Figure 2.1-1**. Alternative 2 would include the loss of approximately 321 acres of open space land use, which represents a 12 percent decrease in the overall amount of open space. Alternative 2 also includes the addition of 11,000 personnel. The conversion of open space to administrative land use would result in short- and long-term moderate adverse impacts on land use at Fort Meade. Although development of Site M is consistent with the Comprehensive Expansion Management Plan, the change in land use would represent an adverse impact because of the loss of recreational areas at the installation. In addition, short- and long-term, moderate, direct, adverse impacts on recreation would be expected under Alternative 2 from the loss of the golf course. However, future consideration of a golf course at Site S was reviewed in the 2007 BRAC EIS (USACE Mobile District 2007).

Impacts on off-installation resources would be greater under Alternative 2 than the Proposed Action and Alternative 1; however, they are not expected to be adverse because Anne Arundel County has planned for future development of off-installation areas near Fort Meade. Alternative 2 includes 11,000 personnel, which would increase demand for off-installation housing and services in Anne Arundel County. Anne Arundel County has been planning for increased growth around Fort Meade and have addressed increased growth concerns in the Odenton Town Center Master Plan. In addition, zoning and planning considerations around Fort Meade have been accounted for in the Anne Arundel County's long-term planning and management strategies.

Impacts on land use as a result of visual impacts under Alternative 2 would be greater than the Proposed Action and Alternative 1 because of a larger footprint. Alternative 2 involves approximately 5.8 million ft^2 of building space that would permanently affect all of Site M. Construction activities would likely result in short-term, minor, adverse impacts while operation of the Proposed Action could range from minor, such as the impacts adjacent to Site M when seen from a distance, to moderate, such as the obstruction of views on the golf courses looking north. Views from the south, east, and west would be permanently obstructed by loss of the entire golf course area. It is expected that the Proposed Action area would be buffered with planted trees to help mitigate adverse impacts on land use from visual intrusion. These measures would help prevent establishing unwanted views or establishing aesthetically unpleasing facades.

4.2 Transportation

4.2.1 Evaluation Criteria

The evaluation of impacts on the transportation system is based on the capacity of the transportation network in an area affected by a proposed action and compatibility of proposed actions with existing conditions. The region of influence for transportation impacts is public roadways within/near the study area. Projected traffic levels were measured both qualitatively and quantitatively using Synchro/SimTraffic Version 7.0 and Highway Capacity Software (HCS+) transportation modeling tools. Thresholds for triggering major impacts include evaluating the potential for the following:

- Increase in traffic volumes or delays to levels that impair a roadway's handling capacity or increase traffic safety hazards
- Reduction in the intersection and state or Federal highway function from LOSs A through D to LOS E and LOS F
- Substantial increase in vehicle queue length
- Substantial disruption of traffic operations.

Development at Site M on Fort Meade is proposed to be developed in three optional phases over a horizon of 20 years. Phase I is identified as Proposed Action and would occur by 2015. Phase II would occur by 2020, and Phase III by 2029. Traffic within Fort Meade and in the surrounding region would likely continuously grow due to ongoing development activities in coming years. Therefore, in addition to the Proposed Action and Alternatives, the No Action Alternative is analyzed and discussed in **Section 4.2.2.1** in order to provide baseline conditions for comparison with the potential traffic impacts of the Proposed Action. This section also identifies a range of viable transportation improvements that would minimize the potential impacts from the Proposed Action and Alternatives and other development.

Traffic within Fort Meade and in the surrounding region would likely grow continuously due to ongoing development activities in the coming years. Therefore, in addition to the Proposed Action and Alternatives, the No Action Alternative is analyzed and discussed in **Section 4.2.2** to provide baseline conditions for comparison with the potential traffic impacts of the Proposed Action. This section also identifies a range of viable transportation improvements that would minimize the potential impacts from the Proposed Action and Alternatives and other development.

4.2.2 Future Conditions (Year 2015)

The proposed NSA site would be developed in three discrete phases over a horizon of 20 years. Phase I is identified as the Proposed Action and the transportation analysis is provided in **Section 4.2.2.2**. Phase II and Phase III are presented as alternative analyses in later sections. **Table 4.2-1** is presented to show the build-out years and job growth associated with each phase.

Table 4.2-1. Comparison for Proposed Action and Alternatives

Alternative	Land Use	Size	Build-out Year
Proposed Action (Phase I)	Office	6,500 personnel (1.8 million ft^2)	2015
Alternative 1 (Phases I and II)	Office	8,000 personnel (3 million ft^2)	2020
Alternative 2 (Phases I, II, and III)	Office	11,000 personnel (5.8 million ft^2)	2029

Note: For trip generation purposes, the number of personnel are used to represent the worst-case condition.

Traffic within Fort Meade and in the surrounding region will grow continuously due to ongoing activities in coming years. Therefore, the No Action Alternative is analyzed and discussed in **Section 4.2.2.1** to provide baseline conditions for comparison with the potential traffic impacts of the Proposed Action.

4.2.2.1 No Action Alternative

Long-term major adverse impacts on the study area roadway network would be expected under the No Action Alternative. DOD would not develop the proposed site on a phased, multiyear basis and would not construct and operate 1.8 million ft^2 of administrative facilities employing approximately 6,500 personnel. The baseline conditions for the No Action Alternative (Year 2015) are used for comparison with Proposed Action.

The BRAC-related activities on Fort Meade and partial EUL actions are assumed to be implemented by Year 2015 and therefore, associated development trips are considered in the analysis of the No Action Alternative. The BRAC-related development activities include the administrative facilities for DISA, DMA, and Defense Adjudication Activities. The partial EUL action includes the completion of the construction for administrative facilities on the parcel located along the south side of Reece Road, east of MD 175.

Additionally, the analysis assumes the completion of planned projects on Fort Meade such as 902nd Military Intelligence Group Administrative and Operations Center, and Defense Information School Expansion.

In order to incorporate all of the trips associated with ongoing and planned future development surrounding the Fort Meade area, a conservative annual growth rate of 3 percent (compounded) was applied to the existing traffic volumes from Year 2009 to Year 2015. Note that 3 percent compounded growth rate over a period of 6 years would represent the worst-case scenario. **Figure 4.2-1** presents the location map of all the aforementioned developments.

The weekday AM/PM peak hour trips entering and exiting the site due to aforementioned developments were established using equations/rates provided in the 8th Edition of the Institute of Transportation Engineers' (ITE) *Trip Generation Report*. **Table 4.2-2** summarizes the total trip generation associated with each of the background developments.

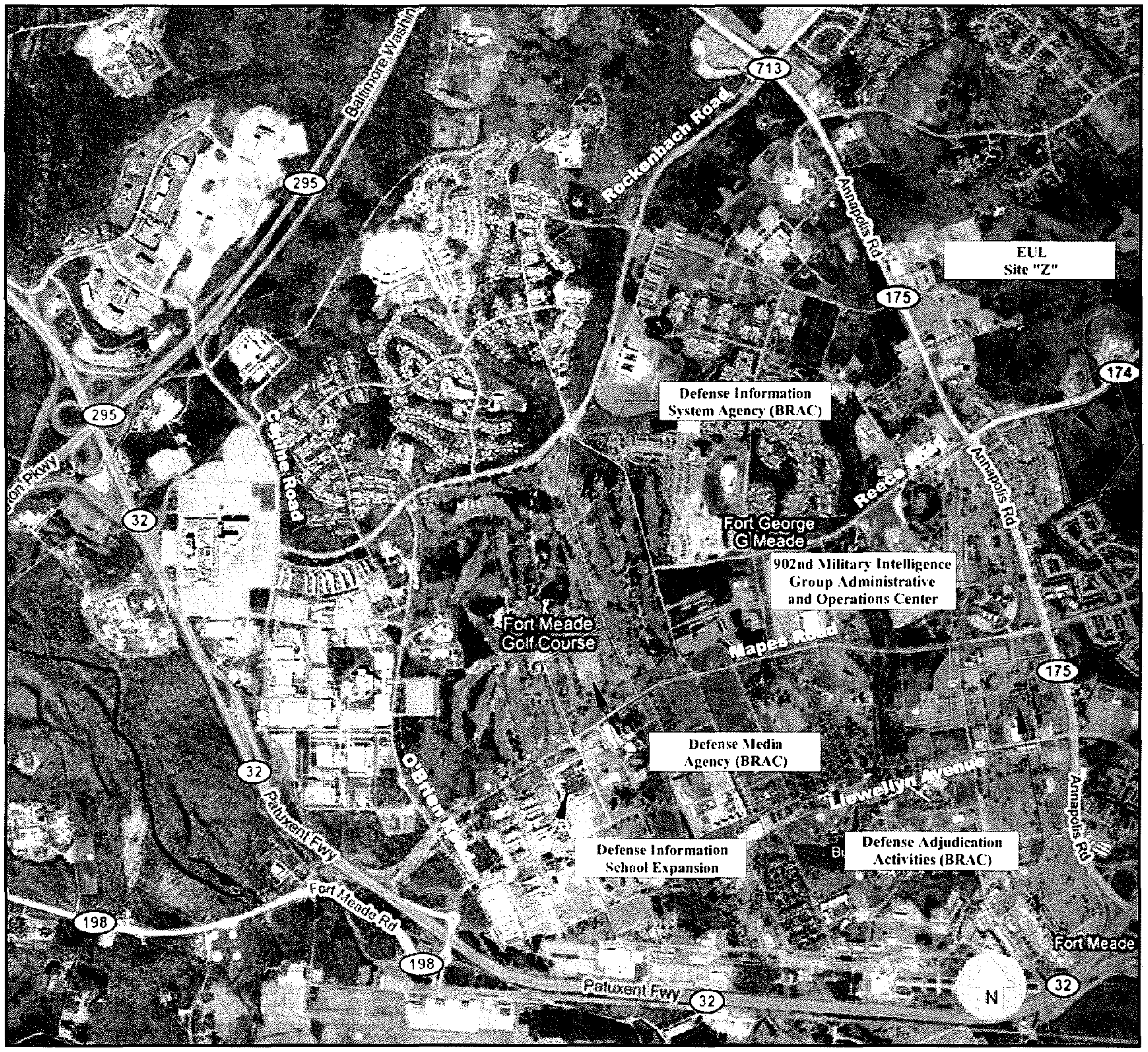


Figure 4.2-1. Location Map: No Action Alternative

No Action Alternative: Total Traffic Volumes

The projected trips related to background development and trips related to other regional growth described under the previous section were added to determine total future traffic volumes for the No Action Alternative. Total trips were then assigned to the study area roadway network. The distribution of trips was based upon local travel patterns for the roadway network surrounding Fort Meade. The trip distribution percentages were derived based upon the amalgamation of the Meade Coordination Zone (MCZ) traffic pattern (Friedberg 2009) and the Fort Meade Traffic and Safety Engineering Study (DOD 2008b). The RGMC trip distribution percentages were revised to some extent in order to reflect more trips coming from MD 32 east per the Traffic Study. **Table 4.2-3** summarizes the directional trip distribution on major roadways. **Figure 4.2-2** is presented to illustrate the AM/PM peak hour volumes at all the study area intersections for Year 2015 No Action Alternative.

Table 4.2-2. No Action Alternative Trip Generation Summary

Land Use	Amount	AM Peak Hour			PM Peak Hour			Weekday ADT
		In	Out	Total [4]	In	Out	Total [4]	
BRAC – DISA [1]	4,272 employees	1,483	202	1,685	279	1,362	1,641	10,428
BRAC – DMA [1]	663 employees	299	41	339	52	253	305	2,180
BRAC – Adjudication [1]	772 employees	340	46	387	59	287	346	2,478
902nd Military Center	420,000 ft^2	520	71	591	93	456	549	4,028
DINFOS Expansion	300 students	50	13	63	53	123	176	1,109
EUL – Site Z [2]	3,450 employees	1,234	168	1,402	227	1,109	1,337	8,715
Sub Total [4]		***3,926***	***541***	***4,467***	***763***	***3,590***	***4,353***	***28,938***
Alternative Mode Reduction (5%) [3]		*196*	*27*	*223*	*38*	*180*	*218*	*1,447*
Total trips [4]		**3,730**	**514**	**4,244**	**725**	**3,411**	**4,136**	**27,491**

Sources: 1. DOD 2008b; 2. USACE Mobile District 2007

Notes:

3. Vehicular Trips reduction anticipating future transit improvements.
4. Subtotals and totals might vary due to rounding during the calculations.

Table 4.2-3. Trips Distribution Pattern

Highway	Direction: From/To	Trips Percentage
BW Parkway (MD 295)	North	30%
BW Parkway (MD 295)	South	7.5%
MD 32	East	30%
MD 32	West	25%
MD 174, MD 175, MD 198, and MD 713	--	7.5%

No Action Alternative: Capacity Analysis and Levels of Service

The AM/PM peak hour traffic volumes described above and lane configurations were entered in the Synchro model to determine the intersection LOSs. Due to continual growth in the area, signal timings at the signalized intersections are in need of constant adjustments. In an effort to achieve progressive traffic flow and, subsequently, to reduce the traffic delay, signal timings and signal phasing were optimized.

HCS+ was utilized to analyze the weaving and merging/diverging conditions at the MD 295/MD 32 interchange.

Major adverse impacts of the No Action Alternative were observed for the study area intersections at both on- and off-installation intersections. Based upon the analysis results, all the Fort Meade perimeter intersections along MD 175 and MD 32, including MD 175 and Rockenbach Road, MD 175 and Disney Road, MD 175 and Reece Road, MD 175 and Mapes Road, MD 175 and Llewellyn Avenue, MD 32 eastbound ramps and Mapes Road, MD 32 westbound ramps and Mapes Road, and Reece Road and Jacobs Road, would fail under this alternative in Year 2015.

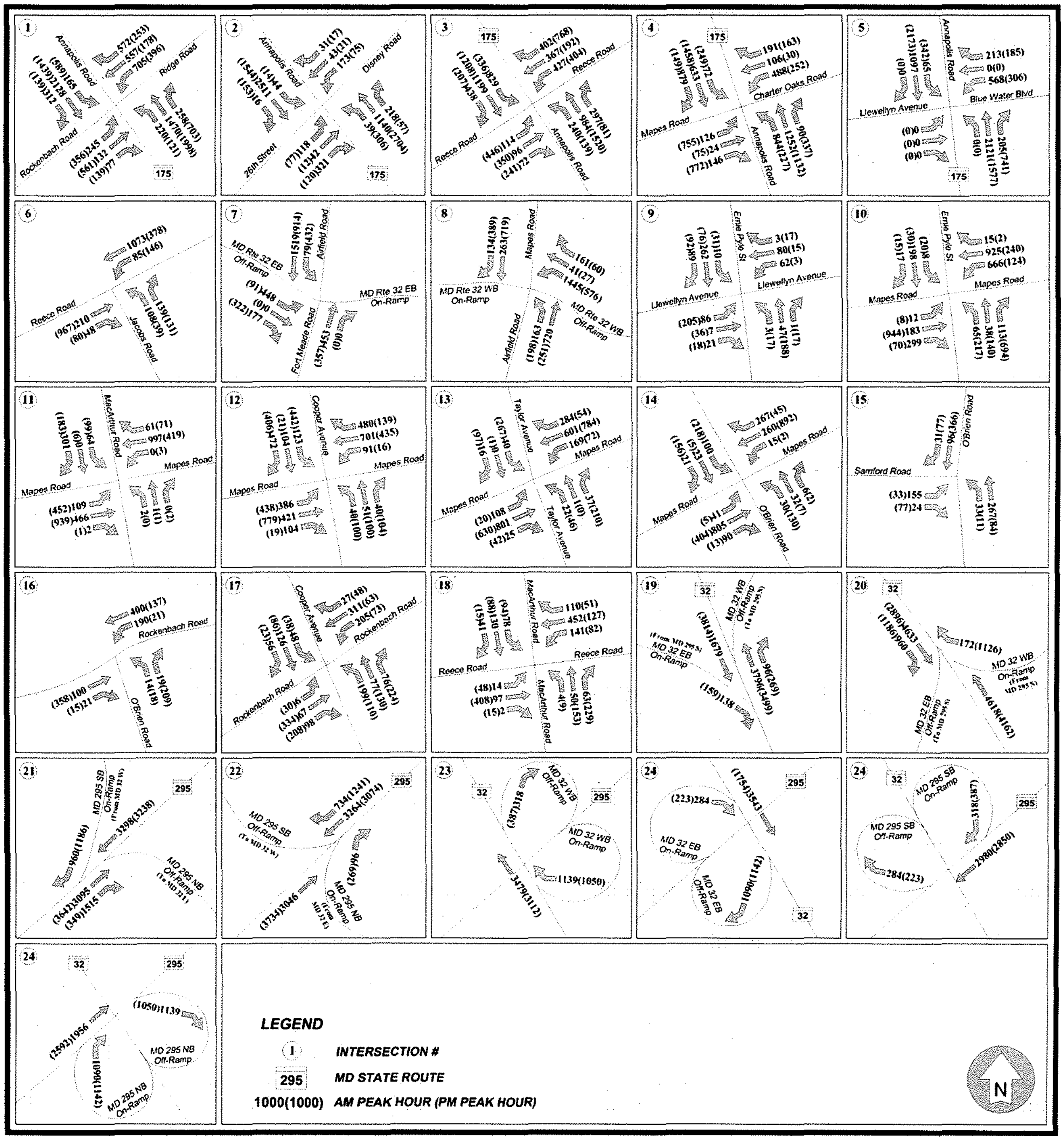


Figure 4.2-2. No Action Alternative: Peak Hour Traffic Volumes (Year 2015)

Similarly, intersections inside Fort Meade, including Mapes Road and Ernie Pyle Street and Mapes Road and Cooper Avenue, would also fail and operate with LOS E or F. These intersections would experience increased delays due to heavy influx of traffic generated by BRAC action, EUL action, 902nd Military Center, DINFOS expansion, and other regional growth. Consequently, the LOS would degrade from D or better observed in the existing conditions to E or F under this alternative. In addition, a through lane along Mapes Road in both directions is recommended due to increased traffic in through lanes.

All the weaving/merging/diverging segments, except MD 295 northbound off-ramp, MD 295 southbound off-ramp, and the weaving segment along MD 295 southbound, would also experience heavy delays and operate with inadequate LOS.

An analysis was conducted with the existing lane geometry to establish the baseline condition, with potential improvements suggested by the U.S. Army and with the recommended improvements that would be required to reduce the impacts of the influx of trips generated by new developments.

Figure 4.2-3 illustrates the projected LOS that would result for all the study area intersections during the No Action Alternative without any roadway improvements. **Figures 4.2-4** and **4.2-5** show the LOS results assuming the potential and recommended improvements, respectively, for Year 2015 No Action Alternative.

4.2.2.2 Proposed Action (Phase I)

Long-term, minor, adverse impacts on the study area roadway network would be expected under the Proposed Action, identified as Phase I in the study. Under this action, 1.8 million ft^2 of administrative facilities will be developed for NSA use on Fort Meade. The build-out and full occupation would occur by Year 2015. Job growth due to this action is estimated to be 6,500 personnel. However, it is anticipated that only two-thirds (4,334 personnel) of the estimated 6,500 employees would come from outside of the Fort Meade boundary. The remaining one-third (2,166) of the personnel would be shifted from adjacent buildings within Fort Meade to the new facility. Therefore, for the purpose of this analysis, the impact of 4,334 personnel has been taken into account.

The weekday AM/PM peak hour trips entering and exiting the site due to the Proposed Action were established using equations/rates provided in the 8th Edition of the Institute of Transportation Engineers' (ITE) Trip Generation Report.

Table 4.2-4 summarizes the total trip generation associated with the Proposed Action.

Table 4.2-4. Proposed Action Trip Generation Summary

Land Use	Amount	AM Peak Hour			PM Peak Hour			Weekly ADT
		In	Out	Total	In	Out	Total	
National Security Agency	4,334 employees	1,501	205	1,706	283	1,381	1,664	10,555
Subtotal Trips		***1,501***	***205***	***1,706***	***283***	***1,381***	***1,664***	***10,555***
*Alternative Mode Reduction (5%)**		*75*	*10*	*85*	*14*	*69*	*83*	*528*
Total Trips		**1,426**	**194**	**1,621**	**269**	**1,312**	**1,580**	**10,027**

Note: * Vehicular trips reduction anticipating future transit improvements.

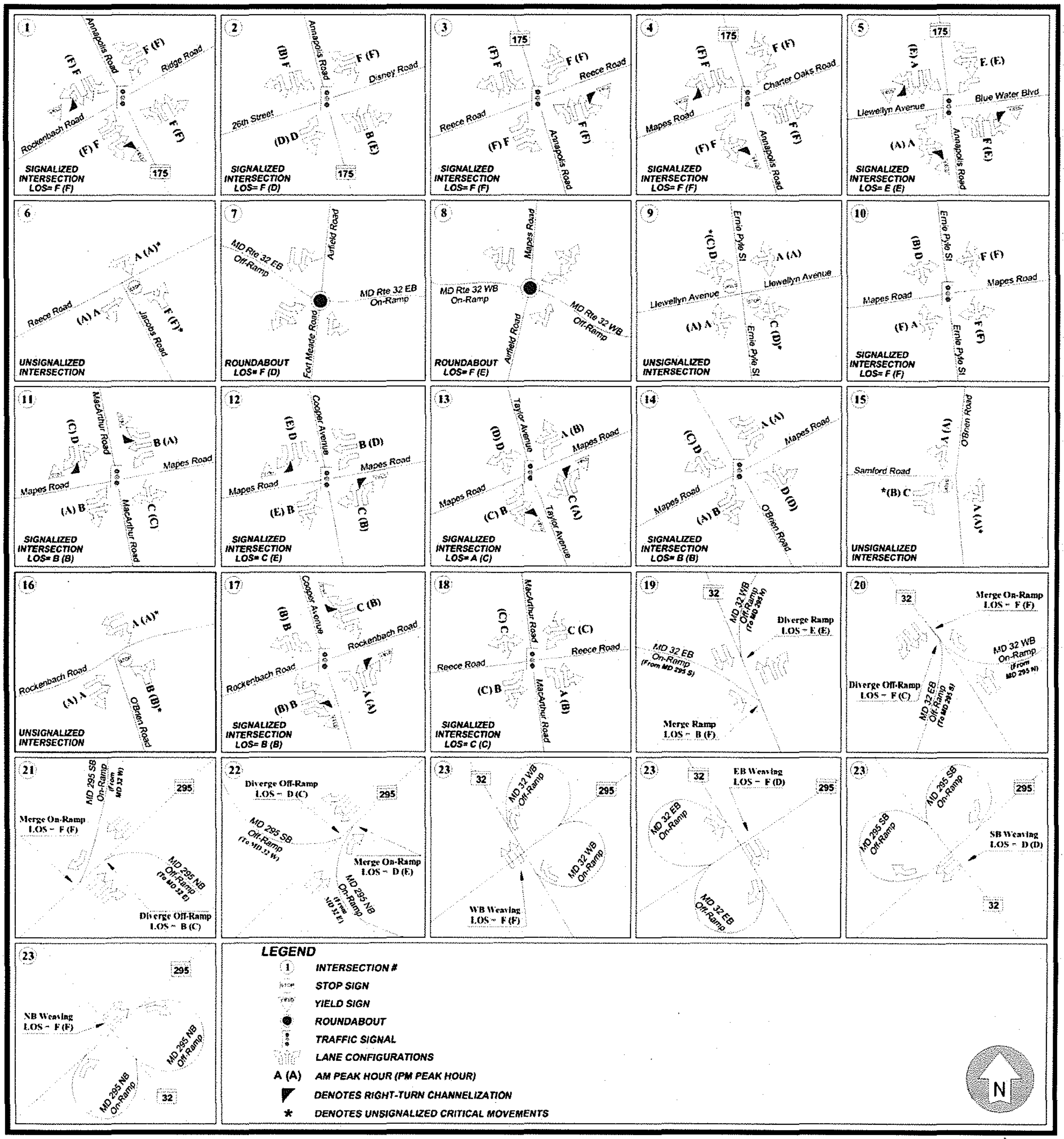
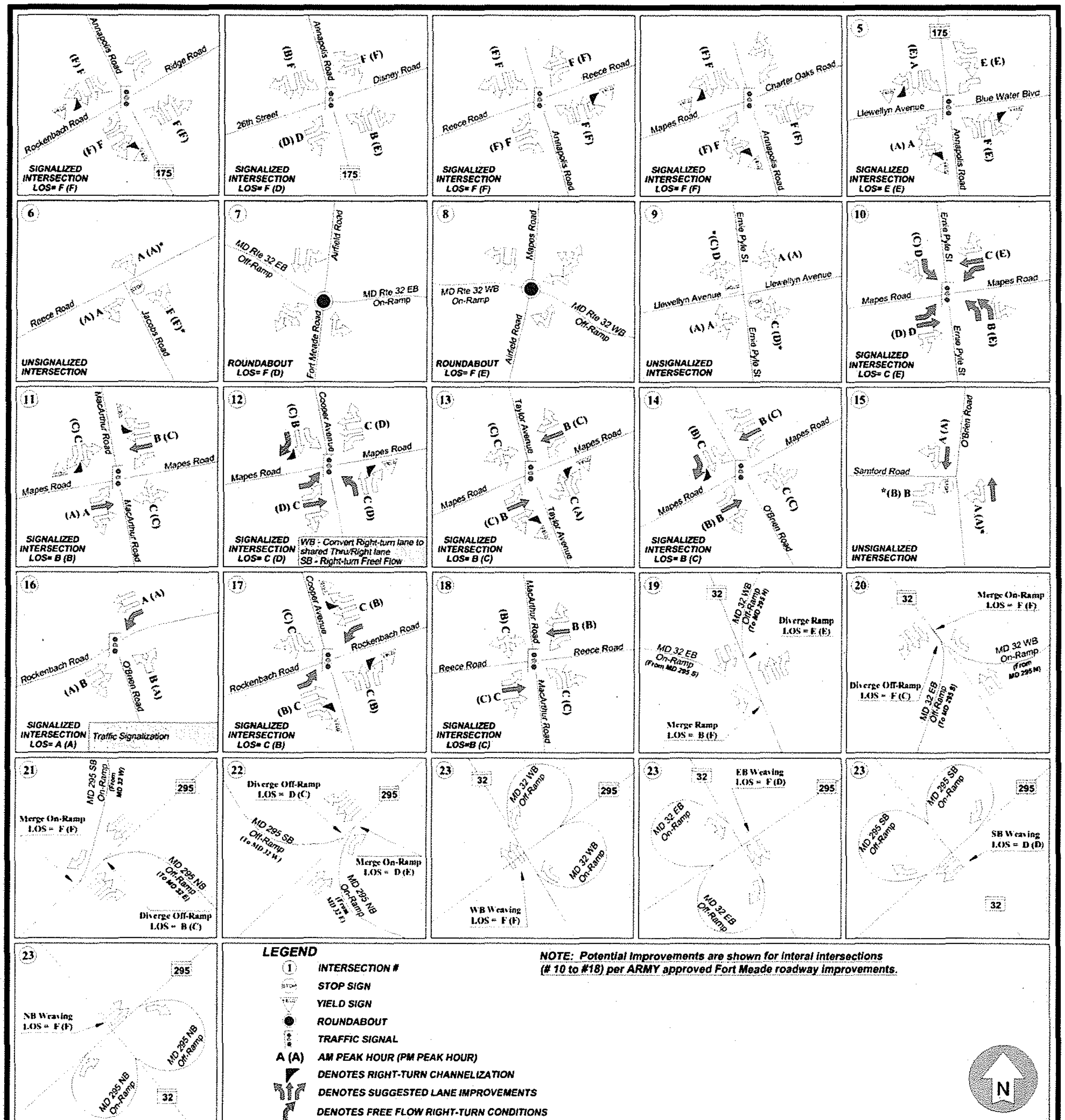


Figure 4.2-3. No Action Alternative: Lane Geometry and Level of Service (Year 2015)

1



2

3 **Figure 4.2-4. No Action Alternative: Lane Geometry and Level of Service**
4 **with Potential Improvements (Year 2015)**

5

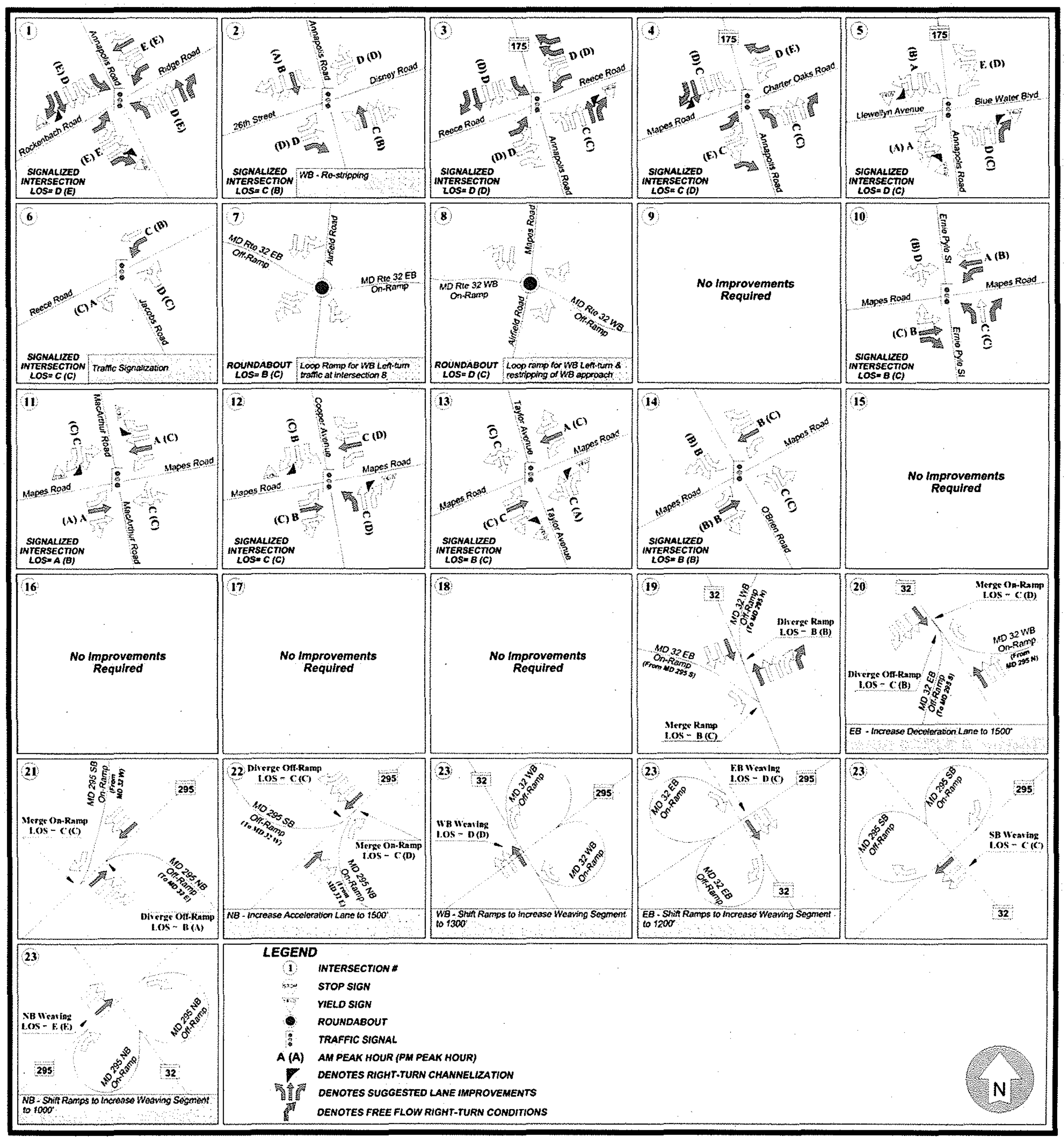


Figure 4.2-5. No Action Alternative: Lane Geometry and Level of Service with Recommended Improvements (Year 2015)

Proposed Action: Total Traffic Volumes

The projected Proposed Action traffic volumes as described in **Section 4.2.2.2** were combined with the No Action Alternative total traffic volumes to determine the total future traffic volumes for the Phase I. It is assumed that the Proposed Action-generated trips would follow the similar traffic pattern to that of the Fort Meade workforce as described in the **Table 4.2-3**.

Figure 4.2-6 is presented to show the AM/PM peak hour traffic volumes for the Proposed Action – Phase 1 condition at all the study area intersections.

Proposed Action: Capacity Analysis and Levels of Service

The projected total traffic volumes were entered in the Synchro model to evaluate the Proposed Action – Phase I condition, as was done for the existing and No Action Alternative. Based upon the capacity analysis results using projected volumes, 11 out of 18 study area intersections would operate at constrained LOS E or F during either AM or PM peak hour traffic conditions. In addition to the intersection failing under the No Action Alternative, the unsignalized intersection of O'Brien Road and Samford Road and weaving segment along MD 295 in a southbound direction would fail due to increased trips related to NSA expansion under the Proposed Action.

A major adverse impact under the Proposed Action would occur if an intersection operating with adequate LOS results (LOS D or better) under the No Action Alternative would experience increased delays and, as a result, would drop the intersection LOS to E or F. Based on this, the Proposed Action would have a long-term minor adverse impact on the study area roadway network. An analysis was conducted with existing geometry, with potential improvements suggested by the U.S. Army and with recommended improvements based on the analysis.

Table 4.2-5 is presented to summarize the intersection LOS comparison between the No Action Alternative and the Proposed Action – Phase I.

Figure 4.2-7 is presented to show the AM/PM peak hour LOS results with the existing lane geometry for the Proposed Action during Year 2015 at all the study area intersections. **Figures 4.2-8** and **4.2-9** show Year 2015 Proposed Action LOS results assuming potential improvements and recommended improvements, respectively.

4.2.3 Future Conditions (Year 2020)

Alternative 1 is discussed and analyzed in this section. It would include 3 million ft^2 of administrative facilities with an estimated growth of 8,000 personnel.

4.2.3.1 No Action Alternative 1

Long-term major adverse impacts on the study area roadway network would be expected under No Action Alternative 1. The baseline conditions for the No Action Alternative 1 (Year 2020) are used for comparison with Alternative 1. This analysis is performed due to the increase in traffic volumes at the off-installation study area intersections for the Year 2020. The increase in traffic is due to the yearly regional growth and other background developments. Under the No Action Alternative 1, Alternative 1 would not be developed on a phased, multiyear basis and DOD would not construct and operate 3 million square feet of administrative facilities employing approximately 8,000 personnel.

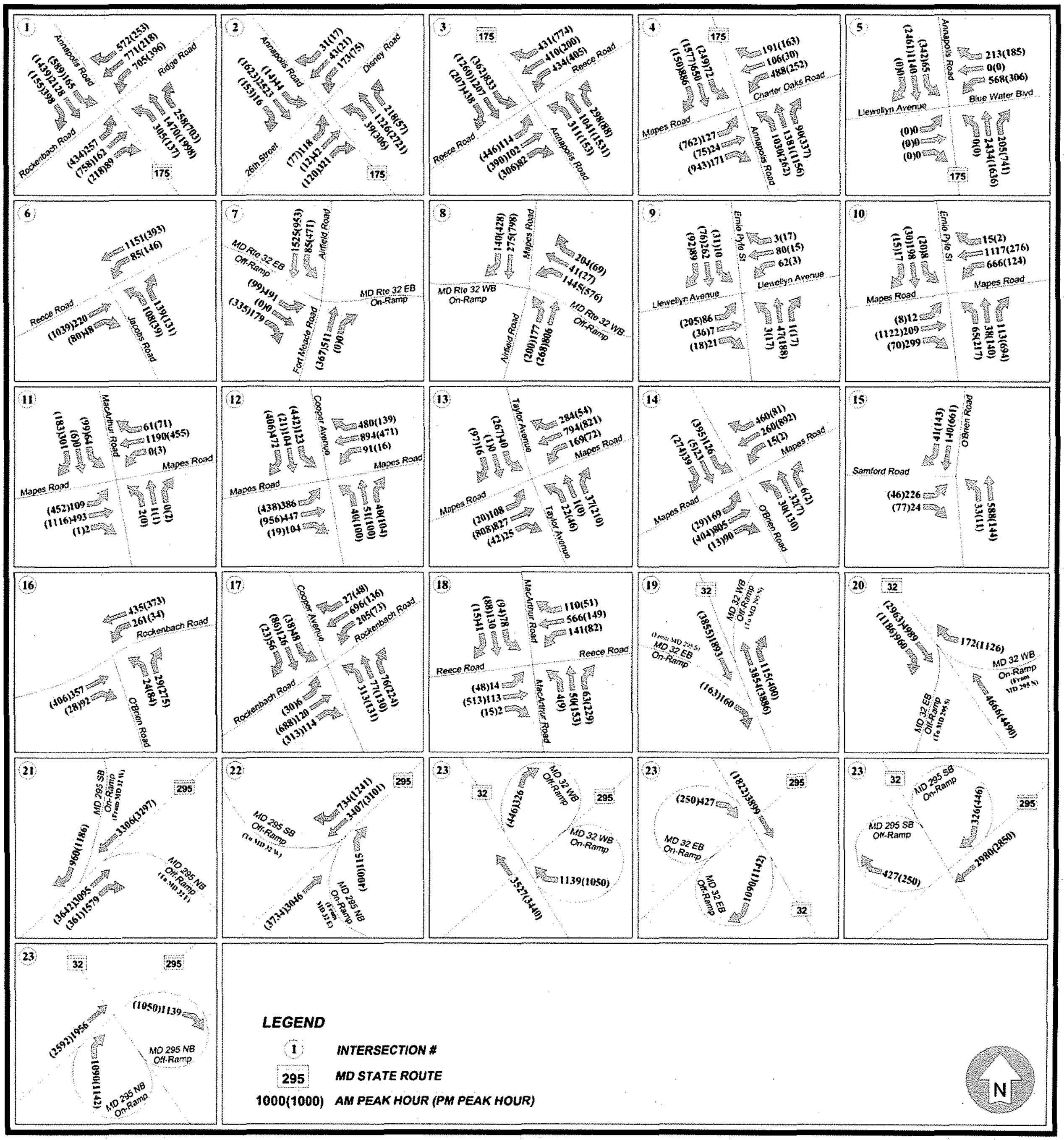


Figure 4.2-6. Proposed Action, Phase I: Peak Hour Traffic Volumes (Year 2015)

Table 4.2-5. Comparison of Intersection LOS

Number	Intersection	LOS*			
		No Action Alternative		Proposed Action	
		AM	PM	AM	PM
1	MD 175 and Rockenbach Road/Ridge Road	F	F	F	F
2	MD 175 and Disney Road/26th Street	F	D	F	D
3	MD 175 and MD 174 (Reece Road)	F	F	F	F
4	MD 175 and Mapes Road	F	F	F	F
5	MD 175 and Llewellyn Avenue	E	E	F	E
6	MD 174 and Jacobs Road	F	F	F	F
7	Mapes Road and MD 32 Eastbound Ramps	F	D	F	E
8	Mapes Road and MD 32 Westbound Ramps	F	E	F	E
9	Llewellyn Avenue and Ernie Pyle Street	D	D	D	D
10	Mapes Road and Ernie Pyle Street	F	F	F	F
11	Mapes Road and MacArthur Road	B	B	C	B
12	Mapes Road and Cooper Avenue	C	E	C	E
13	Mapes Road and Taylor Avenue	A	C	B	C
14	Mapes Road and O'Brien Road	B	B	B	C
15	O'Brien Road and Samford Road	C	B	F	C
16	O'Brien Road and Rockenbach Road	B	B	D	C
17	Cooper Avenue and Rockenbach Road	B	B	C	B
18	Reece Road and MacArthur Road	C	C	C	C
19	MD 32 Eastbound on-ramp, merging	B	F	C	F
	MD 32 Westbound off-ramp, diverging	E	E	E	F
20	MD 32 Westbound on-ramp, merging	F	F	F	F
	MD 32 Eastbound off-ramp, diverging	F	C	F	D
21	MD 295 Southbound on-ramp, merging	F	F	F	F
	MD 295 Northbound off-ramp, diverging	B	C	B	C
22	MD 295 Northbound on-ramp, merging	D	E	D	F
	MD 295 Southbound off-ramp, diverging	D	C	D	C
23	MD 32 Westbound, weaving	F	F	F	F
	MD 32 Eastbound, weaving	F	D	F	E
	MD 295 Westbound, weaving	D	D	E	D
	MD 295 Eastbound, weaving	F	F	F	F

Note: * For signalized intersections, overall intersection LOS is shown.

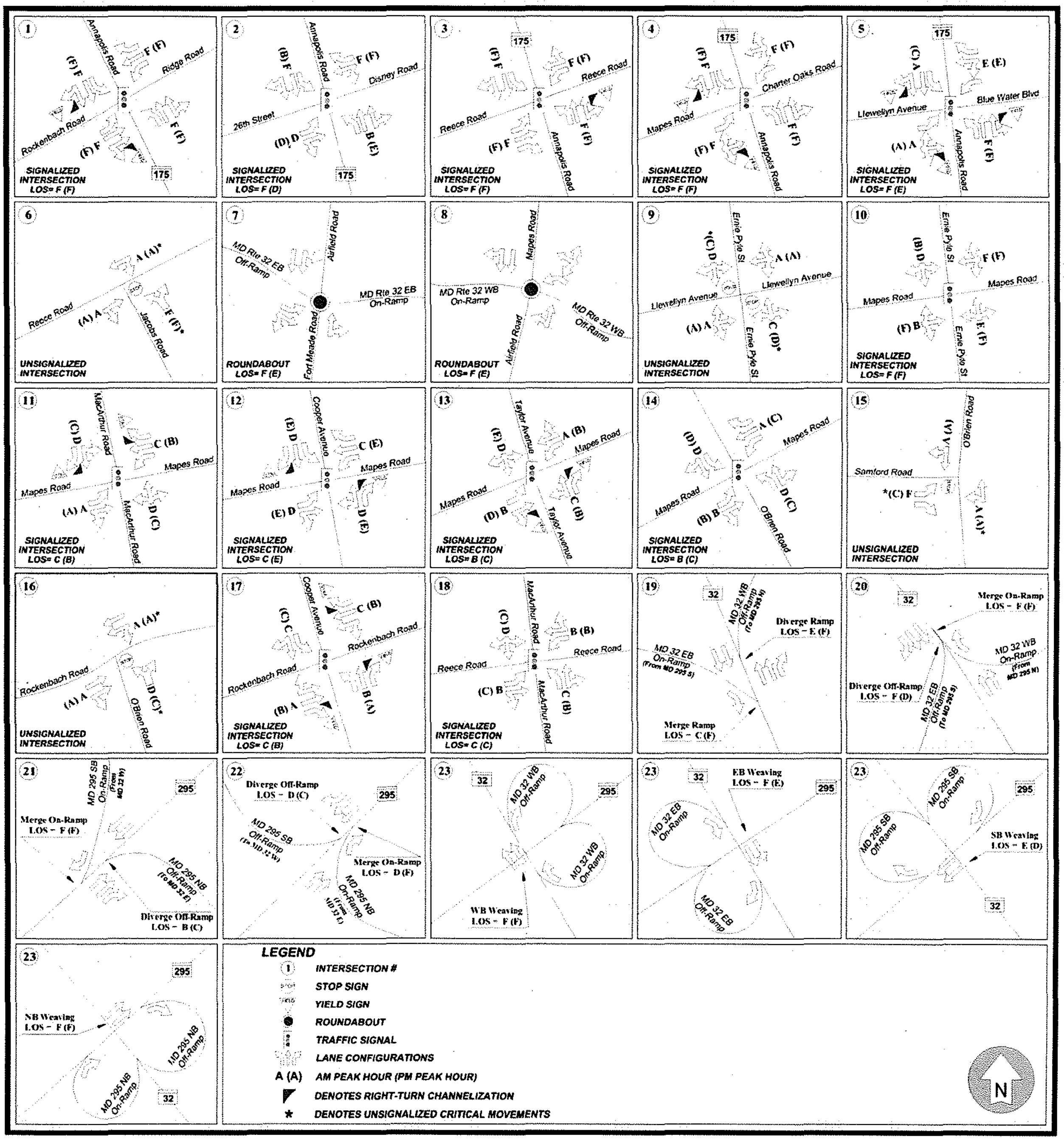
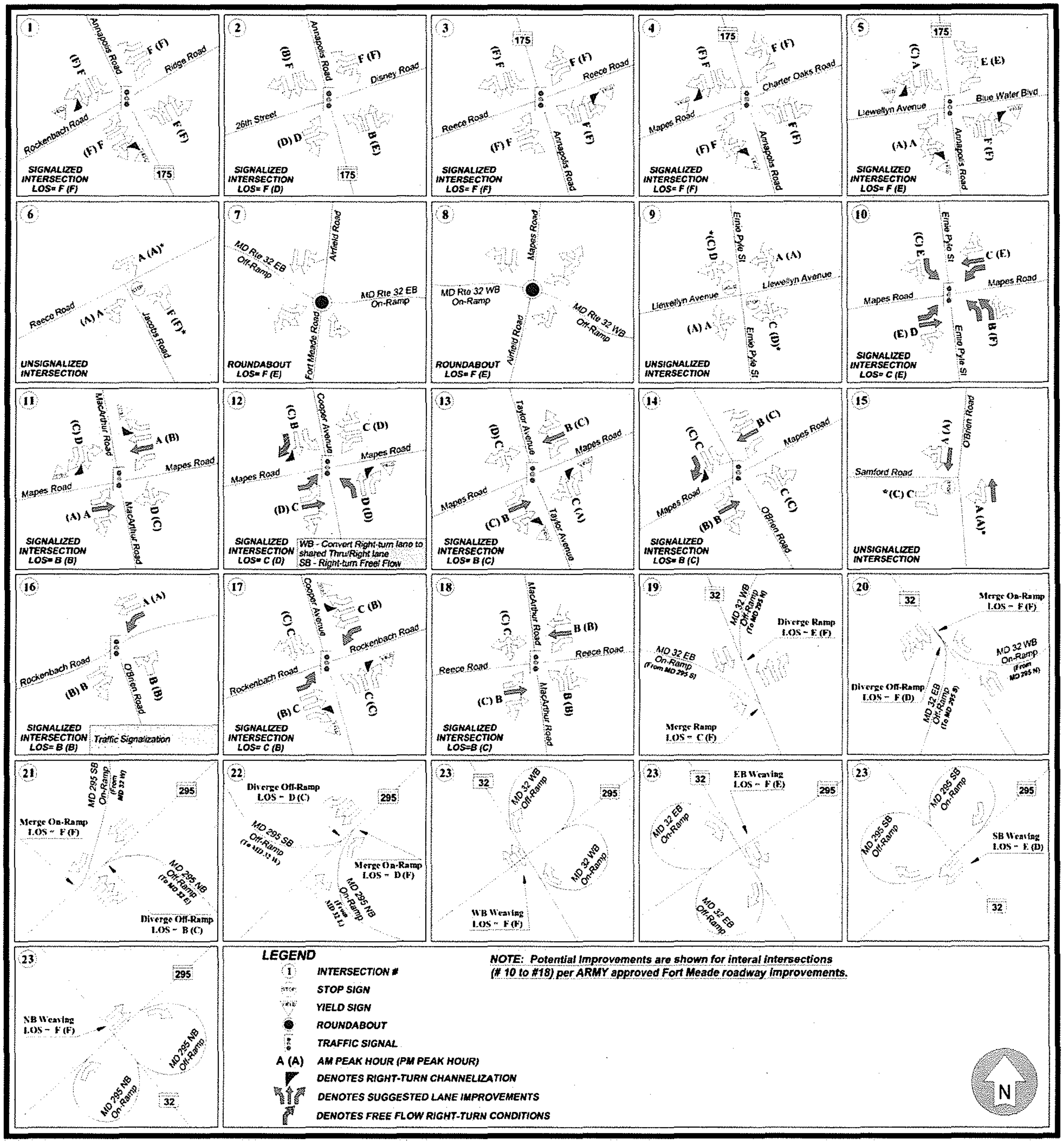


Figure 4.2-7. Proposed Action, Phase I: Lane Geometry and Level of Service (Year 2015)

1



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3 **Figure 4.2-8. Proposed Action, Phase I: Lane Geometry and Level of Service**
4 **with Potential Improvements (Year 2015)**

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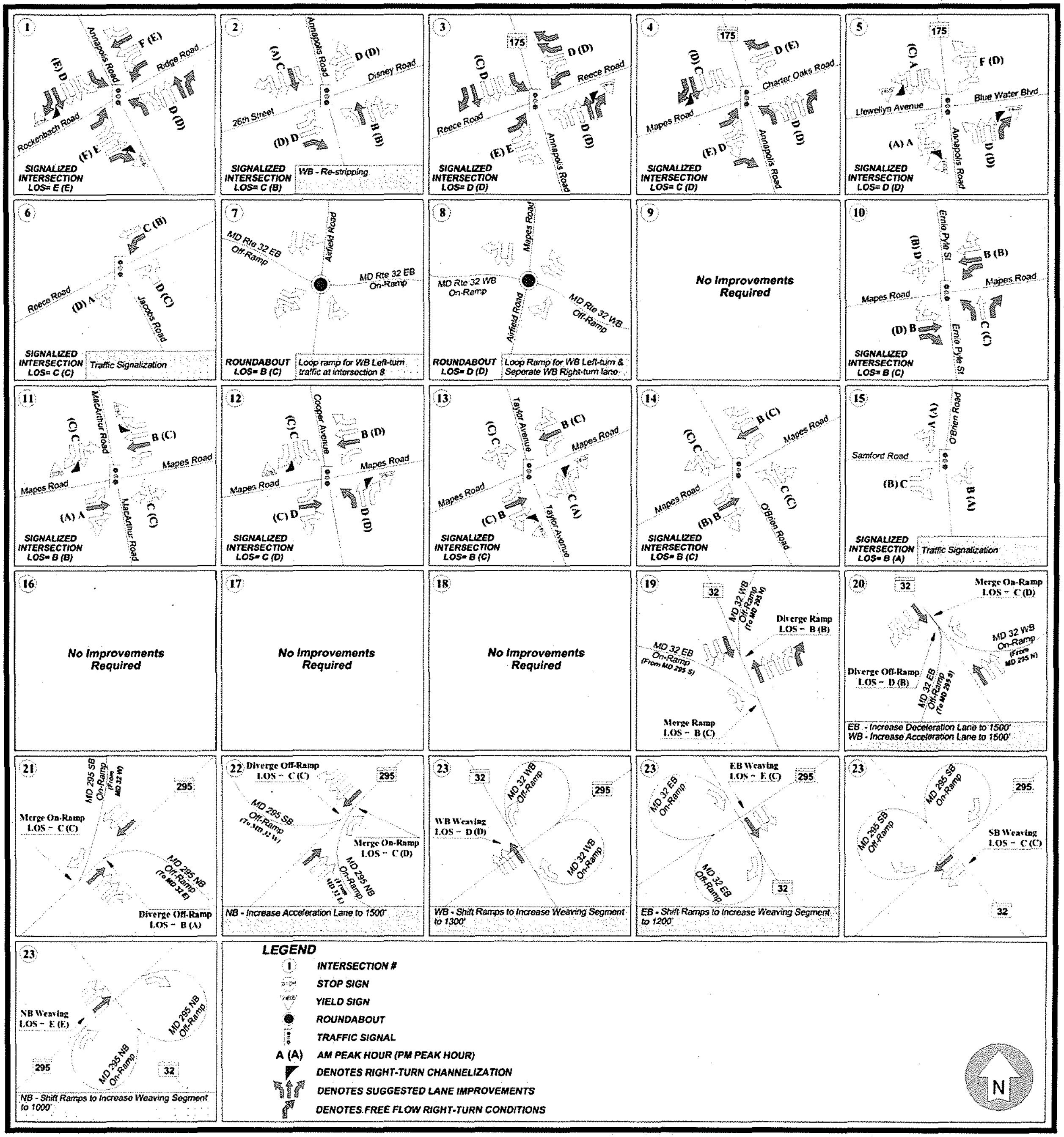

Figure 4.2-9. Proposed Action, Phase I: Lane Geometry and Level of Service with Recommended Improvements (Year 2015)

Trips associated with the BRAC-related activities on Fort Meade, partial EUL action, and other non-BRAC activities on Fort Meade, assumed in the No Action Alternative (Year 2015) described in **Section 4.2.2.1**, remain consistent with the No Action Alternative 1 analysis. In addition, trips related to the remainder of EUL developments (Site Y) are also considered in the analysis. This EUL action includes the completion of the construction for administrative facilities on a parcel along the northern side of Reece Road, east of MD 175. Estimated job growth related to this action would be 7,000 personnel. Access will be provided via a driveway along the east side of MD 175, opposite Clark Road, and via a driveway along the northern side of Reece Road. **Figure 2.4-1** presented the locations of these proposed projects.

In order to incorporate all of the ongoing and planned future developments trips surrounding the Fort Meade area, an annual growth rate of 1 percent (compounded) was applied to the No Action Alternative traffic volumes from Year 2015 to Year 2020.

The weekday AM/PM peak hour trips entering and exiting the site due to aforementioned developments were established using equations/rates provided in the 8th Edition of the ITE *Trip Generation Report.* **Table 4.2-6** summarizes the total trip generation associated with each of the background developments.

Table 4.2-6. No Action Alternative 1 – Trip Generation Summary

Land Use	Amount	AM Peak Hour			PM Peak Hour			Weekday ADT
		In	Out	Total [4]	In	Out	Total [4]	
BRAC – DISA [1]	4,272 employees	1,483	202	1,685	279	1,362	1,641	10,428
BRAC – DMA [1]	663 employees	299	41	339	52	253	305	2,180
BRAC – Adjudication [1]	772 employees	340	46	387	59	287	346	2,478
902nd Military Center	420,000 ft^2	520	71	591	93	456	549	4,028
DINFOS Expansion	300 students	50	13	63	53	123	176	1,109
EUL – Site Z [2]	3,450 employees	1,234	168	1,402	227	1,109	1,337	8,715
EUL – Site Y [2]	7,000 employees	2,267	309	2,576	451	2,200	2,650	8,715
Sub Total [4]		***6,194***	***850***	***7,044***	***1,213***	***5,790***	***7,003***	***44,727***
Alternative Mode Reduction (5%) [3]		*310*	*43*	*352*	*61*	*289*	*350*	*2,236*
Total trips		**5,884**	**808**	**6,692**	**1,153**	**5,500**	**6,653**	**42,491**

Sources: [1] DOD 2008b, [2] USACE Mobile District 2007

Notes: [3] Vehicular Trips reduction anticipating future transit improvements.

[4] Subtotals and totals might vary due to rounding during the calculations.

No Action Alternative 1: Total Traffic Volumes

The projected trips associated with background development and trips related to other regional growth described in **Section 4.2.2.1** were combined to determine total future traffic volumes for the No Action Alternative 1 in Year 2020. Total trips were then assigned to the study area roadway network. The distribution of trips was based upon local travel patterns for the roadway network surrounding Fort Meade. The trip distribution percentages remain consistent with the percentages utilized in the No Action Alternative as shown in **Table 4.2-3**.

Figure 4.2-10 is presented to illustrate the AM/PM peak hour volumes at all the study area intersections for Year 2020 No Action Alternative 1.

No Action Alternative 1: Capacity Analysis and Levels of Service

The AM/PM peak hour traffic volumes previously described and lane configurations were entered in the Synchro model to determine the intersection LOSs. Due to continual growth in the area, signal timings at the signalized intersections are in need of constant adjustments. In an effort to achieve progressive traffic flow and, subsequently, to reduce the traffic delay, signal timings and signal phasing were optimized.

HCS+ was utilized to analyze the weaving and merging/diverging conditions at the MD 295/MD 32 interchange.

Major adverse impacts of the No Action Alternative 1 were observed for the study area intersections at both on- and off-installation intersections. Based upon the analysis results, all the intersections failing under the No Action Alternative would also fail under this alternative in Year 2020. These intersections would experience increased delay due to heavy influx of traffic generated by BRAC action, EUL action (Site Y & Z), 902nd Military Center, DINFOS expansion and other regional growth. Consequently, the LOS would degrade from D or better observed in the existing conditions to E or F under this alternative.

All the weaving/merging/diverging segments, except MD 295 northbound off-ramp, would also experience heavy delay and operate with inadequate LOS.

Analysis was conducted with the existing lane geometry to establish the baseline condition as well as assuming the infrastructure improvements, which would be required to reduce the impacts of the influx of trips generated by new developments.

Figure 4.2-11 is provided to illustrate the projected LOS results at all the study area intersections during No Action Alternative 1 without any roadway improvements. **Figure 4.2-12** is presented to illustrate the LOS results assuming the improvements, which would be required to maintain adequate LOS results.

4.2.3.2 Alternative 1 – (Phase I & Phase II)

Long-term minor adverse impacts on the study area roadway network would be expected under Alternative 1, identified as Phase I and Phase II in the study. Under this alternative, the Proposed Action (Phase I) would be implemented along with Phase II. Under Phase II, development would occur on the western half of proposed site in between the Phase I parcel and 3rd Cavalry Road supporting an additional 1.2 million ft^2 of operational administrative facilities. The build-out and full occupation would occur by Year 2020. The analysis of Alternative 1 includes Phase I and Phase II. Job growth due to this action is estimated to be 1,500 personnel. However, it is anticipated that approximately two-thirds (1,000 personnel) of the estimated 1,500 employees would come from outside the Fort Meade boundary. The remaining one-third (500) of the personnel would be shifted from adjacent buildings within Fort Meade to the new facility. Therefore, for the purpose of this analysis, the impact of a total of 5,334 personnel (4,334 for Phase I and 1,000 for Phase II) has been taken into consideration.

The weekday AM/PM peak hour trips entering and exiting the site due to Alternative 1 were established using equations/rates provided in the 8th Edition of the ITE *Trip Generation Report*. **Table 4.2-7** summarizes the total trip generation associated with Alternative 1.

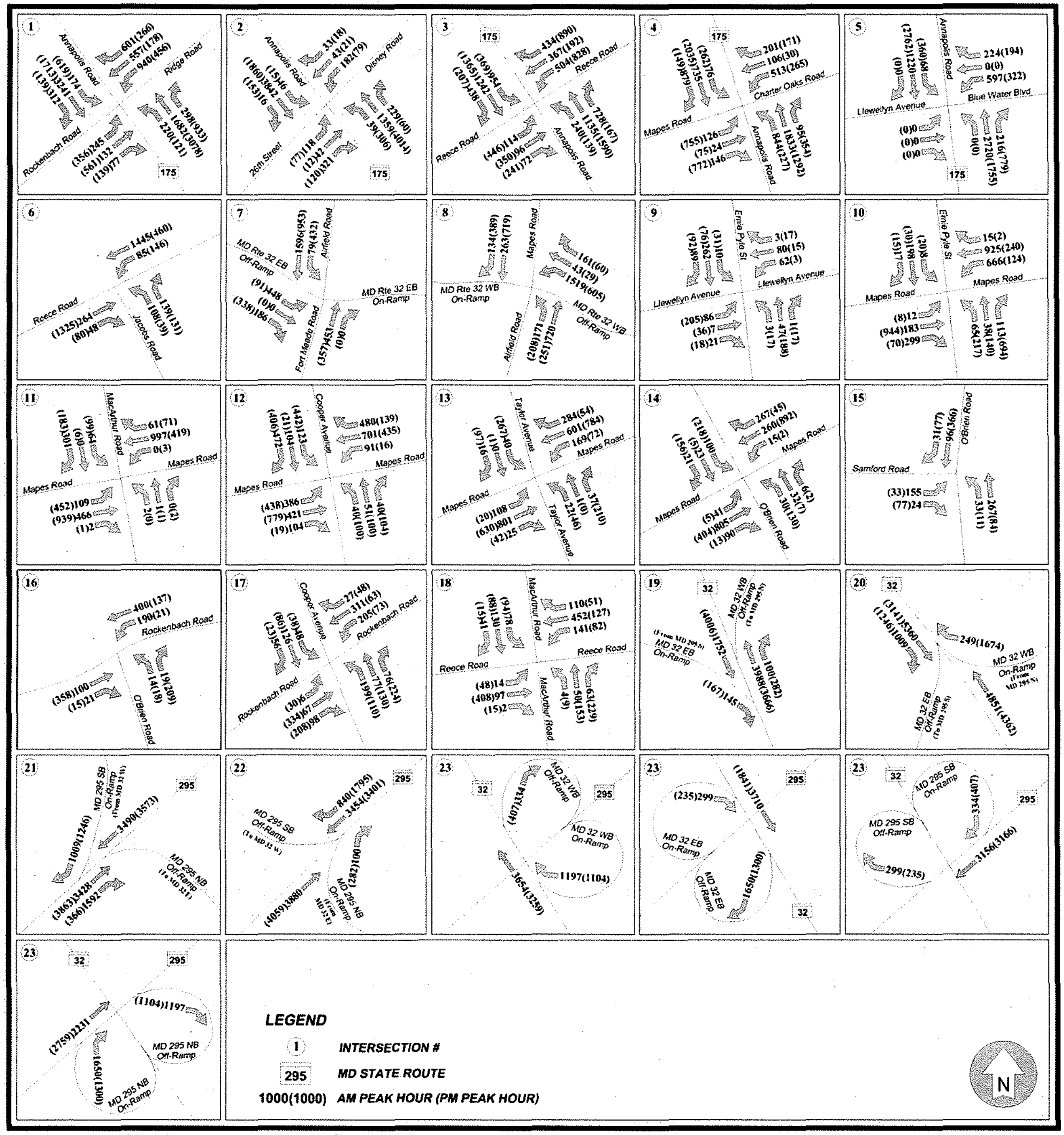

Figure 4.2-10. No Action Alternative 1: Peak Hour Traffic Volumes (Year 2020)

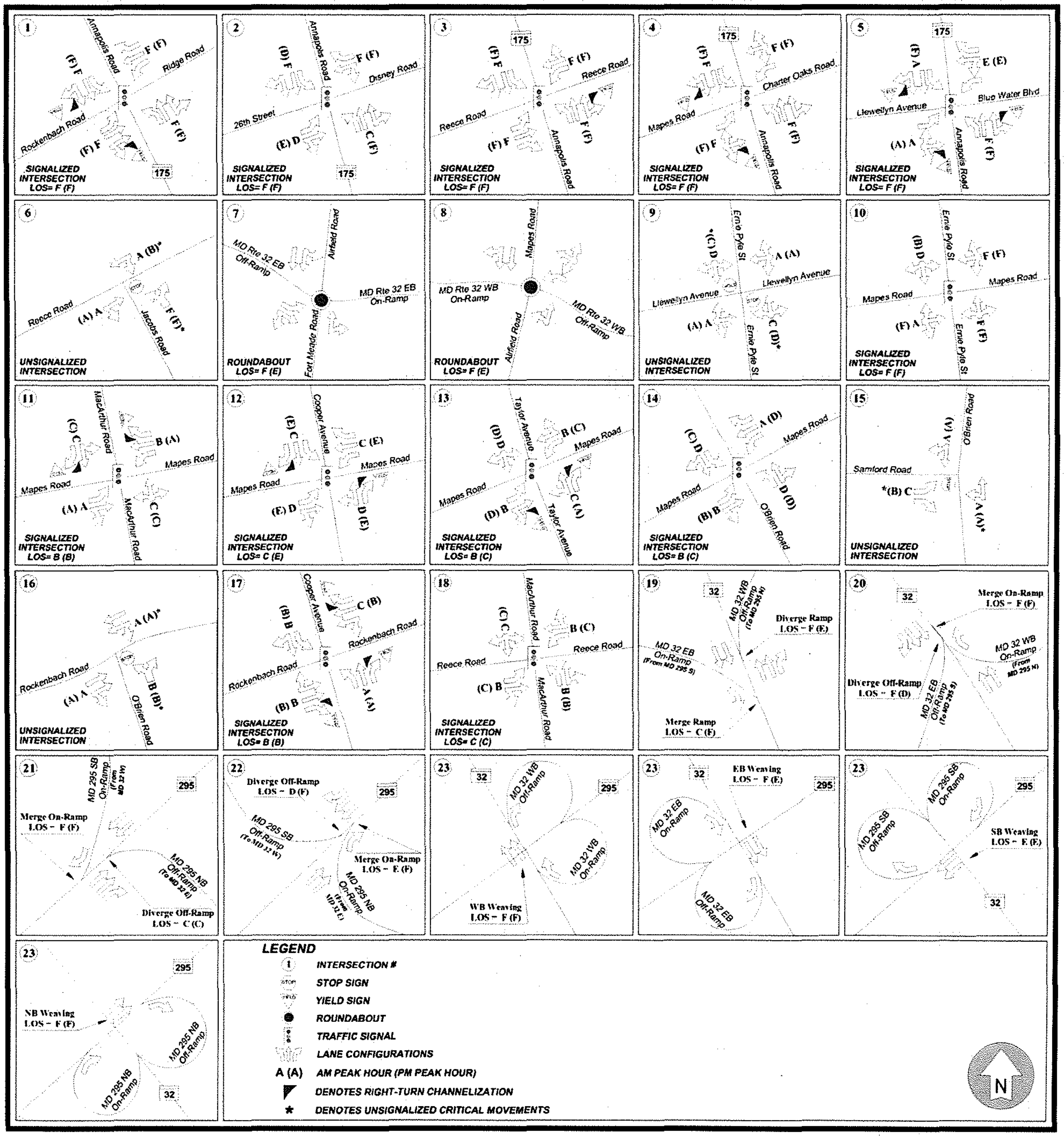

Figure 4.2-11. No Action Alternative 1: Lane Geometry and Level of Service (Year 2020)

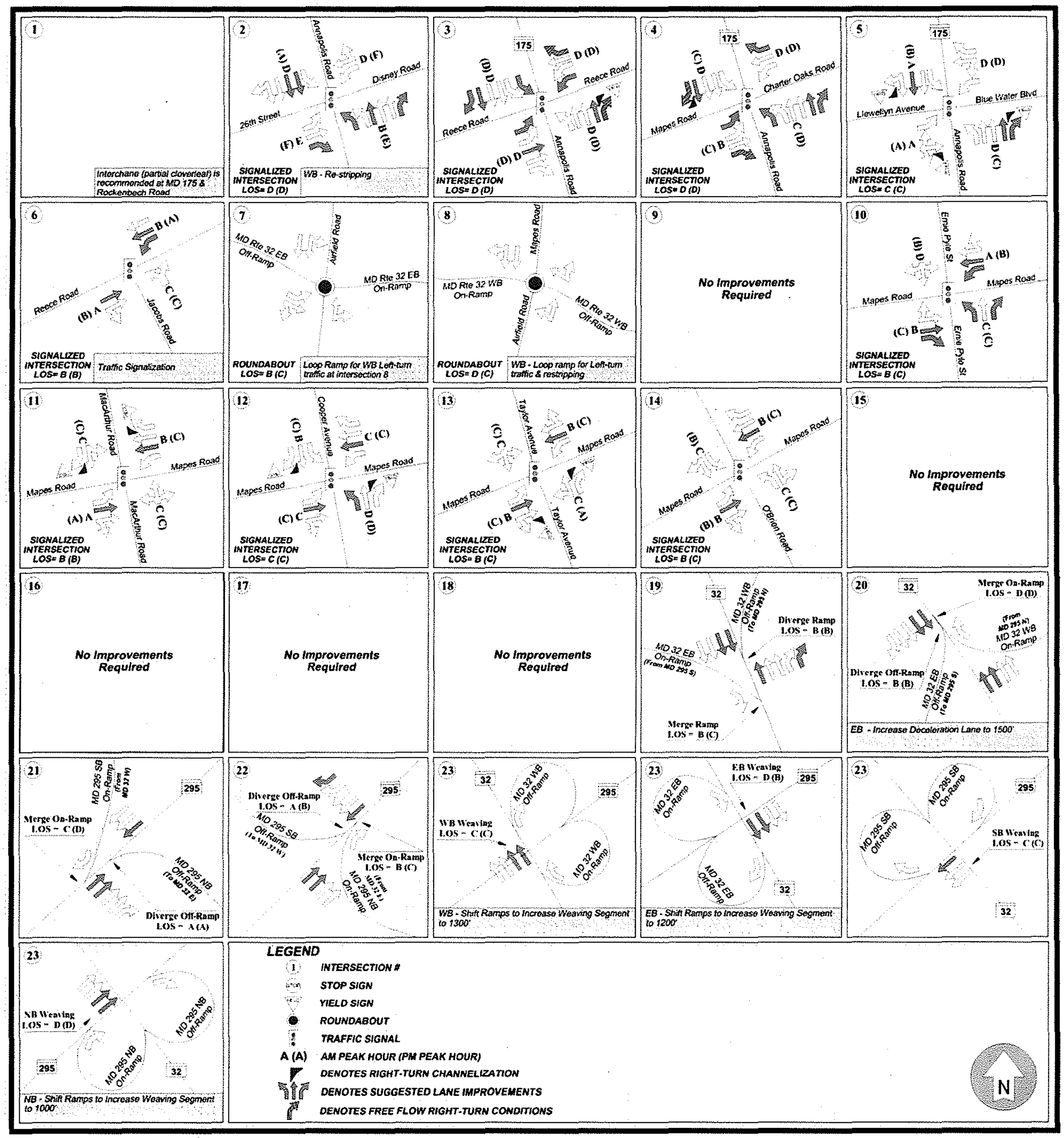

Figure 4.2-12. No Action Alternative 1: Lane Geometry and Level of Service with Recommended Improvements (Year 2020)

Table 4.2-7. Alternative 1 – Trip Generation Summary

Land Use	Amount	AM Peak Hour			PM Peak Hour			Weekly ADT
		In	Out	Total [1]	In	Out	Total [1]	
National Security Agency	5,334 employees	1,795	245	2,039	346	1,688	2,034	12,566
Subtotal Trips [1]		***1,795***	***245***	***2,039***	***346***	***1,688***	***2,034***	***12,566***
Alternative Mode Reduction (5%) [2]		*90*	*12*	*102*	*17*	*84*	*102*	*628*
Total Trips [1]		**1,705**	**232**	**1,937**	**328**	**1,604**	**1,932**	**11,938**

Notes:
1. Subtotals and totals might vary due to rounding during the calculations.
2. Vehicular trips reduction anticipating future transit improvements.

Alternative 1: Total Traffic Volumes

The projected Alternative 1 traffic volumes as described in previous section were combined with the No Action Alternative 1 traffic volumes (see **Figure 4.2-13**) to determine the total future traffic volumes for Alternative 1 in Year 2020. It is assumed that the Alternative 1 generated trips would follow the similar traffic pattern the of Fort Meade workforce as described in the **Table 4.2-3**.

Figure 4.2-14 is presented to show the AM/PM peak hour traffic volumes for the Alternative 1 at all the study area intersections.

Alternative 1: Capacity Analysis and Levels of Service

The projected total traffic volumes were entered in the Synchro model to evaluate the Alternative 1 traffic conditions. Based upon the capacity analysis results using projected volumes, 13 out of 18 study area intersections would operate at constrained LOS E or F during either AM or PM peak hour traffic conditions. In addition to the intersection failing under No Action Alternative 1, the onsite intersections of Mapes Road and O'Brien Road and Rockenbach Road and O'Brien Road would also fail due to increased trips related to NSA expansion under Alternative 1.

A major adverse impact under Alternative 1 is considered when an intersection operating with adequate LOS results (LOS D or better) under No Action Alternative 1 would experience increased delay and, as a result, would drop the intersection LOS to E or F. Based on this, Alternative 1 would have minor adverse impacts on the on-installation intersections. An analysis was conducted with and without infrastructure improvements.

Table 4.2-8 is presented to summarize the intersection LOS comparison between No Action Alternative 1 and implementation of Alternative 1.

Figure 4.2-14 is presented to show the AM/PM peak hour LOS results with the existing lane geometry for Alternative 1 during year 2020 at all the study area intersections. **Figure 4.2-15** shows Year 2020 Alternative 1 levels of service results with the recommended lane geometry.

4.2.4 Future Conditions (Year 2029)

Alternative 2 is discussed and analyzed in this section. It will include a total of 5.8 million ft^2 of administrative facilities with a total job growth of 11,000 personnel.

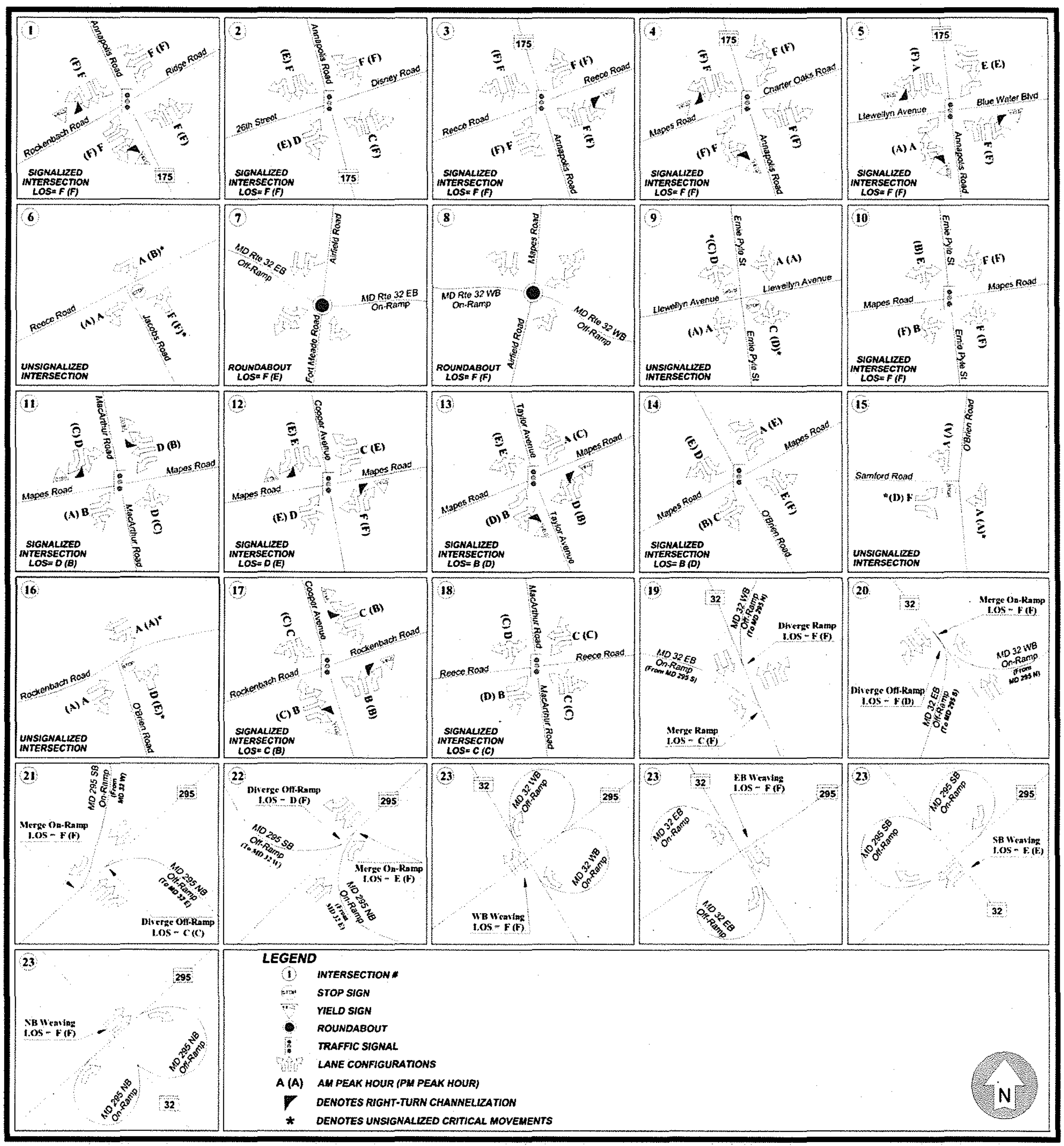

Figure 4.2-13. Alternative 1 (Phase I and Phase II): Lane Geometry and Level of Service (Year 2020)

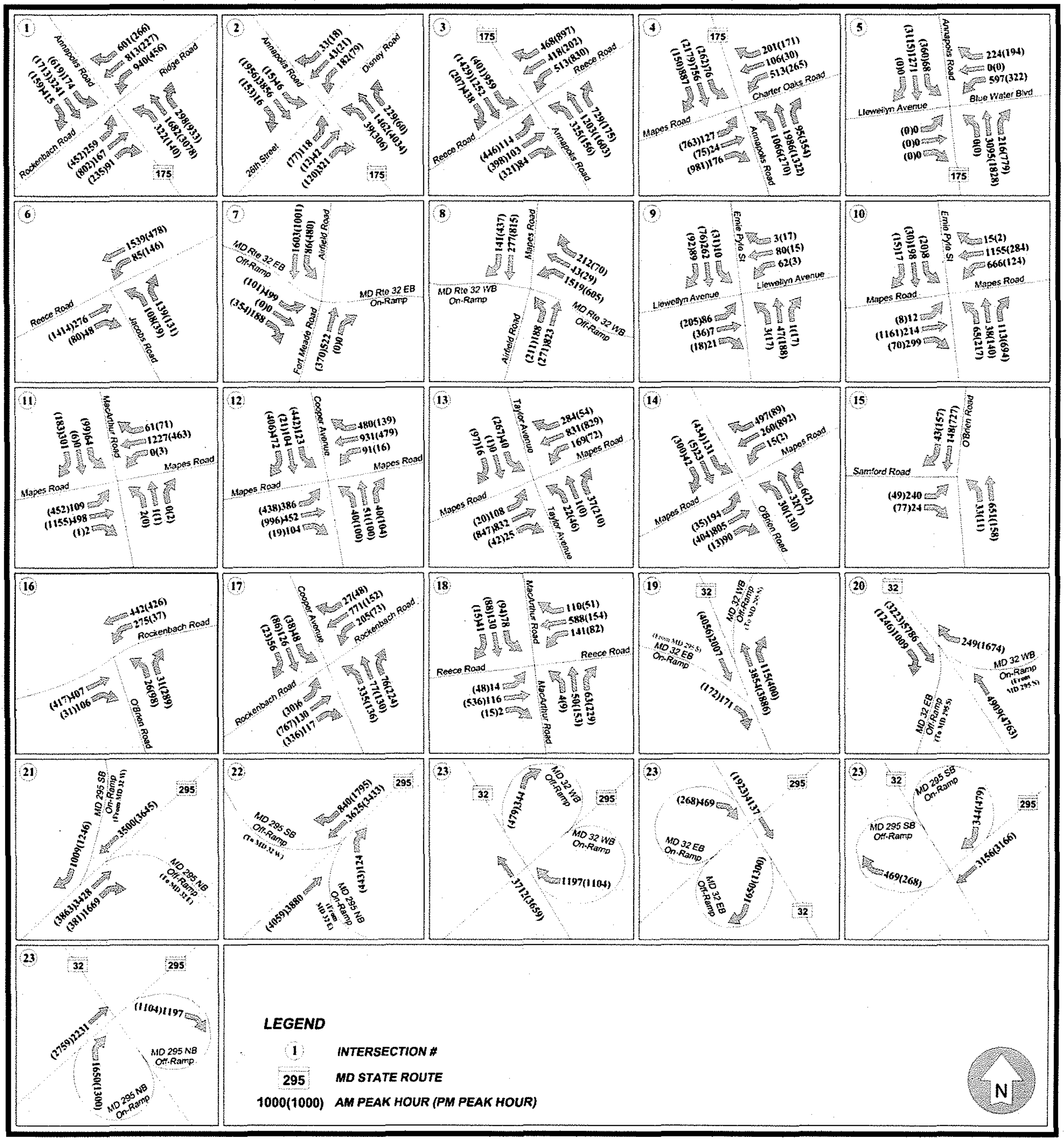

Figure 4.2-14. Alternative 1 (Phase I and Phase II): Peak Hour Traffic Volumes (Year 2020)

1 **Table 4.2-8. Comparison of Intersection LOS (Year 2020)**

Number	Intersection	LOS*			
		No Action Alternative 1		Alternative 1	
		AM	PM	AM	PM
1	MD 175 and Rockenbach Road/Ridge Road	F	F	F	F
2	MD 175 and Disney Road/26th Street	F	F	F	F
3	MD 175 and MD 174 (Reece Road)	F	F	F	F
4	MD 175 and Mapes Road	F	F	F	F
5	MD 175 and Llewellyn Avenue	F	F	F	F
6	MD 174 and Jacobs Road	F	F	F	F
7	Mapes Road and MD 32 Eastbound Ramps	F	E	F	E
8	Mapes Road and MD 32 Westbound Ramps	F	E	F	F
9	Llewellyn Avenue and Ernie Pyle Street	D	D	D	D
10	Mapes Road and Ernie Pyle Street	F	F	F	F
11	Mapes Road and MacArthur Road	B	B	D	B
12	Mapes Road and Cooper Avenue	C	E	D	E
13	Mapes Road and Taylor Avenue	B	C	B	D
14	Mapes Road and O'Brien Road	B	C	B	D
15	O'Brien Road and Samford Road	C	B	F	D
16	O'Brien Road and Rockenbach Road	B	B	D	E
17	Cooper Avenue and Rockenbach Road	B	B	C	B
18	Reece Road and MacArthur Road	C	C	C	C
19	MD 32 Eastbound on-ramp, merging	C	F	C	F
	MD 32 Westbound off-ramp, diverging	F	E	F	F
20	MD 32 Westbound on-ramp, merging	F	F	F	F
	MD 32 Eastbound off-ramp, diverging	F	D	F	D
21	MD 295 Southbound on-ramp, merging	F	F	F	F
	MD 295 Northbound off-ramp, diverging	C	C	C	C
22	MD 295 Northbound on-ramp, merging	E	F	E	F
	MD 295 Southbound off-ramp, diverging	D	F	D	F
23	MD 32 Westbound, weaving	F	F	F	F
	MD 32 Eastbound, weaving	F	E	F	F
	MD 295 Southbound, weaving	E	E	E	E
	MD 295 Northbound, weaving	F	F	F	F

Note: * For signalized intersections, overall intersection LOS is shown.

2

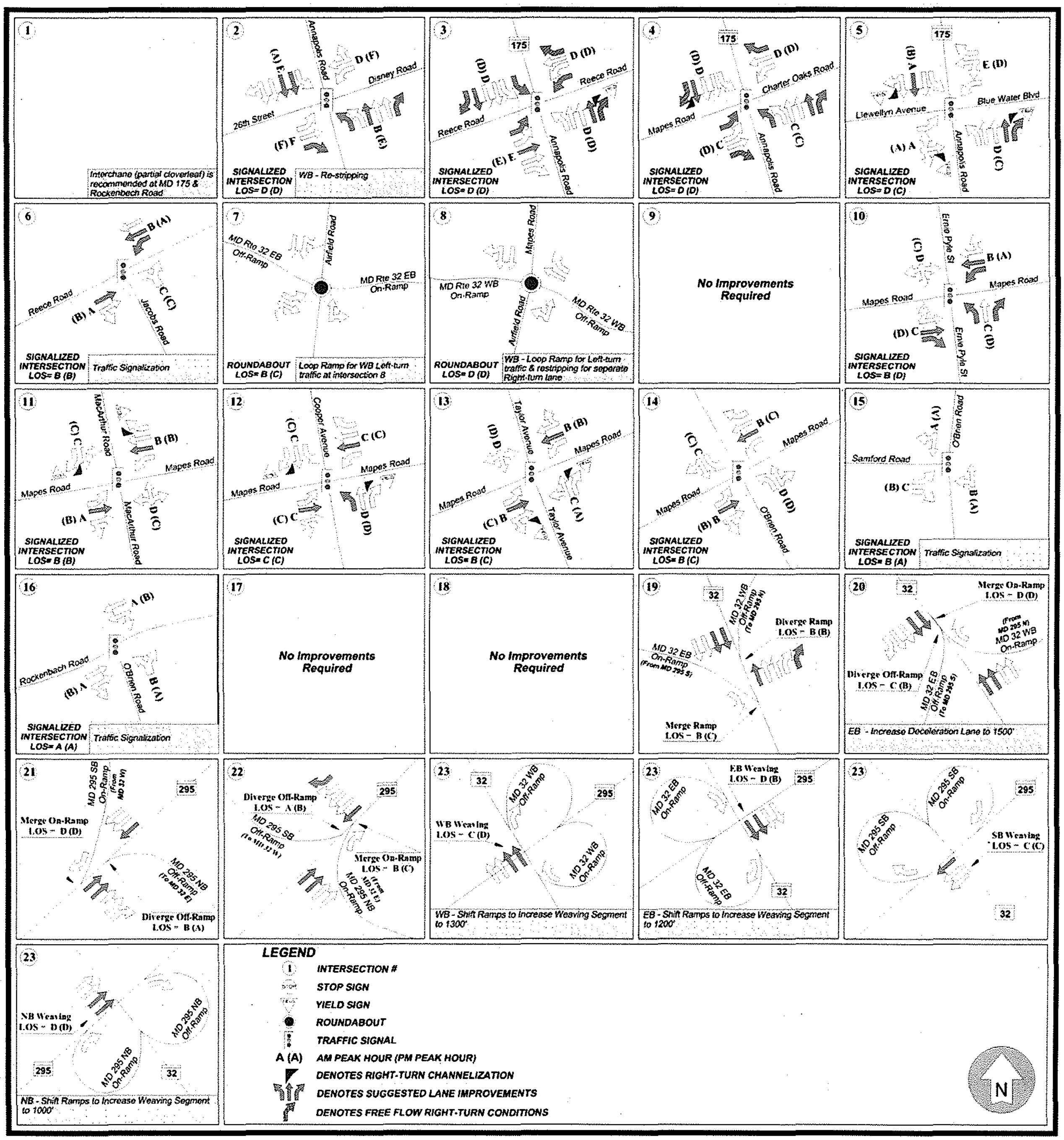

Figure 4.2-15. Alternative 1 (Phase I and Phase II): Lane Geometry and Level of Service with Recommended Improvements (Year 2020)

4.2.4.1 No Action Alternative 2

Long-term major adverse impacts on the study area roadway network would be expected under No Action Alternative 2. The baseline conditions for the No Action Alternative 2 (Year 2029) are used for comparison with Alternative 2. This analysis is performed due to the increase in traffic volumes at the off-installation study area intersections for the Year 2029. The increase in traffic is due to the yearly regional growth and other background developments. Under the No Action Alternative 2, Alternative 2 would not be developed on a phased, multiyear basis and DOD would not construct and operate 5.8 million ft^2 of administrative facilities employing approximately 11,000 personnel.

Trips associated with the BRAC-related activities on Fort Meade, EUL action, and other non-BRAC activities on Fort Meade, assumed in the No Action Alternative 1 (Year 2020) described in the **Section 4.2.3.1** remain consistent with the No Action Alternative 2 analysis.

An annual growth rate of 1 percent (compounded) was applied to the No Action Alternative 1 traffic volumes from Year 2020 to Year 2029 to incorporate all of the ongoing and planned future development trips surrounding the Fort Meade area.

The weekday AM/PM peak hour trips entering and exiting the site due to the aforementioned developments were established using equations/rates provided in the 8th Edition of the ITE *Trip Generation Report*.

Total trip generation associated with each of the background developments remains consistent with **Table 4.2-6** and **Figure 2.4-1**.

No Action Alternative 2: Total Traffic Volumes

The projected background development trips and trips related to other regional growth were added to determine total future traffic volumes for the No Action Alternative 2 in Year 2029. Total trips were then assigned to the study area roadway network. The distribution of trips was based upon local travel patterns for the roadway network surrounding Fort Meade. The trip distribution percentages remain consistent with the percentages utilized in the No Action Alternative as illustrated in **Table 4.2-3**.

Figure 4.2-16 is presented to illustrate the AM/PM peak hour volumes at all the study area intersections for Year 2029 No Action Alternative 2.

No Action Alternative 2: Capacity Analysis and Levels of Service

The AM/PM peak hour traffic volumes and lane configurations were entered in the Synchro model to determine the intersection LOS. Due to continual growth in the area, signal timings at the signalized intersections are in need of constant adjustments. In an effort to achieve progressive traffic flow and, subsequently, to reduce the traffic delay, signal timings and signal phasing were optimized.

HCS+ was utilized to analyze the weaving and merging/diverging conditions at the MD 295/MD 32 interchange.

Major adverse impacts under No Action Alternative 2 were observed for the study area intersections at both on- and off-installation intersections. Based upon the analysis results, all the intersections failing under No Action Alternative 1 (**Section 4.2.3.1**) would also fail under this alternative in Year 2029. These intersections would experience increased delays due to heavy influx of traffic generated by BRAC

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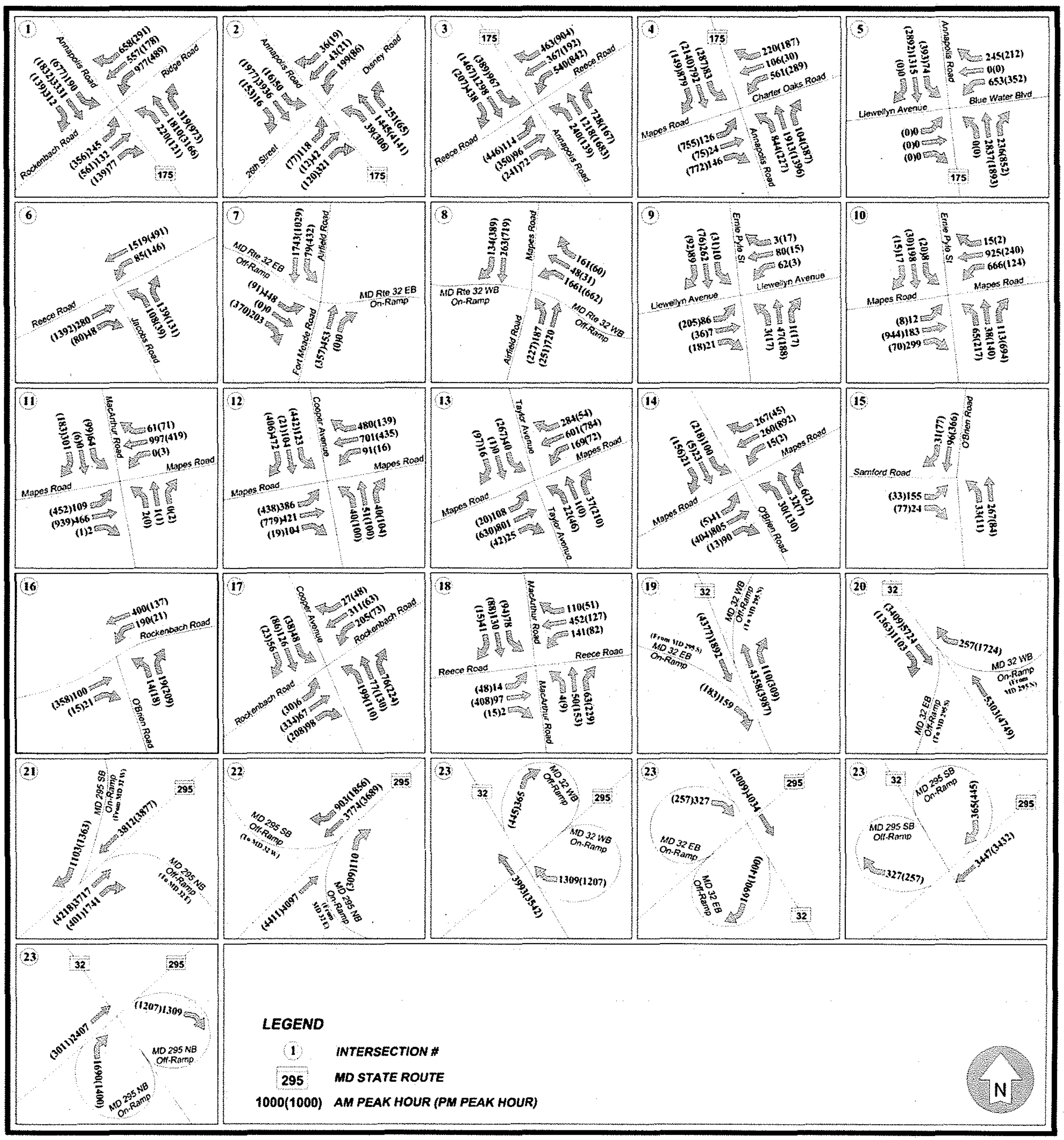


2

3 **Figure 4.2-16. No Action Alternative 2: Peak Hour Traffic Volumes (Year 2029)**

4

action, EUL action (Site Y & Z), 902nd Military Center, DINFOS expansion, and other regional growth. Consequently, the LOS would degrade from D or better observed in the existing conditions to E or F under this alternative.

All the weaving/merging/diverging segments would experience heavy delay and operate with inadequate LOS.

Analysis was conducted with the existing lane geometry to establish the baseline condition as well as assuming the infrastructure improvements, which would be required to reduce the impacts of the influx of trips generated by new developments.

Figure 4.2-17 is provided to illustrate the projected levels of service results at all the study area intersections during No Action Alternative 2. **Figure 4.2-18** is presented to illustrate proposed improvements, which would be required to maintain adequate LOS results.

4.2.4.2 Alternative 2 (Phase I, Phase II and Phase III)

Long-term moderate adverse impacts on the study area roadway network would be expected under Alternative 2, identified as Phase I, Phase II, and Phase III in the study. Under this alternative, the Proposed Action (Phase I) will be implemented along with Phase II and Phase III. Under Phase III, development will occur south of Phase I and Phase II supporting an additional 2.8 million ft^2 of operational administrative facilities, bringing total built space to 5.8 million ft^2 under all three phases. The build-out and full occupation would occur by Year 2029. The analysis of Alternative 2 includes Phase I, Phase II, and Phase III. Job growth due to this Phase III action is estimated to be 3,000 personnel. However, it is anticipated that only two-thirds (2,000 personnel) of the estimated 3,000 employees would come from outside the Fort Meade boundary. The remaining one-third (1,000) would be shifted from adjacent buildings within Fort Meade to the new facility. Therefore, for the purpose of this analysis, the impact of a total of 7,334 personnel (4,334 for Phase I, 1,000 for Phase II, and 2,000 for Phase III) has been considered.

The weekday AM/PM peak hour trips entering and exiting the site due to the Alternative 2 were established using equations/rates provided in the 8th Edition of the ITE *Trip Generation Report.* **Table 4.2-9** summarizes the total trip generation associated with Alternative 2.

Table 4.2-9. Alternative 2 – Trip Generation Summary

Land Use	Amount	AM Peak Hour			PM Peak Hour			Weekly ADT
		In	Out	Total	In	Out	Total	
National Security Agency	7,334 employees	2,360	322	2,682	472	2,302	2,774	16,420
Subtotal Trips		***2,360***	***322***	***2,682***	***472***	***2,302***	***2,774***	***16,420***
*Alternative Mode Reduction (5%)**		*118*	*16*	*134*	*24*	*115*	*139*	*821*
Total Trips		**2,242**	**306**	**2,548**	**448**	**2,187**	**2,635**	**15,599**

Note: * Vehicular trips reduction anticipating future transit improvements.

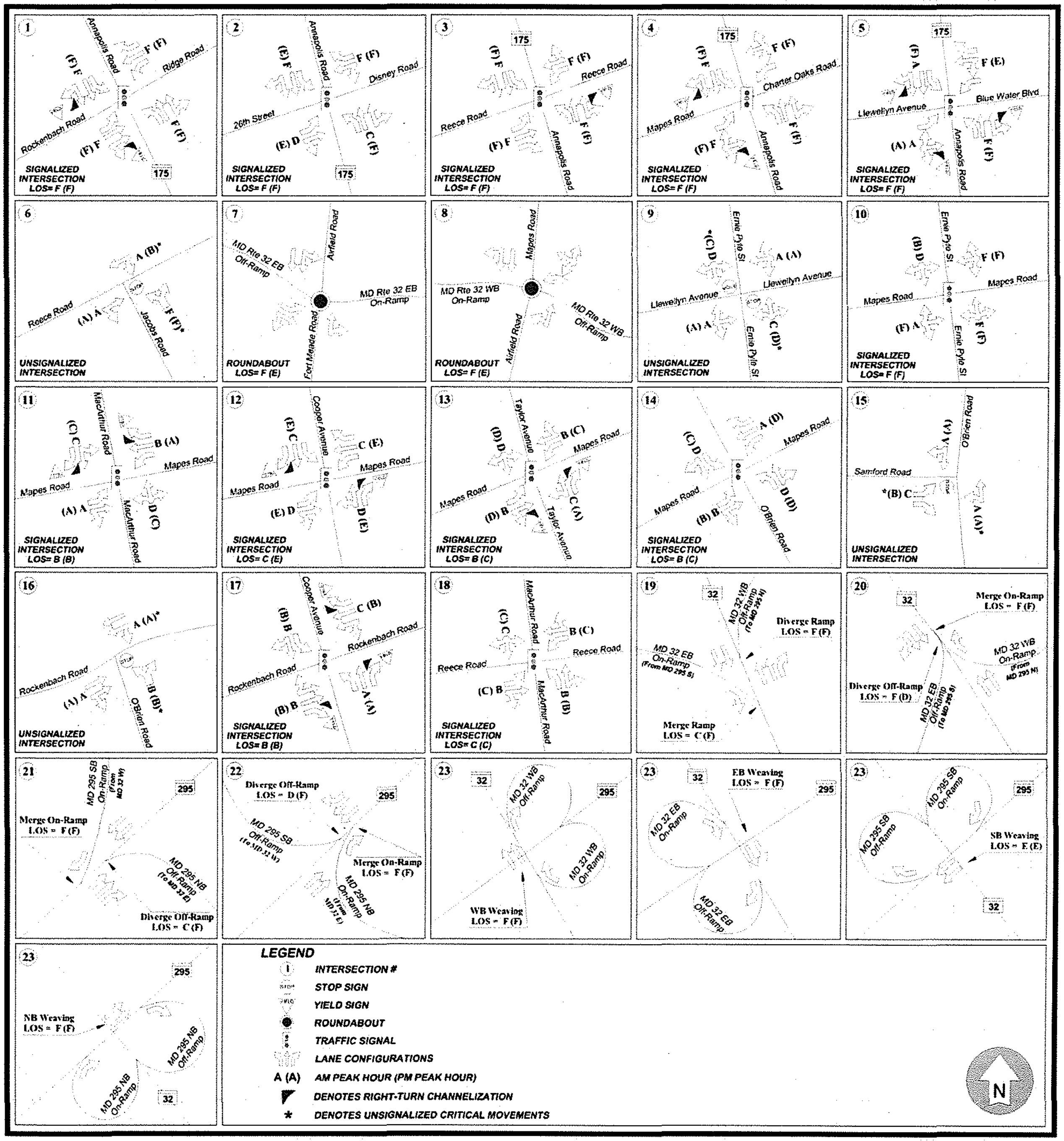


Figure 4.2-17. No Action Alternative 2: Lane Geometry and Level of Service (Year 2029)

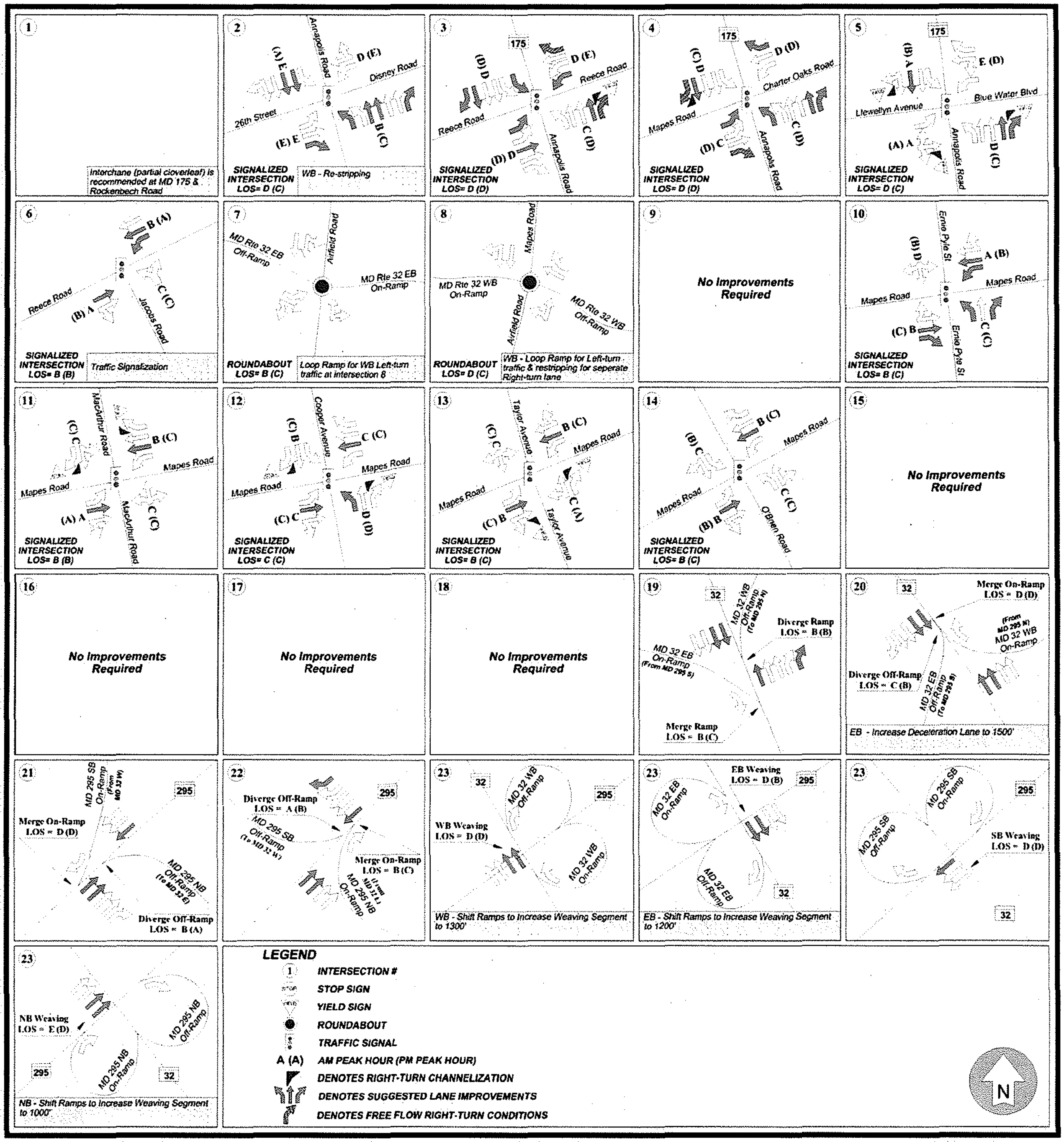


Figure 4.2-18. No Action Alternative 2: Lane Geometry and Level of Service with Recommended Improvements (Year 2029)

Alternative 2: Total Traffic Volumes

The projected Alternative 2 traffic volumes as described in **Section 4.2.4.2** were combined with the No Action Alternative 2 traffic volumes (see **Figure 4.2-16**) to determine the total future traffic volumes for Alternative 2 in Year 2029. It is assumed that the Alternative 2 generated trips would follow a similar traffic pattern than that of Fort Meade workforce as described in **Table 4.2-3**.

Figure 4.2-19 is presented to show the AM/PM peak hour traffic volumes for Alternative 2 at all the study area intersections.

Alternative 2: Capacity Analysis and Levels of Service

The projected total traffic volumes were entered in the Synchro model to evaluate the Alternative 2 traffic conditions. Based upon the capacity analysis results using projected volumes, 15 out of 18 study area intersections would operate at constrained LOS E or F during either AM or PM peak hour traffic conditions. In addition to the intersection failing under No Action Alternative 2, the on-installation intersections of Mapes Road and MacArthur Road and Mapes Road and Taylor Avenue would also fail due to increased trips related to NSA expansion under Alternative 2.

A major adverse impact under Alternative 2 is considered when an intersection operating with adequate LOS results (LOS D or better) under No Action Alternative 2 would experience increased delay and, as a result, would drop the intersection LOS to E or F. Based on this analogy, Alternative 2 would have moderate adverse impacts on the on-installation study area intersections. Analysis was conducted with the existing lane geometry to establish the baseline condition and assume the infrastructure improvements, which would be required to reduce the impacts of the influx of trips generated by new development.

Table 4.2-10 is presented to summarize the intersection LOS comparison between No Action Alternative 2 and implementation of Alternative 2.

Figure 4.2-20 is presented to show the AM/PM peak hour LOS results with the existing lane geometry for Alternative 2 during year 2029 at all the study area intersections. **Figure 4.2-21** shows the respective Year 2029 Alternative 2 LOS results with the recommended lane geometry.

4.2.5 Recommendations

As a result of the Proposed Action (NSA expansion), BRAC action (DISA, DMA, and Adjudication), EUL action, other onsite developments such as 902nd Military Intelligence Group Administrative and Operations Center, DINFOS expansion, and other offsite regional growth, substantial personnel increase is proposed in and around the Fort Meade region. Transportation constraints and deficiencies were identified in the existing conditions analysis. The results of the study indicate that the influx of new traffic would significantly affect the existing roadway capacity in the vicinity of Fort Meade. The study area was limited to the perimeter and internal roadways of Fort Meade. A region-wide traffic study is suggested to analyze the impacts of future growth in and around Fort Meade on the regional roadway network in Howard County and Anne Arundel County. Transportation improvements are recommended in this section for the purpose of identifying the magnitude of the improvements at failing intersections that would reduce the motorist delay and thus maintain satisfactory operational condition.

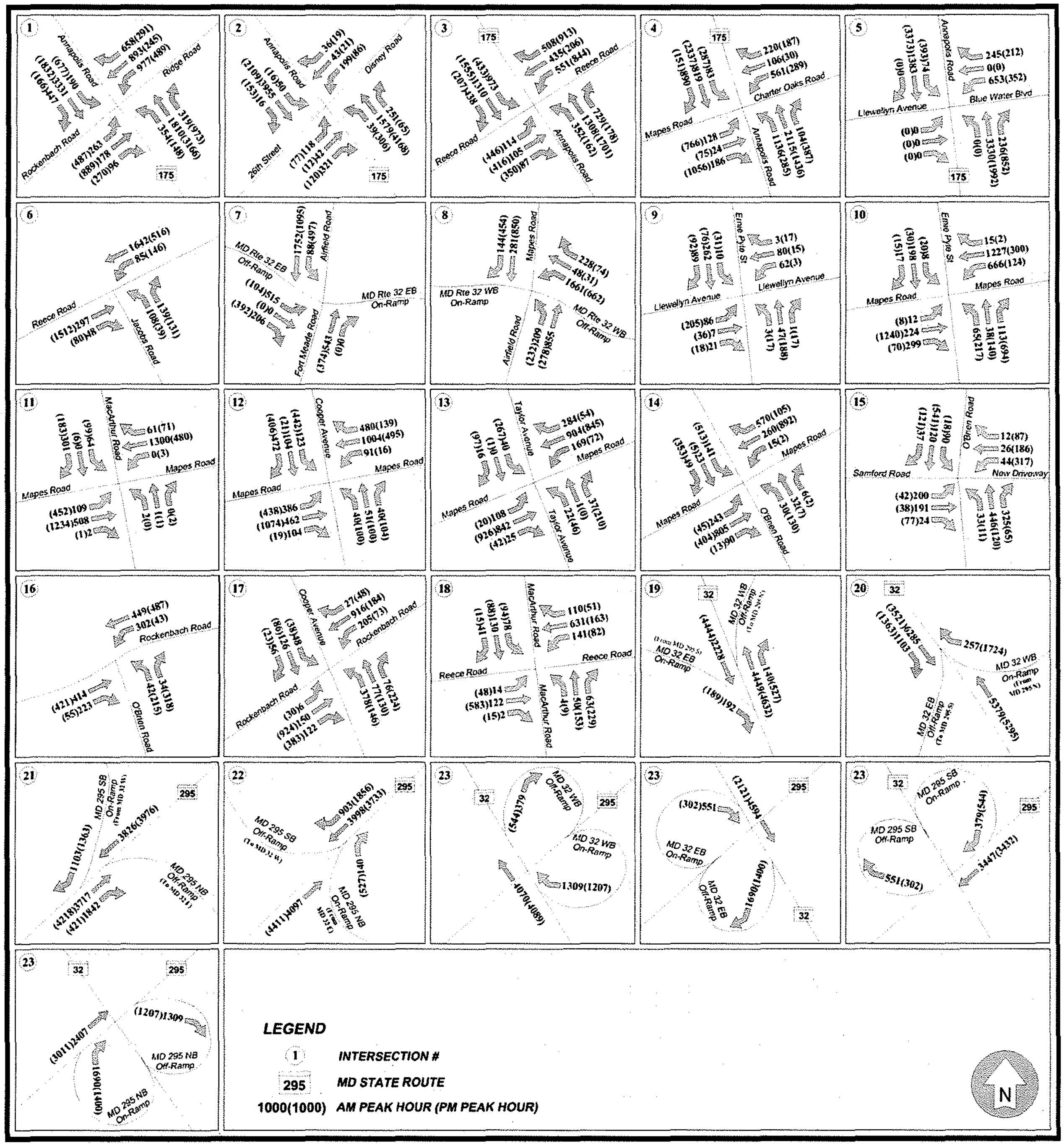


Figure 4.2-19. Alternative 2 (Phases I, II, and III): Peak Hour Traffic Volumes (Year 2029)

Table 4.2-10. Comparison of Intersection LOS (Year 2029)

Number	Intersection	LOS*			
		No Action Alternative 1		Alternative 1	
		AM	PM	AM	PM
1	MD 175 and Rockenbach Road/Ridge Road	F	F	F	F
2	MD 175 and Disney Road/26th Street	F	F	F	F
3	MD 175 and MD 174 (Reece Road)	F	F	F	F
4	MD 175 and Mapes Road	F	F	F	F
5	MD 175 and Llewellyn Avenue	F	F	F	F
6	MD 174 and Jacobs Road	F	F	F	F
7	Mapes Road and MD 32 Eastbound Ramps	F	E	F	E
8	Mapes Road and MD 32 Westbound Ramps	F	E	F	F
9	Llewellyn Avenue and Ernie Pyle Street	D	D	D	D
10	Mapes Road and Ernie Pyle Street	F	F	F	F
11	Mapes Road and MacArthur Road	B	B	D	B
12	Mapes Road and Cooper Avenue	C	E	E	F
13	Mapes Road and Taylor Avenue	B	C	B	D
14	Mapes Road and O'Brien Road	B	C	B	E
15	O'Brien Road and Samford Road	C	B	F	D
16	O'Brien Road and Rockenbach Road	B	B	F	F
17	Cooper Avenue and Rockenbach Road	B	B	C	B
18	Reece Road and MacArthur Road	C	C	C	D
19	MD 32 Eastbound on-ramp, merging	C	F	C	F
	MD 32 Westbound off-ramp, diverging	F	F	F	F
20	MD 32 Westbound on-ramp, merging	F	F	F	F
	MD 32 Eastbound off-ramp, diverging	F	D	F	D
21	MD 295 Southbound on-ramp, merging	F	F	F	F
	MD 295 Northbound off-ramp, diverging	C	F	C	F
22	MD 295 Northbound on-ramp, merging	F	F	F	F
	MD 295 Southbound off-ramp, diverging	D	F	E	F
23	MD 32 Westbound, weaving	F	F	F	F
	MD 32 Eastbound, weaving	F	F	F	F
	MD 295 Southbound, weaving	E	E	E	E
	MD 295 North, weaving	F	F	F	F

Note: * For signalized intersections, overall intersection LOS is shown.

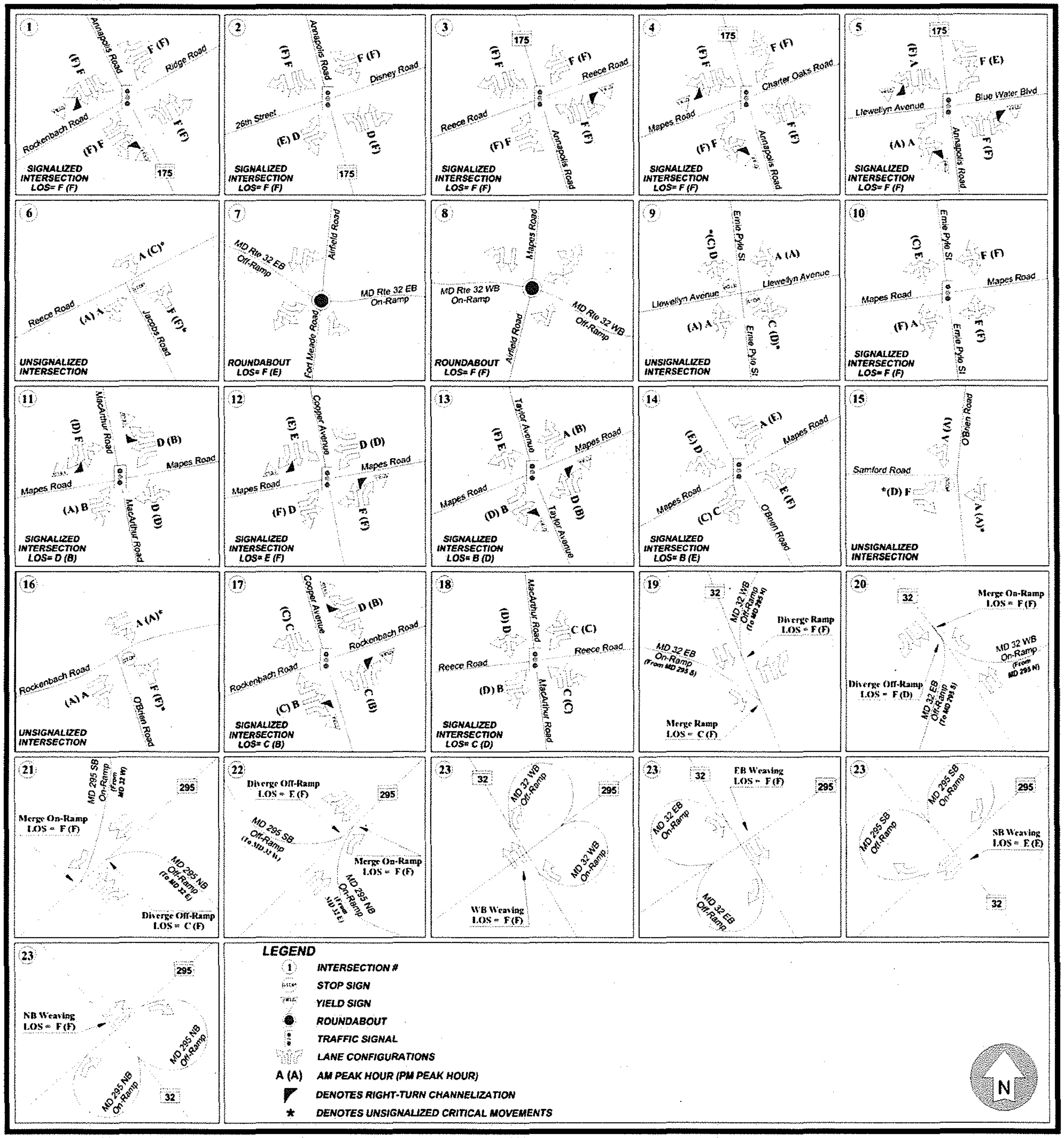
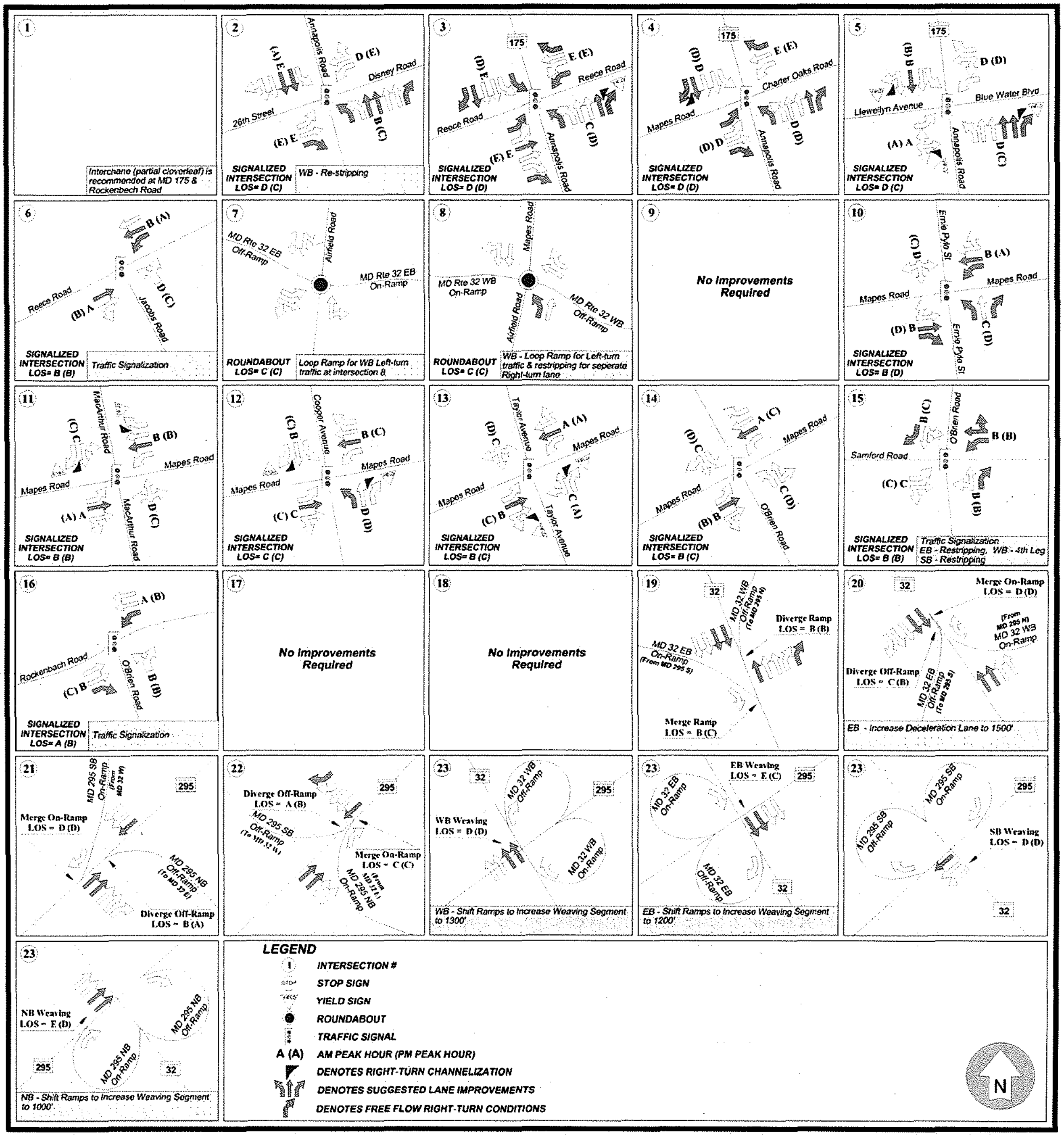


Figure 4.2-20. Alternative 2 (Phases I, II, and III): Lane Geometry and Level of Service (Year 2029)

1



2

3 **Figure 4.2-21. Alternative 2 (Phases I, II, and III): Lane Geometry**
4 **and Level of Service with Recommended Improvements (Year 2029)**

5

4.2.5.1 Roadway Improvements

The improvements are identified to mitigate the adverse impacts of the foregoing alternatives. The improvements presented under the heading of "Potential Improvements" are the improvements for on-installation intersections. They are identified by the Army and potentially could be funded by the U.S. Army to mitigate the impacts of BRAC action by Proposed Action Year 2015. However, the funding details are not finalized yet. Additionally, another set of improvements are presented under the heading of "Recommended Improvements" for the Proposed Action, Alternative 1, and Alternative 2. These improvements are suggested based upon the transportation infrastructure deficiencies identified in the analysis results. The improvements are as discussed below.

Potential Improvements (Proposed Action – Year 2015)

The U.S. Army has identified these improvements for the on-installation intersections to mitigate the traffic impacts caused by the trips generated by BRAC and other ongoing activities on Fort Meade.

Ernie Pyle Street and Mapes Road:

- Two additional left-turn lanes and conversion of the shared left/through/right lane to shared through/right lane along Ernie Pyle Street northbound direction.
- One additional left-turn lane and conversion of the shared left/through/right lane to shared through/right lane along Ernie Pyle Street southbound direction.
- One additional through lane, one additional left-turn lane and converting shared left/through/right lane to shared through/right lane along Mapes Road eastbound direction.
- One additional left-turn lane, one additional through lane, and conversion of the shared left/through/right lane to shared through/right lane along Mapes Road westbound direction.

MacArthur Road and Mapes Road:

- One additional through lane along Mapes Road eastbound direction.
- One additional through lane along Mapes Road westbound direction.

Cooper Avenue and Mapes Road:

- One additional left-turn lane and conversion of the shared left/through lane to through lane along Cooper Avenue northbound direction.
- One free-flow right-turn lane along Cooper Avenue southbound direction.
- One additional left-turn lane, one additional through lane along Mapes Road eastbound direction.
- Converting right-turn lane to shared through/right lane along Mapes Road westbound direction.

Taylor Avenue and Mapes Road:

- One additional through lane along Mapes Road eastbound direction.
- One additional through lane along Mapes Road westbound direction.

O'Brien Road and Mapes Road:

- One additional through lane along Mapes Road eastbound direction.
- One additional through lane along Mapes Road westbound direction.
- One additional right-turn lane and conversion of the through/right shared lane to through lane along O'Brien Road southbound direction.

O'Brien Road and Samford Road:

- One additional through lane along O'Brien Road northbound direction.
- One additional through lane along O'Brien Road southbound direction.

O'Brien Road and Rockenbach Road:

- Traffic signalization.
- One additional left-turn lane and conversion of the shared left/through lane to through lane along Rockenbach Road westbound direction.

Cooper Avenue and Rockenbach Road:

- One additional left-turn lane and conversion of the shared left/through lane to through lane along Rockenbach Road eastbound direction.
- One additional left-turn lane and conversion of the shared left/through lane to through lane along Rockenbach Road westbound direction.

Reece Road and MacArthur Road:

- One additional through lane along Reece Road eastbound direction.
- One additional through lane along Reece Road westbound direction.

Recommended Improvements (Proposed Action – Year 2015)

Based on analysis results, the following improvements are recommended to maintain adequate level of service at the study area intersections. The mitigation measures might not completely eliminate the projected capacity deficiencies to achieve conditions that satisfy the capacity threshold set forth by Anne Arundel County and the U.S. Army. However, they would improve the traffic conditions greatly by relieving the congestion and reducing the delay and back of queue. The recommended improvements are as follows:

MD 175 and Rockenbach Road/Ridge Road:

- One each additional left-turn lane, through lane, and right-turn lane and conversion of the shared through/right lane to through lane along MD 175 northbound direction.
- One each additional left-turn lane, through lane, and right-turn lane and conversion of the shared through/right lane to through lane along MD 175 southbound direction.

- One each additional left-turn lane and right-turn lane and conversion of the shared through/right lane to through lane along Rockenbach Road eastbound direction.
- One additional left-turn lane and through lane along Ridge Road westbound direction.

MD 175 and 26th Street/Disney Road:

- One additional through lane along MD 175 northbound direction.
- One additional through lane along MD 175 southbound direction.
- One additional right-turn lane and conversion of the shared through/right to through lane along 26th Street eastbound direction.
- Conversion of the shared left/through lane to left-turn only and converting right-turn lane to shared through/right lane along Disney Road westbound direction.

MD 175 and Reece Road (MD 174):

- One each additional through lane and right-turn lane and conversion of the shared through/right lane to through lane along MD 175 northbound direction.
- One each additional left-turn lane, through lane, and right-turn lane and conversion of the shared through/right lane to through lane along MD 175 southbound direction.
- One additional left-turn lane along Reece Road eastbound direction.
- One additional left-turn lane and two additional right-turn lanes and conversion of the shared through/right lane to through lane along Reece Road westbound direction.

MD 175 and Mapes Road/Charter Oaks Road:

- One each additional left-turn lane and right-turn lane and conversion of the shared through/right lane to through lane along MD 175 northbound direction.
- One each additional through lane and free-flow right-turn lane and conversion of the shared through/right lane to through lane along MD 175 southbound direction.
- One each additional left-turn lane, and right-turn lane and conversion of the shared left/through/right lane to shared through/right lane along Mapes Road eastbound direction.
- One additional right-turn lane and conversion of the shared left/through/right lane to through lane along Charter Oaks Road westbound direction.

MD 175 and Llewellyn Avenue/Blue Water Boulevard:

- One additional right-turn lane and conversion of the shared through/right lane to through lane along MD 175 northbound direction.

MD 32 Westbound Ramps and Mapes Road:

- A loop ramp for traffic coming from westbound MD 32 to westbound MD 198.
- Conversion of the shared through/right lane to right-turn lane along MD 32 westbound direction.

MD 174 (Reece Road) and Jacobs Road:

- Traffic signalization, one additional left-turn lane, and conversion of the shared left/through to through lane along Jacobs Road northbound direction.

Ernie Pyle Street and Mapes Road:

- One additional left-turn lane, one additional right-turn lane, and conversion of the shared left/through/right lane to through lane along Ernie Pyle Street northbound direction.
- One additional through lane, one additional right-turn lane, and conversion of the shared left/through/right lane to shared left/through lane along Mapes Road eastbound direction.
- One additional left-turn lane, one additional through lane, and conversion of the shared left/through/right lane to shared through/right lane along Mapes Road westbound direction.

MacArthur Road and Mapes Road:

- One additional through lane along Mapes Road eastbound direction.
- One additional through lane along Mapes Road westbound direction.

Cooper Avenue and Mapes Road:

- One additional left-turn lane and converting shared left/through lane to through lane along Cooper Avenue northbound direction.
- One additional through lane along Mapes Road eastbound direction.
- One additional through lane along Mapes Road westbound direction.

Taylor Avenue and Mapes Road:

- One additional through lane along Mapes Road eastbound direction.
- One additional through lane along Mapes Road westbound direction.

O'Brien Road and Mapes Road:

- One additional through lane along Mapes Road eastbound direction.
- One additional through lane along Mapes Road westbound direction.

O'Brien Road and Samford Road:

- Traffic signalization, if warranted by Manual on Uniform Traffic Control Devices (MUTCD).

MD 295 and MD 32 Interchange:

- One additional lane along MD 295 northbound and southbound direction, one additional lane along MD 32 eastbound and westbound direction, one additional lane on MD 32 westbound off-ramp to MD 295 northbound, and lengthening of acceleration/deceleration ramps lanes.

Recommended Improvements (Alternative 1 – Year 2020)

The following improvements, in addition to the improvements recommended for Proposed Action – Year 2015, would be required for Alternative 1 in Year 2020.

MD 175 and Rockenbach Road/Ridge Road:

- Full/partial cloverleaf interchange.

MD 175 and 26th Street/Disney Road:

- One additional left-turn lane and right-turn lane and conversion of the shared through/right lane to through lane along MD 175 northbound direction.
- One additional through lane along MD 175 southbound direction.

MD 175 and Reece Road (MD 174):

- Make right-turn lane as free flow along MD 175 northbound direction.
- One additional through lane along Reece Road eastbound direction.
- Make right-turn lane as free flow along Reece Road westbound direction.

MD 175 and Mapes Road/Charter Oaks Road:

- One additional through lane along MD 175 northbound direction.
- Make right-turn lane as free flow and convert shared through/right lane to through lane along Mapes Road eastbound direction.

MD 175 and Llewellyn Avenue/Blue Water Boulevard:

- One additional through lane along MD 175 northbound direction.
- One additional through lane along MD 175 southbound direction.

Rockenbach Road and O'Brien Road:

- Traffic Signalization.

MD 174 (Reece Road) and Jacobs Road:

- One additional through lane along Reece Road eastbound direction.
- One additional through lane along Reece Road westbound direction.

MD 295 and MD 32 Interchange:

- One additional lane along MD 295 northbound direction (four-lanes in northbound), one additional lane on MD 295 southbound off-ramp to MD 32 westbound, one additional lane along MD 32 eastbound and westbound direction (four-lanes in each direction), and lengthening of acceleration/deceleration ramps lanes.

Recommended Improvements (Alternative 2 – Year 2029)

The following improvements, in addition to the improvements recommended for Alternative 1 – Year 2020, would be required for Alternative 2 in Year 2029.

MD 175 and 26th Street/Disney Road:

- One additional through lane along MD 175 northbound direction.

MD 175 and Reece Road (MD 174):

- One additional left-turn lane along MD 175 northbound direction.
- One additional right-turn along Reece Road eastbound direction.

MD 175 and Llewellyn Avenue/Blue Water Boulevard:

- One additional through lane along MD 175 northbound direction.

MD 32 Westbound Ramps and Mapes Road:

- One additional left-turn lane and conversion of the shared left/through lane to through lane along MD 198 (Airfield Road) northbound direction.

O'Brien Road and Samford Road:

- One additional right-turn lane along O'Brien Road northbound direction.
- One additional right-turn lane along O'Brien Road southbound direction and conversion of the shared through/right lane to shared left/through lane.
- Conversion of the right-turn lane to shared through/right lane along Samford Road eastbound direction.
- Add intersection leg with one left-turn lane and shared through/right lane in westbound direction.

The study results indicated that the existing roadway network would be significantly affected by NSA, BRAC, and other Fort Meade onsite and offsite activities. The analysis of No Action Alternatives suggested major adverse impacts of BRAC action and other Fort Meade onsite activities and other regional growth on regional highways including MD 295, MD 175, and MD 32. Existing roadway capacity would be inadequate and substantial roadway improvements would be required with or without the proposed NSA Alternatives.

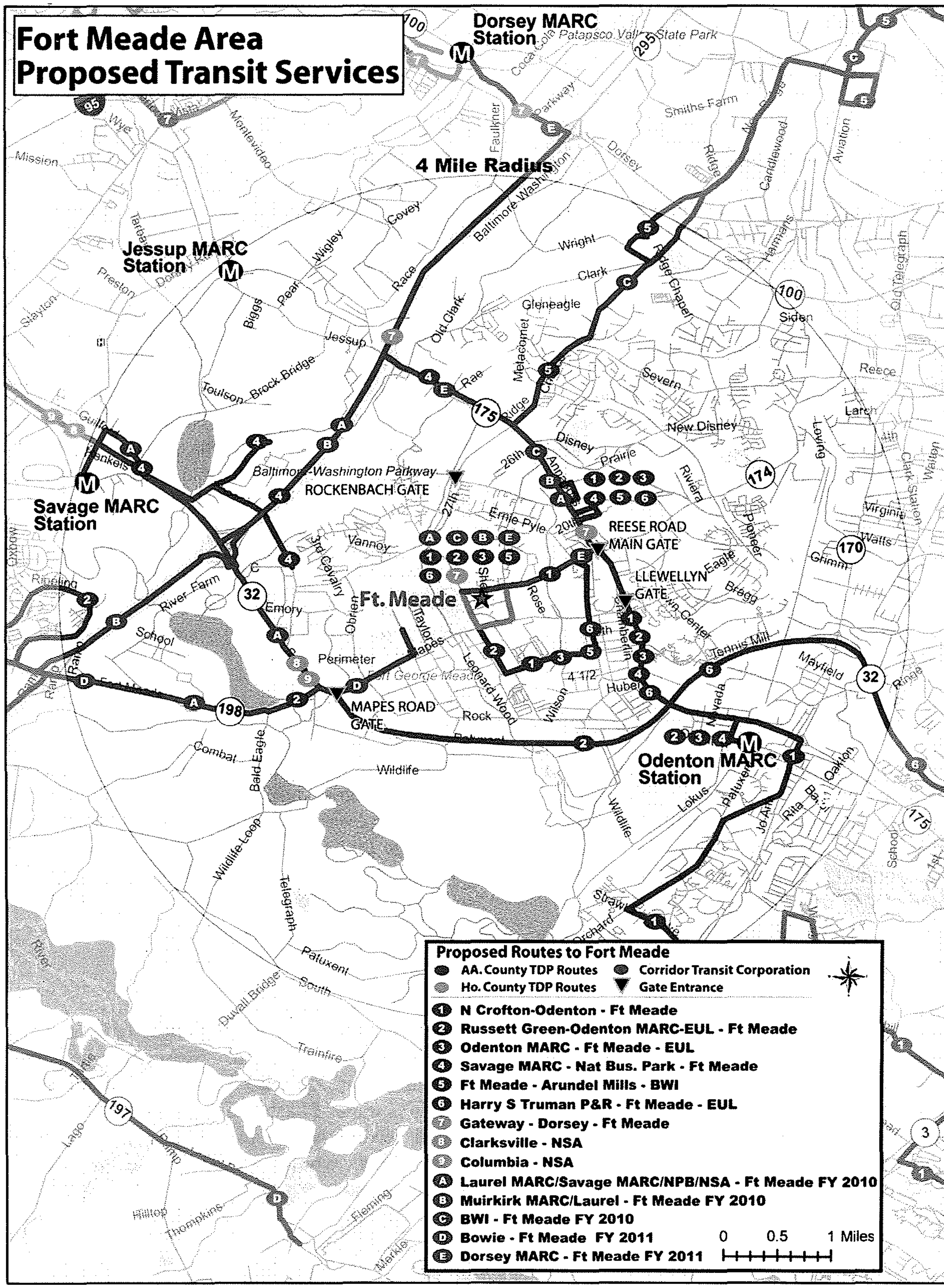
4.2.5.2 Transit Improvements

The foregoing analysis and discussion have identified several transportation deficiencies and constraints. The completion of BRAC action, NSA action, and other onsite and offsite development activities will create approximately 25,000 new jobs in the Fort Meade region. This job growth would result in more than 60,000 daily trips on to the study are roadway network. Currently, Fort Meade lacks in commuter choices as discussed in **Section 3.2.2.2**. The shuttle bus service is provided from Odenton MARC Station and Savage MARC Station to Fort Meade. However, the ridership is limited due to the limited service in the morning and evening peak hours and a lack of service for the internal circulation. Roadway improvements alone will not be sufficient to reduce the congestion and delay in the region. This section discusses the planned transit improvements, which would address the imminent influx of trips due to the BRAC, NSA, and other related activities.

Numerous proposals have been identified by local and state agencies to address the on-installation circulation, connectivity to MARC stations, local connectivity, and regional connectivity. The planned improvements are as follows:

- As shown in **Figure 4.2-22**, bus services have been proposed by local agencies from MARC stations and other major locations in Howard County and Anne Arundel County to Fort Meade. These routes will serve the NSA buildings and other major facilities located on Fort Meade.
- Per the MARC Growth & Investment Plan, MTA has proposed to enhance the train services on the Penn Line and Camden Line serving the Odenton Station and Savage Station, respectively. As part of the plan, additional peak hours and nonpeak hour services will be provided and headways will be improved to 20 minutes.
- MTA has proposed commuter bus service connecting Fort Meade to the region. This planned service includes the following:
    - *Gaithersburg to Fort Meade:* This route would originate from the Metropolitan Grove Marc Station in Montgomery County along the Intercounty Connector roadway with connections to the Shady Grove Metro Station and other park and ride lots. Six daily trips would be provided.
    - *Annapolis to Fort Meade:* This route would operate from the Harry S. Truman Park and Ride Lot in Anne Arundel County to Fort Meade. Six daily trips would be provided.
    - *Greenbelt to Fort Meade:* This route would operate from the Greenbelt Metro Station in Prince George's County to Fort Meade. Six daily trips would be provided.
- Transit Oriented Development (TOD) at the Odenton MARC Station is planned by MTA in conjunction with Anne Arundel County. The Odenton Station is located along the Penn Line connecting Baltimore and Washington, DC. The station currently handles 2,100 trips per day and it has approximately 2,000 surface parking spaces. The purpose of this project is to develop a high-density, pedestrian-friendly development. It will consist of approximately 800 condominium/townhouse units and a mix of retail uses including restaurants, bank, coffee shops, cleaners, and other retail uses. As part of the development, two parking garages will be constructed and total parking spaces will increase from 2,000 to almost 5,000. The development is planned to be operational by Year 2015. The TOD at Odenton MARC Station, through improved regional transit service, will support the ability of regional transit service providers to enhance services to Fort Meade and major regional destinations. The development would also facilitate in creating the transit system connectivity.

The aforementioned proposals are still in preliminary stages. The funding sources and implementation strategies have not been identified. There are also challenges associated with these proposals such as security issues at gates for transit vehicles entering Fort Meade and parking availability at the park and ride lots. In addition, a Transportation Management Plan (TMP) is required to be implemented and maintained to influence the travel choice of Fort Meade commuters towards discouraging the single occupant vehicle travel. This can be achieved by employing telecommuting and flexible employee timing programs to reduce the peak hour trips, developing ridesharing programs to encourage carpool and vanpool, providing transit subsidies to the employees, extending the Guaranteed Ride Home (GRH) program to Fort Meade employees, and increasing the awareness about various TMP strategies among Fort Meade commuters.



Source: MTA 2009

Figure 4.2-22. Proposed Fort Meade Area Transit Services

4.3 Noise

4.3.1 Evaluation Criteria

An analysis of the potential effects associated with noise typically evaluates potential changes to the existing acoustical environment that would result from implementation of a proposed action. Potential changes in the acoustical environment can be beneficial (i.e., they reduce the number of sensitive receptors exposed to unacceptable noise levels or reduce the ambient sound level), negligible (i.e., the total number of sensitive receptors to unacceptable noise levels is essentially unchanged), or adverse (i.e., they result in increased sound exposure to unacceptable noise levels or ultimately increase the ambient sound level).

The main issues concerning noise effects on humans are physiological effects (e.g., hearing loss and non-auditory effects), behavioral effects (e.g., speech or sleep interference and performance effects), and subjective effects such as annoyance. This noise analysis considers potential effects on nearby noise-sensitive receptors, including residential (MFH and barracks), schools, churches, and hospitals. The major sources of noise, their contribution to the overall noise environment, and maximum sound level were estimated for comparison to local noise control standards. The analysis considers construction and operation of the proposed facilities.

4.3.2 No Action Alternative

Under the No Action Alternative, the proposed campus development would not be implemented. The acoustical environment described in **Section 3.3.2** would remain unchanged. No effects on the noise environment would be expected.

4.3.3 Proposed Action (Phase I)

Under the Proposed Action, an increase in noise levels could originate from construction equipment, additional vehicle traffic, and the use of emergency generators and other operational equipment (i.e., electrical substation, heating and cooling systems, and equipment for operation of the facility). The primary sources of noise under the Proposed Action would be construction and pile-driving noise and the operation of emergency power generators on those occasions when they are needed, once the facilities are completed. Effects due to noise would vary with location and the nearest noise-sensitive receptor. An overview of construction and operational noise for Phase I is presented below.

Construction Effects

Construction Noise. Short-term minor adverse impacts on the ambient acoustical environment are anticipated as a result of construction activities under the Proposed Action. Noise from construction activities varies depending on the type of construction being done, the area that the project would occur in, and the distance from the source. Construction activities under Phase I include grading, paving, and building construction. Pile-driving noise was evaluated separately due to the intensity of the sound generated (91 to 105 dBA) and the short duration the equipment would be used. Noise associated with pile-driving activities is an impact-type noise. Impact-type noises are those of high intensity and a very short duration, and can be particularly intrusive.

To predict how these activities would affect populations, noise from the anticipated construction was estimated. For example, as shown in **Table 3.3-4**, building construction usually involves several pieces of equipment (e.g., saws and haul trucks) that can be used simultaneously. Cumulative noise from the construction equipment during the busiest day for the Proposed Action was estimated to determine the total effect of noise from building activities at a given distance. Since construction of multiple facilities, structures, and roadways would take place throughout Phase I simultaneously, construction and pile-driving noise levels were estimated from the property line to a specific noise-sensitive receptor. Noise levels were estimated using logarithmic cumulative decibel equations for construction (which includes grading, excavation, and building construction) and pile-driving activities. Examples of expected construction and pile-driving noise for Phase I are shown in **Table 4.3-1**.

Table 4.3-1. Predicted Construction Noise Levels at Noise-sensitive Receptors

Phase I Property Line	Noise-Sensitive Receptor			Estimated Noise from Construction (dBA)	Estimated Noise from Pile Driving (dBA)
	Distance in feet (meters)	Direction from Property Line	Type		
Northern	350 (107)	North	Residential (MFH)	72	81
	750 (223)	North	Church (Argonne Hills Chapel Center)	65	75
	1,110 (338)	Northwest	School (Pershing Hill Elementary)	62	71
Western	3,100 (945)	West	Government (NSA Campus off Canine Rd)	53	62
	4,760 (1,451)	West	Installation Boundary	49	58
Eastern	800 (244)	East	Residential (MFH)	65	58
	1,850 (564)	North	School (MacArthur Middle)	57	67
	2,640 (805)	East	School (Manor View Elementary)	54	64
Southern	7,175 (2,187)	South	Recreational (Patuxent Research Refuge)	46	59

Since multiple items of equipment would be operating concurrently, noise levels would be relatively high during daytime periods at locations within several hundred feet of active construction sites. As shown in **Table 4.3-1**, the zone of relatively high construction noise levels would typically extend to distances of 300 to 800 feet from the site of major equipment operations. Locations more than 1,000 feet from construction sites would seldom experience substantial levels (greater than 62 dBA) of construction noise. A noise-sensitive receptor would have to be within approximately 50 feet of building construction activity or 125 feet from pile driving to experience noise louder than the maximum allowed in the State of Maryland noise regulation for daytime activities (90 dBA). As shown in **Table 4.3-1**, the closest noise-sensitive receptor to Phase I is MFH approximately 350 feet north of construction. A noise-sensitive receptor would have to be within approximately 2,500 feet (approximately 0.5 miles) of the site to experience construction noise louder than the maximum allowed in the State of Maryland noise regulation for nighttime activities (55 dBA). As shown in **Table 4.3-1**, several residences and facilities are within 2,500 feet of construction. Therefore, some of the on-installation land uses, such as MFH, could potentially be exposed to relatively high levels of construction noise. Specific construction times would be provided under the direction of the Fort Meade Garrison Command and could be restricted due to proximity of residential areas.

Implementation of the Proposed Action would have short-term effects on the ambient acoustical environment within the installation boundary from the use of heavy equipment during construction activities. Noise generation would last only for the duration of construction activities. It is proposed that construction of Phase I would occur from 6 a.m. to 6 p.m., Monday to Friday, and the occasional weekend. Construction and pile-driving noise would be louder than the maximum allowed for nighttime activities (55 dBA). Therefore, restrictions on construction would likely be necessary between the hours of 10:00 p.m. and 7:00 a.m. Fort Meade would seek an exception from the State of Maryland noise regulation before construction begins due to the need to start construction at 6:00 a.m. If an exception is not obtained, construction activities would adhere to the time and noise level restrictions stated in the noise regulation as discussed in **Section 3.3.1**. Pile-driving activities would only be conducted from 8 a.m. to 5 p.m. on weekdays per the State of Maryland noise regulation, as pile-driving noise would exceed the regulation during any other times due to the considerable distance required for pile-driving noise to attenuate to levels below 55 dBA (approximately 7,200 feet [1.4 miles]). Specific construction times would be provided under the direction of the Fort Meade Garrison Command and could be restricted due to proximity of residential areas.

No adverse effects on noise-sensitive receptors outside of the installation boundary would be expected from construction noise, as the average construction noise level (approximately 49.1 dBA) would be lower than the estimated ambient noise level of approximately 60 to 65 dBA [see **Table 3.3-3**]). Estimated construction noise levels at the Patuxent Research Refuge boundary would be expected to be similar to the ambient noise level (as described in **Section 3.3.2**) and would not exceed the state noise regulation; therefore, no adverse effects on the refuge from construction noise would be expected.

No adverse effect on noise-sensitive receptors outside of the installation boundary would be expected from pile-driving noise, as the average pile-driving noise level (approximately 63.5 dBA) would be similar to the ambient noise level and would not exceed the lowest State of Maryland noise regulation for daytime activities (65 dBA). The estimated pile-driving noise level of approximately 59 dBA at the Patuxent Research Refuge boundary (given in **Table 4.3-1**) would also not exceed the state noise regulation. As described in **Section 3.3.2**, the northern portion of the refuge is adjacent to several noise-generating activities (i.e., Tipton Airport, a small arms range, and MD 32). Therefore, existing ambient noise levels in this area would be expected to be slightly higher than is typical for a refuge. Therefore, it is expected that pile-driving noise would only slightly exceed the existing ambient noise level in the northern portion of the refuge. Pile-driving activities would only be conducted from 8 a.m. to 5 p.m. on weekdays or at the direction of Fort Meade Garrison Command; therefore, negligible adverse effects on the refuge would be expected from pile-driving activities. Noise effects on biological resources are discussed in **Section 4.7.3**.

Construction Noise Mitigation Measures. Daytime construction and pile-driving noise levels for the Proposed Action (Phase I) would not exceed the maximum allowed under the State of Maryland noise regulation (65 dBA) in off-installation areas. Specific construction times would be provided under the direction of the Fort Meade Garrison Command and could be restricted due to proximity of residential areas. Therefore, it is unlikely that nighttime construction would be authorized because it would exceed the maximum allowed under the state noise regulation for nighttime activities (55 dBA). Construction noise effects on residential areas under the Proposed Action could be mitigated through the following actions (City of New York 2007):

- Performing maintenance on the equipment to potentially lessen their noise levels
- Replacing older equipment with newer, quieter equipment
- Utilizing the best available noise control techniques (i.e. improved mufflers, equipment redesign, intake silencers, ducts, and engine enclosures and noise attenuating shields or shrouds on all equipment and trucks)
- Use exhaust mufflers on compressed air exhaust
- Stationary construction equipment placed as far from sensitive receptors as possible
- Use acoustical shielding on stationary equipment when feasible.

Pile-driving noise for the Proposed Action (Phase I) could be mitigated through the following actions (City of New York 2007):

- Use of noise barriers around the entire construction site, such as plywood barriers
- Use of "quiet" pile-driving technology based on soils and structural requirements, as feasible
- Use of noise-control blankets on proposed building to reduce noise emissions from site
- Implement noise reduction measures under the supervision of an acoustical consultant
- Evaluate effectiveness of noise attenuation by taking noise measurements during construction
- Provide surrounding residents and personnel (minimum 300-foot radius) at least 30 days written notice of start date and duration of pile driving.

Construction Vehicular Noise. Short-term negligible adverse effects on the ambient noise environment would be expected as a result of the increase in construction vehicle traffic under the Proposed Action. Construction traffic would exit from MD 295 or MD 32 onto Canine Road, then turn onto Rockenbach Road to access Site M. Canine Road and Rockenbach Road are primary roads within the installation (Fort Meade 2005b), and are therefore already heavily used by Fort Meade personnel. In addition, temporary construction traffic would be distributed throughout the day (peaking at the beginning and end of the normal working day) and would be minimal compared to noise produced on roads outside the installation boundary including MD 32 and MD 295. The temporary construction traffic would be a fraction of the existing traffic, and would likely cause negligible increases in noise levels on noise-sensitive populations adjacent to the roads outside the installation boundary.

Operational Effects

Electrical Generation Alternative: Stationary Internal Combustion Engine (Generator) Noise. Noise from the emergency generators would dominate over the noise levels produced by other equipment associated with the operation of the Proposed Action (Phase I). Generator operation would only occur during emergency situations; however, the generators would also be tested on a regular basis (maximum of 100 hours per year) to ensure they are in working order. This facility is in the preliminary design stage; therefore, a complete equipment list and associated manufacturers specifications are not finalized. Much of the noise producing equipment associated with the generators would be contained inside the facility superstructure. For the purpose of this EIS, it was assumed that the facility superstructure would provide a 25 dBA noise reduction, which could be accomplished via a combination of multiple noise-reducing methods (e.g., each generator being enclosed in a separate enclosure within the facility superstructure, the use of noise-reducing materials on surfaces, and the superstructure being constructed of brick). Generator exhausts would be open to the exterior of the facility and would be equipped with industrial-grade silencers. The site development plan for Phase I is in the preliminary design stage; therefore, the location of the generator facility within Site M-1 is not finalized. For the purposes of this EIS, the proposed location of the generator facility within Site M-1 from the 2009 *NSA Real Property Master Plan, Fort Meade, Maryland* (URS/LAD 2009) was used to determine the distance from the facility to a noise-sensitive receptor.

Noise levels generated by operation of the proposed generators under the Proposed Action (Phase I) were estimated for 100 percent capacity (24 2.5-MW generators running concurrently). Sound level data for the proposed 2.5-MW generators were obtained from vendors, and noise levels were calculated using empirical formulas based on process and mechanical equipment data. **Table 4.3-2** outlines noise levels that would be generated by operation of the proposed generators under the Proposed Action for the period of time emergency power is required. Detailed operating noise calculations are provided in **Appendix D.** Any emergency operations are exempt from the State of Maryland's noise regulation, however, the levels outlined in the regulation were carried forward to assess the noise effects. The generators would be operated for a maximum of 100 hours per year for testing and maintenance purposes. As shown in **Table 4.3-2,** operating noise levels at locations within the installation boundary would exceed state noise limits for the period of time that an emergency electrical power supply might be needed. The long-term intermittent noise effects would be negligible to minor depending on the distance from the generator facility to a noise-sensitive receptor.

Table 4.3-2. Estimated Noise Levels for Noise-Sensitive Receptors Due to Generator Operations

Noise-Sensitive Receptor			Sound Level (dBA)	Exceeds State Noise Limits for Nighttime (> 55 dBA)
Receptor	**Direction from Generator Facility**	**Distance in feet (meters)**		
Residential (MFH)	North	665 (203)	74	Yes
School (Pershing Hill Elementary)	North	1,415 (431)	68	Yes
Residential (MFH)	East	1,600 (488)	67	Yes
Church (Argonne Hills Chapel Center)	Northwest	1,980 (604)	65	Yes
School (MacArthur Middle)	Northeast	2,450 (747)	63	Yes
Installation Boundary	West	5,860 (1,786)	55	No

Mitigation Measures for Generator Noise. As shown in **Table 4.3-2,** operating noise levels at locations within the installation boundary would exceed state noise limits for the period of time that an emergency electrical power supply is needed. Generator noise could be mitigated via residential sound dampening such as the tree buffers that are planned on the northern border of Site M along Rockenbach Road; however, the buffers would not be expected to provide the 12 to 19 dBA noise reduction necessary to bring the noise level at the closest receptors to the State of Maryland maximum noise level for nighttime activities (55 dBA). As shown **Table 4.3-2,** increasing the distance from the generator facility to the receptor (i.e., moving the facility more to the interior of Site M rather than its proposed location near the northern border) would not significantly reduce the noise level at receptors within the installation boundary, as a receptor would have to be 5,860 feet (1,786 meters) from the facility to experience noise levels less than 55 dBA. To adhere to the state nighttime noise limit of 55 dBA at the closest receptor (MFH), the generator facility superstructure would have to provide a 35 dBA noise reduction, and the generator exhaust would have to be equipped with critical-grade silencers that would provide a 30 dBA noise reduction. A noise reduction of this scale would require a significant financial investment.

Electrical Generation Alternative: Natural Gas-Fired Combustion Turbine Noise. An alternative to the generators discussed above is a natural gas-fired combustion turbine. It was assumed that if the turbine alternative was chosen for implementation, the turbine facility would be constructed in the same location as the generator facility discussed above; therefore, the distance from the turbine facility to adjacent noise-sensitive receptors would be the same as shown in **Table 4.3-2**.

A single 85 MW turbine was analyzed, as this would be the unit to cover the 50 MW range. For the purposes of this EIS, it was assumed that the facility superstructure would provide a 10 dBA noise reduction; the actual amount of attenuation may be greater depending upon the actual facility design. Noise levels were calculated using empirical formulas based on process and mechanical equipment data. **Table 4.3-3** outlines noise levels that would be generated by operation of the proposed turbine at Phase I for the period of time emergency power generation is required. Detailed operating noise calculations are provided in **Appendix D**. Any emergency operations are exempt from the State of Maryland's noise regulation. However, the levels outlined in the regulation were carried forward to assess the noise effects and provide the analyses for this EIS. The turbine would be operated for a maximum of 100 hours per year for testing and maintenance purposes.

As shown in **Table 4.3-3**, operation of natural gas-fired combustion turbines would be 32 dBA quieter than operation of diesel generators. Operating noise levels would not exceed state noise limits for the period of time that an emergency electrical power supply is needed. The noise level would be lower than the ambient noise level (see **Section 3.3.2**); therefore, a negligible long-term effect on the ambient acoustical environment from combustion turbine operation would be expected.

Table 4.3-3. Estimated Long-term Noise Levels Due to Turbine Operations

Noise-Sensitive Receptor			Sound Level (dBA)	Exceeds State Noise Limits for Nighttime (> 55 dBA)
Distance in feet (meters)	**Direction from Turbine Facility**	**Type**		
665 (203)	North	Residential (MFH)	42	No
1,415 (431)	North	School (Pershing Hill Elementary)	36	No
1,600 (488)	East	Residential (MFH)	35	No
1,980 (604)	Northwest	Church (Argonne Hills Chapel Center)	33	No
2,450 (747)	Northeast	School (MacArthur Middle)	31	No
5,860 (1,786)	West	Installation Boundary	23	No

Other Operational Equipment Noise. As previously discussed, noise from the emergency diesel generators would dominate over the noise levels produced by other equipment associated with the operation of Phase I. Other noise-producing equipment would include the electrical substation, heating and cooling systems, and operation of the facility. The electrical substation would be outdoors, and the heating and cooling systems and equipment for operation of the facility would be enclosed.

The electrical substation would operate full time and would provide the 50 MW of electricity for Phase I. The site development plan for Phase I is in the preliminary design stage; therefore, the location of the substation within Site M-1 has not been finalized. The proposed location of the substation from the 2009 NSA Master Plan is the same as the generator building (URS/LAD 2009). At 50 feet, the noise level of a 100 MW electrical substation is approximately 52 dBA; therefore, this is a conservative overestimate for the noise of the substation proposed for Phase I (BHP & BEPC 2007). Electrical transformers at substations emit a sound that has a tonal component to it; the tone is a harmonic of 60 Hz and would be audible as a distinct hum at 50 feet. By virtue of its nature, this tonal noise might be perceived as annoying. However, transformer noise is unlikely to approach noise impact thresholds at noise-sensitive receivers in the project area; therefore, a negligible adverse effect on the ambient noise environment would be expected.

No adverse effects on the ambient acoustical environment would be expected from operation of the heating and cooling systems, and other operational equipment. The heating and cooling systems and equipment for operation of the facility would be enclosed within a building; therefore, operational noise would only affect persons accessing those structures. Typically, acoustical treatments like absorbent baffles are not installed in rooms that house certain types of facility equipment because of the requirements to minimize dust. Therefore, noise levels within certain areas of the facility could approach OSHA thresholds for worker exposure. Per USEPA Report No. 550/9-82-105, *Guidelines for Noise Impact Analysis,* noise-induced hearing loss can begin to occur at high levels, and other noise-induced physiological effects and/or changes may occur. However, a firm causal link between community noise and extra-auditory disease has not been established at this time. Therefore, the USEPA proceeds on the assumption that protection against noise-induced hearing loss is sufficient to protect against severe extra-auditory health effects (USEPA 1982). If operational noise levels for Phase I are expected to exceed the OSHA standards (see **Section 3.3.1**), hearing protection equipment would be provided that would reduce sound levels to acceptable limits and a hearing conservation program would be implemented per 29 CFR Part 1910.95.

As discussed in **Section 2.1.2**, the complex would include the use of "green" technology. Operational noise could result from some of the "green" technologies chosen, such as the use of wind turbines. The facilities are currently in the preliminary design stage, and a complete list of potential technologies and associated manufacturers specifications are not finalized. Therefore, this EIS only discusses noise effects from one potential technology, the construction and operation of wind turbines.

Negligible adverse effects on the ambient acoustical environment are anticipated from wind turbine operation. Wind turbines would operate full time to provide the 50 MW of electricity for Phase I. Common commercial wind turbines are 1.5–3.0 MW; therefore, approximately 17 to 33 wind turbines would be required to produce the 50 MW of power generation for the Proposed Action. A wind turbine farm of this size would normally be spread out over a very large area; therefore, it is unlikely that the turbines would be located within the Fort Meade installation boundary.

Modern wind turbines emit noise from several places. This includes the mechanical systems inside the housing on the top of the mast, the mast itself via mechanical and physical radiation, and the blades emit aerodynamic noise as they move through the air. Aerodynamic noise from the wind turbine blades is the loudest source of noise. Wind turbine noise would be expected to similar from operation of the electrical substation, which is estimated at approximately 52 dBA at 50 feet. A 2.0 MW wind turbine has a noise level of approximately 60 dBA at 50 feet (15 meters), 59 dBA at 131 feet (40 meters), and 57 dBA at 250 feet (76 meters) (GE Energy 2009). Therefore, a noise-sensitive receptor would have to be within approximately 250 feet (76 meters) of the turbine to experience operational noise above the maximum allowed in the State of Maryland noise regulation for nighttime activities (55 dBA). A wind turbine would not be constructed this close to a noise-sensitive receptor; typical setback distances for residences would be normally 1,000 feet (305 meters) or more. Therefore, negligible adverse effects on the ambient noise environment would be expected from wind turbine operation. These potential adverse impacts from noise generated from wind turbines would be considered during evaluation of this technology for Site M development.

Operational Vehicular Noise. Long-term negligible adverse effects on the ambient acoustical environment would be anticipated as a result of the increase in vehicular traffic from the operation of Phase I. Civilian and military traffic entering the Phase I would use the same roadways discussed above for construction vehicular traffic. As discussed in **Section 3.3.1**, the roadways in the vicinity of Phase I are already heavily utilized. In addition, vehicle noise would be distributed throughout the day (peaking at the beginning and end of the normal working day) and would be minimal compared to noise produced on roads outside the installation boundary including MD 32 and MD 295. The traffic from personnel commuting to Phase I would be a fraction of the existing traffic, and would likely cause negligible increases in noise levels on noise-sensitive populations adjacent to the roads outside the installation boundary.

4.3.4 Alternative 1: Implement Phases I and II

Under this alternative, Phase I would be implemented along with Phase II. Phase II would include the development discussed in **Section 4.3.2**, as well as development on the eastern half of Site M-1. Phase II would have a greater but still minor adverse effects on the ambient acoustical environment than those described under Phase I for the western noise-sensitive receptors, since the western border of Site M-1 is approximately 1,400 feet (463 meters) west of the western border of Phase I.

Construction Effects

Construction Noise. Short-term minor adverse effects on the ambient noise environment would be expected as a result of construction and pile-driving activities under Phase II. Construction and pile-driving noise within the eastern portion of Site M-1 would be the same as discussed above in **Section 4.3.2** for Phase I. The western border of Site M-1 is approximately 1,400 feet (463 meters) closer to the western noise-sensitive receptors shown in **Table 4.3-1** than the western border of Phase I; therefore, construction and pile-driving noise levels would be slightly higher at those receptors. Noise levels were calculated in the same manner as Phase I. Examples of expected construction and pile-driving noise would be expected to include the following:

- Persons accessing the NSA campus off Canine Road approximately 1,730 feet (526 meters) west of the western border of Phase II would experience construction noise levels of approximately 58 dBA, and pile-driving noise levels of approximately 67 dBA
- Persons at the installation boundary approximately 3,420 feet (1,042 meters) west of the western border of Phase II would experience construction noise levels of approximately 52 dBA, and pile-driving noise levels of approximately 61 dBA
- Persons accessing the Patuxent Research Refuge approximately 6,770 feet (2,063 meters) south of the southern border of Phase II would experience construction noise levels of approximately 46 dBA, and pile-driving noise levels of approximately 55 dBA.

The same construction hours of operation discussed for Phase I would apply to Alternative 1. As discussed previously, a noise-sensitive receptor would have to be within approximately 50 feet of building construction or 125 feet of pile driving to experience construction noise louder than the maximum allowed in the State of Maryland noise regulation for daytime activities (90 dBA). The closest noise-sensitive receptor to the western half of Site M-1 is the barracks approximately 300 feet north of the northwestern border. A noise-sensitive receptor would have to be within approximately 2,500 feet (approximately 0.5 miles) of the site to experience construction noise louder than the maximum allowed in the State of Maryland noise regulation for nighttime activities (55 dBA). Pile-driving activities would not be conducted at night. The same mitigation measures discussed in **Section 4.3.1** could also be applied to Phase II.

Construction Vehicular Noise. Short-term negligible adverse effects on the ambient acoustical environment are anticipated as a result of the increase in construction vehicle traffic under Phase II. Construction traffic would use the same roadways as discussed above for Phase I, and the additional traffic resulting from construction vehicles would likely cause negligible increases in noise levels on noise-sensitive populations adjacent to these roadways.

Operational Effects

Electrical Generation Alternative: Stationary Internal Combustion Engine (Generator) Noise. The proposed location for the generator facility as shown in the 2009 NSA Master Plan is within Phase I (URS/LAD 2009), therefore the noise levels shown in **Table 4.3-2** would also apply to Phase II.

Electrical Generation Alternative: Natural Gas-Fired Combustion Turbine Noise. The turbine facility is part of Phase I; therefore, the discussion of the turbine noise in **Section 4.3.2** would apply to Phase II.

Other Operational Noise. The electrical substation, heating and cooling systems, equipment for operation of the facility, and "green" technologies are part of Phase I; therefore, the discussion of their operational noise in **Section 4.3.2** would apply to Phase II.

Operational Vehicular Noise. Long-term negligible adverse effects on the ambient noise environment are anticipated as a result of the increase in vehicular traffic from operation of Phases I and II. Under Alternative 2, approximately 8,000 personnel would use the same roadways discussed above for construction vehicular traffic. As discussed in **Section 3.3.1**, the roadways in the vicinity of Fort Meade are already heavily utilized. In addition, vehicle noise would be distributed throughout the day (peaking at the beginning and end of the normal working day) and would be minimal compared to noise produced on roads outside the installation boundary including MD 32 and MD 295. The traffic from personnel commuting to Phases I and II would be a fraction of the existing traffic, and would likely cause negligible increases in noise levels on noise-sensitive populations adjacent to the roads outside the installation boundary.

4.3.5 Alternative 2: Implement Phases I, II, and III

Under this alternative, Phase I would be implemented along with Phases II and III. Phase III would include the development discussed in **Sections 4.3.2** and **4.3.3**, as well as development on Site M-2. Phase III would have a greater but still minor adverse effects on the ambient acoustical environment than those described under Phase I and II for noise-sensitive receptors south of Phase II, since Site M-2 extends approximately 1,770 feet (539 meters) south of Phase II.

Construction Effects

Construction Noise. Short-term minor adverse effects on the ambient noise environment would be expected as a result of construction and pile-driving activities under Phase III. Construction and pile-driving noise within the northern half of Phase III would be the same as discussed above in **Section 4.3.2** for Phase I and **Section 4.3.3** for Phase II. The southern border of Site M-2 is approximately 1,400 south of the southern border of Phase II; therefore, noise-sensitive receptors south of Mapes Road would experience higher construction and pile-driving noise levels than they would under Phase I or II. Examples of expected construction and pile-driving noise would be expected to include the following:

- Persons accessing the Defense Information School (Building 6500) approximately 1,780 feet (543 meters) south of the southern border of Phase III would experience construction noise levels of approximately 58 dBA, and pile-driving noise levels of approximately 67 dBA
- Persons at the installation boundary approximately 3,850 feet (1,773 meters) west of the southwestern border of Phase III would experience construction noise levels of approximately 51 dBA, and pile-driving noise levels of approximately 60 dBA
- Persons accessing the Patuxent Research Refuge approximately 5,630 feet (1,716 meters) south of the southern border of Phase III would experience construction noise levels of approximately 48 dBA, and pile-driving noise levels of approximately 57 dBA.

The same hours of operation discussed for Phase I would apply to Phase III. As discussed previously, a noise-sensitive receptor would have to be within approximately 50 feet of building construction or 125 feet of pile driving to experience construction noise louder than the maximum allowed in the State of Maryland noise regulation for daytime activities (90 dBA). The closest noise-sensitive receptor to Site M-2 is Building 8901 off Love Road, approximately 130 feet west of the Phase III western border. A noise-sensitive receptor would have to be within approximately 2,500 feet (approximately 0.5 miles) of the site to experience construction noise louder than the maximum allowed in the State of Maryland noise regulation for nighttime activities (55 dBA). Pile-driving activities would not be conducted at night. The same mitigation measures discussed in **Section 4.3.1** could also be applied to Phase III.

Construction Vehicular Noise. Short-term negligible adverse effects on the ambient acoustical environment are anticipated as a result of the increase in construction vehicle traffic under Phase III. Construction traffic would use the same roadways as discussed above for Phase I to access the northern portion of Phase III, and would use the Mapes Road exit off MD 32 to access the southern portion of Phase III. As discussed in **Section 3.3.1**, the roadways in the vicinity of Phase III are already heavily utilized. The additional traffic resulting from construction vehicles would likely cause negligible increases in noise levels on noise-sensitive populations adjacent to these roadways.

Operational Effects

Electrical Generation Alternative: Stationary Internal Combustion Engine (Generator) Noise. The proposed location for the generator facility as shown in the 2009 NSA Master Plan is within Phase I (USACE Mobile District 2007); therefore, the noise levels shown in **Table 4.3-2** would also apply to Phase III.

Electrical Generation Alternative: Natural Gas-Fired Combustion Turbine Noise. The turbine facility is part of Phase I; therefore, the turbine noise shown in **Section 4.3.2** would also apply to Phase III.

Other Operational Noise. The electrical substation, heating and cooling systems, equipment for operation of the facility, and "green" technologies are part of Phase I; therefore, their operational noise as discussed in **Section 4.3.2** would also apply to Phase III.

Operational Vehicular Noise. Long-term negligible to minor adverse effects on the ambient noise environment are anticipated as a result of the increase in vehicular traffic from operation of Alternative 2. Under Alternative 2, approximately 11,000 additional personnel would use the same roadways discussed above for construction vehicular traffic. As discussed in **Section 3.3.1**, the roadways in the vicinity of Phases I and III are already heavily utilized. In addition, vehicle noise would be distributed throughout the day (peaking at the beginning and end of the normal working day) and would be minimal compared to noise produced on roads outside the installation boundary including MD 32 and MD 295. The traffic from personnel commuting to Phases I, II, and III would be a fraction of the existing traffic, and would likely cause negligible to minor increases in noise levels on noise-sensitive populations adjacent to the roads outside the installation boundary.

4.4 Air Quality

4.4.1 Evaluation Criteria

The environmental impacts on local and regional air quality conditions near a proposed action are determined based on increases in regulated pollutant emissions compared to existing conditions and ambient air quality. With respect to the General Conformity Rule, impacts on air quality would be considered major if a proposed 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 minimis* threshold levels established in 40 CFR 93.153(b) for individual nonattainment pollutants.

4.4.2 No Action Alternative

The No Action Alternative would not result in changes in ambient air quality conditions if the Proposed Action or alternatives were not implemented. No construction activities would be undertaken, and no changes in operations would take place. A general conformity analysis and the permitting of stationary sources would not be required. No impacts on air quality would be expected.

4.4.3 Proposed Action (Phase I)

Implementing the Proposed Action would have both short- and long-term minor adverse impacts on air quality. Short-term impacts would be due to air emissions generated during the construction of the proposed facilities. However, increases in emissions would be below the General Conformity Rule applicability thresholds and would not contribute to a violation of any Federal, state, or local air regulations. Long-term impacts would be due to introducing heating boilers and standby generators at the proposed facilities.

General Conformity. For the purpose of determining if the General Conformity Rule applies, all the projects were combined in a single analysis. All direct and indirect sources of air emissions were estimated for all years and for all phases of the Proposed Action and Alternatives. Direct emissions are emissions that would be caused or initiated by a Federal action and occur at the same time and place as the action. Indirect emissions are defined as reasonably foreseeable emissions that would be caused by the action, but could occur later in time or be farther removed in distance from the action itself, and that the Federal agency can practicably control. Because all the projects and all the potential sites are within the same AQCR, the emissions have been combined throughout this discussion. More specifically, project-related direct and indirect emissions would result from the following:

- *Demolition and construction activities*—use of construction equipment, worker vehicles (e.g., bulldozers, backhoes), and use of VOC paints; and paving off gasses and fugitive particles from surface disturbances.
- *Operational activities*—use of emergency generators and boilers. Notably, the diesel generator alternative would have greater emissions than the combustion turbine alternative. Therefore, it was carried forward as the worst-case alternative under the general conformity analysis.

Regardless of the individual building sites ultimately chosen, estimated actual construction emissions would be similar. The construction emissions were generated by estimating equipment use for utilities, site preparation, and construction for the proposed facilities, including the following:

- Office Modules and Operations Center
- Module Interconnections
- Data Center
- Electrical substation
- Generator plants (providing 50 MW of service)
- Chiller plants
- Boiler plants
- Ancillary parking
- Water storage tank
- Utility upgrades (Water, gas, and communications services)
- Infrastructure upgrades (Paving, walks, curbs, and gutters, storm water management).

Operational emissions include increases due to new boilers, emergency generators with controls, and additional commuter emissions. Emissions estimates from proposed stationary sources do not include reductions from the possible demolition or partial reuse of the existing NSA facilities. Therefore, regardless of the ultimate decision regarding the existing NSA facilities, the emissions described herein would be considered the upper bound of adverse impacts. Detailed methodologies for estimating air emissions are provided in **Appendix E**.

Applicability. To determine the applicability of the General Conformity Rule to the Proposed Action, air emissions from proposed Phase I construction and operational activities were estimated (see **Table 4.4-1**). The total direct and indirect emissions of NO_X and VOCs in any given year are less than the applicability thresholds and less than 10 percent of the emissions in the region (see **Tables 4.4-2** and **4.4-3**). Therefore, the general conformity requirements do not apply, and no formal conformity determination is required. Detailed methodologies for estimating air emissions and a draft Record of Nonapplicability to the General Conformity Rule are provided in **Appendix E**.

Regulatory Review. Permitting scenarios can vary based on the types and sizes of new stationary sources, timing of the projects, and the types of controls ultimately selected. These can differ in specific features from the ones described in this EIS. However, during the final design stage and the permitting process either (1) the actual equipment, controls, or operating limitations would be selected to reduce the PTE below the major source threshold; or (2) the NNSR permitting process would require emissions offsets be obtained at a 1 to 1.3 ratio from other previously decommissioned sources within the region. This cap-and-trade-type system is inherent to Federal and state air regulations, and leads to a forced reduction in regional emissions. Therefore, regardless of the ultimate permitting scenario, these impacts would be considered minor under NEPA.

Permitting requirements for proposed stationary sources are based on their overall PTE criteria pollutants. A discussion of the use of diesel generators and the use of combustion turbines for back-up power is below.

Table 4.4-1. Total Annual Emissions Subject to the General Conformity Rule

Year [a]	Total Annual Emissions (tpy)					
	Phase I		Phase II [b]		Phase III [b]	
	NO_x	VOC	NO_x	VOC	NO_x	VOC
1	26.8	1.9	29.1	3.2	34.2	4.2
2	14.5	1.1	14.6	2.2	34.2	4.3
3	**51.2**	7.6	46.2	7.3	46.7	**7.8**
4	34.2	5.4	33.8	5.6	40.0	7.0
5	44.9	7.5	38.3	6.5	41.6	7.6
6	13.1	2.3	-	-	41.1	7.8
7	8.3	1.3	-	-	39.2	7.5
8	-	-	-	-	-	-
	Phase I		Phase I and II		Phase I, II, and III	
Total Operational Emissions	**9.3**	**1.8**	**11.8**	**2.6**	**16.9**	**3.7**

Sources: SCAQMD 1993; USEPA 1995, 2003, 2005

Notes:

a. Represents years from the beginning of each phase.

b. Includes operational emissions from previous phases

Table 4.4-2. Greatest Annual Project-Related Emissions Compared to Applicability Thresholds

Criteria pollutants	Greatest annual project-related emissions (All years – All phases) (tpy)	Applicability threshold (tpy)	Exceeds applicability threshold (yes/no)
O_3 (NO_x or VOCs): Marginal and moderate Nonattainment Areas inside an O_3 transport region			
NO_x	51.2	100	No
VOC	7.8	50	No

Sources: 40 CFR 93.153; 71 FR 40420

Table 4.4-3. Greatest Annual Project-Related Emissions Compared to Regional Emissions

Criteria pollutants	Greatest annual project-related emissions (All years – All phases) (tpy)	Regional Emissions (tpy)	Percent Regional Emissions (%)	Regionally Significant (> 10%)?
NO_x	51.2	83,742	< 0.1%	No
VOC	7.8	101,496	< 0.1%	No

Sources: 40 CFR 93.153; MDE 2007

Diesel Generator Alternative. The estimated PTE for the use of diesel generators for the 50 MW of back-up power is outlined in **Table 4.4-4** and **4.4-5**. If diesel generators were selected, the total uncontrolled PTE of VOCs would not exceed the NNSR threshold (see **Table 4.4-4**). However, total uncontrolled emissions of NO_x would exceed the NNSR threshold of 25 tpy. Both SCR and the MDE mandated federally enforceable limitation on the hours of operation of the generators would be required to reduce potential NO_x emissions below the NNSR threshold (see **Table 4.4-5**). Under this scenario, a Minor NSR construction permit would be required.

Table 4.4-4. Uncontrolled Potential to Emit – Diesel Generators

Criteria Pollutant	NO_x	CO	VOC	PM*	SO_x
PTE (tpy)	44.8	3.6	0.9	0.3	1.8
PSD Threshold (tpy)	-	250	-	250	250
NNSR Threshold (tpy)	25	-	25	-	-
Exceeds Threshold (Yes/No)	Yes	No	No	No	No

Note: * Conservatively assumed $PM_{2.5} = PM_{10} = PM$

Table 4.4-5. Controlled Potential to Emit NO_x – Diesel Generators

	PTE NO_x (tpy)	NNSR Threshold (tpy)	Exceeds Threshold (Yes/No)
SCR and Limited Hours of Operation (100 hrs)	6.7	25	No

NSPS limitations on diesel generator emissions come into effect using a tiered approach over time; Tier 1 being the least restrictive and Tier 4 being the most. All generators would meet the NSPS requirements. The 2.5-MW Tier 2 generators are the most suitable off-the-shelf generators at this time. It is possible that Tier 4 generators could be available for nonemergency applications in the next few years. The generators ultimately selected would have emissions profiles consistent with or lower than the Tier 2 engines described herein. All stationary sources at NSA combined currently emit 0.31 tpy of HAPs. With the additional proposed diesel generators, the total HAP emissions would increase by approximately 0.09 tpy. All proposed diesel generators would meet NESHAP requirements.

Combustion Turbine Alternative. The estimated PTE for the use of stationary combustion turbines for the 50 MW of back-up power is outlined in **Table 4.4-6**. If combustion turbines were selected, the total uncontrolled PTE of all regulated nonattainment pollutants (i.e. NO_x and VOC) would be below the NNSR thresholds (see **Table 4.4-6**). This analysis assumes a 100 hours-of-operation limitation and the selection of low NO_x turbines. Although SCR would not be required, a federally enforceable limitation on the hours of operation would be necessary to reduce potential NO_x emissions below the NNSR threshold. Under this scenario, a Minor NSR construction permit would be required.

NSPS limitations on NO_x and SO_2 emissions for stationary gas turbines were promulgated in 2006 (40 CFR part 60, subpart KKKK). All stationary combustion turbines with a heat input equal to or greater than 10 MMBtu/hour would meet these NSPS requirements. As with the diesel generators, with the proposed gas turbines the total HAP emissions would not change appreciably. All proposed stationary gas turbines would meet NESHAP requirements.

Table 4.4-6. Uncontrolled Potential to Emit – Combustion Turbines

Criteria Pollutant	NO_x	CO	VOC	PM*	SO_x
PTE (tpy)	0.8	2.3	0.2	0.2	0.2
PSD Threshold (tpy)	-	250	-	250	250
NNSR Threshold (tpy)	25	-	25	-	-
Exceeds Threshold (Yes/No)	Yes	No	No	No	No

Note: * Conservatively assumed $PM_{2.5} = PM_{10} = PM$

Neither emergency generators, nor combustion turbines are included in the 26 listed source categories subject to PSD review. Therefore, regardless of what is selected the applicable PSD threshold for the back-up power facility is 250 tpy of any regulated attainment pollutant. Total uncontrolled emissions of the regulated attainment pollutants (i.e., CO, SO_2, $PM_{2.5,}$ and PM_{10}) would not exceed the PSD thresholds, and therefore would not trigger PSD review (see **Tables 4.3-5** and **4.3-7**). Additional controls would only further reduce these already limited emissions, and PSD permitting would still not be required.

Regardless whether emergency generators or combustion turbines are ultimately selected, the following scenarios and rationale apply:

- If the final permitting scenario became such that NSA's contemporaneous emission were the determining factor for NNSR, a thorough evaluation of them would be necessary. However, additional controls or changes in scheduling to meet the "netting" requirements under NNSR, would not change the applicability determination under the General Conformity Rule, and would only reduce further these already limit emissions and their effects.
- The proposed facility is rated at less than 70 MW, and no electricity will be exported to the electric system. NSA would be required to obtain a waiver from the PSC. This process would take approximately two months.
- Title V Significant Permit Modifications would be required to establish federally enforceable limitations to reduce potential emissions below the thresholds. Submission of an application for these permit modifications would be required within one year of the first operation of the proposed units.

Other proposed stationary sources. In addition to the standby power generation equipment outlined above, the proposed action would include the establishment of new boilers, chillers, tanks, and other support equipment. Detailed information about the sizes and types of equipment is not available at this time. However, as stated above, during the final design stage and the permitting process either (1) the actual equipment, controls, or operating limitations would be selected to reduce the PTE below the major source threshold; or (2) the NNSR permitting process would require emissions offsets be obtained at a 1 to 1.3 ratio from other previously decommissioned sources within the region. Therefore, regardless of the ultimate permitting scenario, these impacts would be minor under NEPA.

Notably, fossil fuel boilers are included in the 26 listed source categories subject to PSD review. Therefore, the applicable PSD threshold for the proposed boiler plant is 100 tpy of any regulated attainment pollutant. Total emissions of the regulated attainment pollutants (e.g. CO, $PM_{2.5}$, PM_{10}, and SO_2) may exceed the PSD thresholds, and trigger PSD review (see **Tables 4.3-5** and **4.3-7**). PSD regulations would impose limits on the amount of pollutants that the new boilers would emit. The PSD permitting process would take 18–24 months to complete, and require a BACT review for criteria pollutants, predictive modeling of emissions, and a public involvement process.

Greenhouse Gases and Global Warming. The only direct source of GHG would be the CO_2 emitted from the emergency generators and the boilers. There would be no significant emissions of N_2O, CH_4, HFCs, PFCs, or SF_6. Although the exact type of equipment is yet unknown, the primary sources will be fossil fuel burning equipment such as generators and boilers. Although there would be an increase in GHG from construction activities, modern construction techniques used for the proposed facilities would make them more efficient and would lead to long-term conservation of GHG emissions.

The Department of Defense (DOD) has committed to reduce greenhouse gas emissions from non-combat activities 34 percent by 2020 (DOD 2010). NSA, as part of the DOD, has begun the process of inventorying there direct and indirect emissions of GHG, and determining their role in the overall process. This is both in response to, and consistent with, the guidelines put forth in EO 13514. In addition, it is not expected that any of the activities outlined herein would interfere with the DOD's ability to meet their overall goal.

Best Management Practices. Best Management Practices (BMPs) would be required and implemented for both construction emissions and stationary point source emissions associated with the new facilities. The construction would be accomplished in full compliance with current and pending Maryland regulatory requirements through the use of compliant practices or products. These requirements appear in COMAR Title 26, Subtitle 11, *Air Quality*. They include the following:

- Particulate Matter from Materials Handling and Construction (COMAR 26.11.06.03.D)
- Open Fires (COMAR 26.11.06)
- Control of Emissions of VOCs from Architectural Coatings (COMAR 26.11.33)
- Control of Emissions of VOCs from Consumer Products (COMAR 26.11.32)
- Control of Emissions of VOCs from Adhesives and Sealants (COMAR 26.11.35).

Irrespective of whether stationary sources are above or below the major source threshold, one or more air pollution control permits would be required for the facilities. BMPs associated with the new permitted stationary sources of emissions would include the following:

- BACT review for each criteria pollutant
- MACT review for regulated HAPs and designated categories
- Air quality analysis (predictive air dispersion modeling), upon MDE's request
- Establishing procedures for measuring and recording emissions or process rates
- Meeting the NSPS and NESHAP requirements.

This listing is not all-inclusive; NSA and any contractors would comply with all applicable Maryland air pollution control regulations.

4.4.4 Alternative 1: Implement Phases I and II

Implementing Alternative 1 would have both short- and long-term minor adverse impacts on air quality. Short-term impacts would be due to air emissions generated during the construction of the proposed facilities. However, increases in emissions would be below the General Conformity Rule applicability thresholds and would not contribute to a violation of any Federal, state, or local air regulations. Long-term impacts would be due to introducing additional heating requirements and the mobile emissions from commutes from the additional on-site personnel.

Phase II activities involve the mid-term construction and operation of approximately 1.2 million ft^2 of operational administrative facilities. The construction activities outlined in Phase II are smaller in size and in scope as those outlined under the Phase I. However when combined with operational activities from Phase I, the emissions for any given year increase during Phase II. For these reasons, air quality impacts for Alternative 1 are expected to be both more intense and over a longer period than those outlined under the Proposed Action.

General Conformity. To determine the applicability of the General Conformity Rule, air emissions from proposed construction and operational activities for both Phases I and II were estimated (see **Table 4.3-1**). The total direct and indirect emissions of NO_x and VOCs in any given year are less than the applicability thresholds and less than 10 percent of the emissions in the region (see **Tables 4.3-2** and **4.3-3**). Therefore, the general conformity requirements do not apply, and no formal conformity determination is required. Detailed methodologies for estimating air emissions and a draft Record of Nonapplicability to the General Conformity Rule are provided in **Appendix E**.

Construction emissions were estimated based primarily on the building areas and the relative timeframe of the action. Unlike the BRAC action, construction activities for the Campus Development are slated to occur over a 20-year period. Regardless of the construction approach, it is unlikely that these emission estimations would change appreciably. For example, if the implementation schedule were to change such that one building were to be built before another, the overall intensity of the construction would remain the same. In addition, the combination of estimated construction emissions from any two years would be below the applicability threshold values. Therefore, even if construction activities for any two phases would overlap substantially the general conformity rule would still not apply. However, if the overall timeline for the implementation of the project were to be compressed dramatically (i.e. into a 7-10 year period or less) it is likely that the applicability thresholds would be exceeded and a formal conformity determination would be required. Notably, much of the scheduled construction would take place after the act mandated attainment year for the 8-hour O_3 NAAQS.

Regulatory Review. Permitting requirements and applicable air quality regulations would be similar to those outlined under the Proposed Action although would take place over the mid-term. Air quality regulations and applicable standards are updated frequently. All permitting of stationary sources and construction would be accomplished in full compliance with Maryland regulatory requirements at the time of construction. BMPs would be similar to those outlined for the Proposed Action. It is not expected that any of the activities would interfere with the DOD's ability to meet their overall GHG reduction goals.

4.4.5 Alternative 2: Implement Phases I, II, and III

Implementing Alternative 2 would have both short- and long-term minor adverse impacts on air quality. Short-term impacts would be due to air emissions generated during the construction of the proposed facilities. However, increases in emissions would be below the General Conformity Rule applicability thresholds and would not contribute to a violation of any Federal, state, or local air regulations. Long-term impacts would be due to introducing additional heating requirements and the mobile emissions from commutes from the additional on-site personnel.

Phase III activities involve the long-term construction and operation of approximately 2.8 million ft^2 of operational administrative facilities, and the demolition of the golf course clubhouse. The construction activities outlined in Phase III are smaller in size and in scope as those outlined under the Phase I; however, when combined with operational activities from Phase I and Phase II, the emissions for any given year increase during Phase III. For these reasons, air quality impacts for these activities are expected to be both more intense and over a longer period than those outlined under the Proposed Action and Alternative 1.

General Conformity. To determine the applicability of the General Conformity Rule, air emissions from proposed construction and operational activities for Phases I, II, and III were estimated (see **Table 4.3-1**). The total direct and indirect emissions of NO_x and VOCs in any given year are less than the applicability thresholds and less than 10 percent of the emissions in the region (see **Tables 4.3-2** and **4.3-3**). Therefore, regardless of the implementation schedule ultimately selected, the general conformity requirements do not apply, and no formal conformity determination is required. Detailed methodologies for estimating air emissions and a draft Record of Nonapplicability to the General Conformity Rule are provided in **Appendix E**.

Regulatory Review. Permitting requirements and applicable air quality regulations would be similar to those outlined under the Proposed Action although would take place over the long-term. Air quality regulations and applicable standards are updated frequently. All permitting of stationary sources and construction would be accomplished in full compliance with Maryland regulatory requirements. BMPs would be similar to those outlined for the Proposed Action. It is not expected that any of the activities would interfere with the DOD's ability to meet their overall GHG reduction goals.

4.5 Geological Resources

4.5.1 Evaluation Criteria

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 would be major if they would alter the lithology, stratigraphy, and geological structures that control groundwater quality, distribution of aquifers and confining beds, and groundwater availability; or change the soil composition, structure, or function (including prime farmland and other unique soils) within the environment.

4.5.2 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be established and existing conditions would remain as described in **Section 3.5.2**. No effects on geological resources or soils would be expected.

4.5.3 Proposed Action (Phase I)

Short-term, minor and long-term, minor to moderate adverse impacts on soils would be expected from implementing the Proposed Action. The Proposed Action would require additional disturbance to the soils resulting from excavation, grading, and compaction associated with construction of buildings, roads, parking areas, and the placement of other infrastructure, such as power lines. As a result of implementing the Proposed Action, soils would be compacted, and soil structure disturbed and modified. Loss of soil structure due to compaction from foot and vehicle traffic could result in localized changes in drainage patterns. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would be eliminated in those areas within the footprint of building structures, roadways, or parking facilities. The activities associated with the Proposed Action would entail clearing of vegetation, grading, and paving. Clearing of vegetation would increase erosion and sedimentation potential. Soil erosion and sediment production would be minimized for all construction operations as a result of following an approved sediment and erosion control plan. Use of storm water control measures that favor reinfiltration would minimize the potential for erosion and sediment production as a result of storm events. Implementing green roofs would be a viable technique to diminish erosion and sedimentation potential by absorbing precipitation and decreasing runoff volume and velocity. In addition, earthen security berms would be constructed that would alter natural water flow patterns. However, berms would be designed and constructed in a manner to maintain the natural conveyance of storm water flow. Please see **Section 4.6.2** for an evaluation of impacts from the Proposed Action on water resources.

Short-term, minor, adverse impacts would be expected from trenching activities associated with placement of utilities. Trenching would involve removal of vegetation and disturbance of soil structure. Removal of vegetation would temporarily increase erosion and sedimentation potential until disturbed soil have been stabilized and vegetation regrowth has occurred. Once vegetation has been reestablished, impacts from trenching activities associated with erosion and sedimentation would be reduced to negligible. Please see **Section 4.7.2** for a discussion of impacts on vegetation. Any removed soils would be managed onsite and incorporated into the design plan if appropriate. If soils cannot be maintained onsite, they would be transferred to a user for construction or other purposes.

Site-specific soil surveys should be conducted prior to implementation of the Proposed Action to determine the breadth and severity of any engineering limitations. Per COMAR 26.17.01 (*Erosion and Sediment Control*), an Erosion and Sediment Control Plan would be required for the Proposed Action as it involves land clearing, grading, or other earth disturbances to an area greater than 5,000 ft^2 of land area. The *1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control* (MDE 1994) would serve as the official guide for erosion and sediment control principles, methods, and practices. The 1994 manual is currently being updated, and, when finalized, the Proposed Action would be subject to the standards outlined in the updated document. The Soil Erosion and Sediment Control Plan would describe the measures implemented to prevent loss of soil during construction by storm water runoff or wind erosion and to prevent sedimentation of storm sewer or receiving streams. Construction BMPs would be implemented to minimize soil erosion; therefore, no major adverse impacts to the soils would be anticipated. BMPs could include installing silt fencing and sediment traps, applying water to disturbed soil, installing green roofs, and revegetating disturbed areas as soon as possible after disturbance, as appropriate. In addition, storm water BMPs, discussed in **Section 4.6.2** would be implemented to reduce potential for soil erosion and associated sedimentation. State storm water requirements would be adhered to, including the minimization of storm water generation, removal of 80 percent of average annual total suspended solids through use of structural BMPs, and the maintenance of uniform annual recharge from pre- and post-development site conditions (MDE 2009c).

4.5.4 Alternative 1: Implement Phases I and II

Impacts on geological resources and soils from implementing Phase II would be similar, and in addition to, those impacts associated with Phase I. Implementation of Phase II would require disturbing 1.2 million ft^2 to soils in addition to the 1.8 million ft^2 disturbed during Phase I. Therefore, short-term, minor to long-term minor to moderate adverse impacts on geology and soils would be expected. Phase II would consist of excavating, grading, and construction activities similar to those discussed in **Section 4.1.3**. Increased impervious surfaces could lead to increased soil erosion and sedimentation. Site-specific soil surveys should be conducted prior to implementation of the Proposed Action to determine the types and severity of any engineering limitations. An Erosion and Sediment Control Plan and construction BMPs would be implemented and state storm water requirements would be followed to minimize soil erosion and associated sedimentation; therefore, no major adverse impacts to the soils would be anticipated. Any removed soils would be managed onsite and incorporated into the design plan if appropriate. If soils cannot be maintained onsite, they would be transferred to a user for construction or other purposes. BMPs could include installing silt fencing and sediment traps, applying water to disturbed soil, installing green roofs, and revegetating disturbed areas as soon as possible after disturbance, as appropriate. In addition, storm water BMPs, discussed in **Section 4.6.2,** would be implemented to reduce potential for soil erosion and associated sedimentation.

4.5.5 Alternative 2: Implement Phases I, II, and III

Impacts on geological resources and soils from implementing Phase III would be similar, and in addition to, those impacts associated with Phase I and Phase II. Phase III would require an additional 2.8 million ft^2 of disturbance to soils. Therefore short-term, minor to long-term minor to moderate adverse impacts on geology and soils would be expected. Phase III would consist of excavating, grading, and construction activities similar to those discussed in **Section 4.1.3**. Increased impervious surfaces could lead to increased soil erosion and sedimentation. Any removed soils would be managed onsite and incorporated into the design plan if appropriate. If soils cannot be maintained onsite, they would be transferred to a user for construction or other purposes. Site-specific soil surveys should be conducted prior to implementation of the Proposed Action to determine the types and severity of any engineering limitations. An Erosion and Sediment Control Plan and construction BMPs would be implemented and state storm water requirements would be followed to minimize soil erosion and associated sedimentation; therefore, no major adverse impacts on the soils would be anticipated. BMPs could include installing silt fencing and sediment traps, applying water to disturbed soil, installing green roofs, and revegetating disturbed areas as soon as possible after disturbance, as appropriate. In addition, storm water BMPs, discussed in **Section 4.6.2**, would be implemented to reduce potential for soil erosion and associated sedimentation.

4.6 Water Resources

4.6.1 Evaluation Criteria

Evaluation of impacts on water resources is based on water availability, quality, and use; existence of floodplains; and associated regulations. A proposed action would be adverse if it were to substantially affect water quality, substantially reduce water availability or supply to existing users, threaten or damage hydrologic characteristics, or violate established Federal, state, or local laws and regulations. The potential impact of flood hazards on a proposed action is important if such an action occurs in an area with a high probability of flooding.

4.6.2 No Action Alternative

Under the No Action Alternative, NSA would not develop Site M. Conditions would remain as described in **Section 3.6.2**. No impacts on water resources would be expected.

4.6.3 Proposed Action (Phase I)

Under the Proposed Action, the construction contractor would obtain all necessary construction permits and comply with the requirements and guidelines set forth in those permits to minimize potential for adverse impacts. The Proposed Action would require storm water management plans and soil erosion and sedimentation controls. Per COMAR 26.17.01 (Erosion and Sediment Control) an Erosion and Sediment Control Plan would be required for the Proposed Action as it involves land clearing, grading, or other earth disturbances to an area greater than 5,000 ft^2 of land area. The *1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control* (MDE 1994) shall serve as the official guide for erosion and sediment control principles, methods, and practices. The Soil Erosion and Sediment Control Plan would describe the measures implemented to prevent soil erosion during construction by storm water runoff and to prevent sedimentation of storm sewer or receiving streams. In addition, construction contractors would need to develop a site-specific Storm Water Pollution Prevention Plan (SWPPP) prior to construction. All construction BMPs would follow the guidelines provided in the Soil Erosion and Sediment Control Plan; site-specific SWPPP; MDE's *Maryland Stormwater Design Manual* and Supplement No. 1 of the manual; and Federal and state permitting processes.

Assuming proper use of BMPs to provide sediment and erosion control and storm water management on the active construction site, no major, short-term, adverse, effects on water resources would be expected. However, short-term, minor, adverse impacts on water resources could occur from the Proposed Action. Despite construction BMPs, a minor amount of sediment or construction-related pollutants (e.g., fuels, oils, paints, solvents) could be transported during large storm events to Midway Branch. In the event of a spill or leak of fuel or other construction-related products, there could be adverse impacts on surface water quality or groundwater quality. All construction equipment would be maintained according to the manufacturer's specifications and all fuels and other potentially hazardous materials would be contained and stored appropriately. In the event of a spill, procedures outlined in NSA's Spill Prevention, Control, and Countermeasures (SPCC) Plan would be followed to quickly contain and clean up a spill. See **Section 3.10** and **4.10** for a discussion on hazardous materials and wastes.

The Proposed Action would result in a substantial increase in impervious surfaces, as the existing condition of Site M is golf course with permeable vegetated surfaces throughout with patches of tree cover. It is anticipated that the overall building footprint from the Proposed Action would be approximately 1.8 million ft^2. According to the general illustrative plan in NSA's Master Plan, approximately 1.6 million ft^2 (36 acres) of impervious surface, including buildings, roads, and sidewalks, could be constructed in Site M-1 from the implementation of Proposed Action (Phase I). The amount of impervious surfaces can be greatly reduced through ESD and nonstructural BMPs. Per the Maryland Stormwater Management Act of 2007 and COMAR 26.17.02, NSA would be required to implement ESD in its storm water management system to the maximum extent practicable through the use of better site design and nonstructural BMPs, and by using appropriate structural BMPs only when absolutely necessary. ESD would be used in order to maintain the predevelopment runoff characteristics post-development and to reduce stream channel erosion, pollution, siltation and sedimentation, and local flooding to the maximum extent practicable. Adherence to the *Maryland Stormwater Design Manual* and updates in Supplement No. 1 of the manual would ensure that post-development storm water runoff characteristics mimic the predevelopment storm water runoff characteristics on Site M.

NSA would comply with the General Performance Standards for Stormwater Management in Maryland, outlined in the *Maryland Stormwater Design Manual* and the updated Supplement No. 1 (MDE 2009c. To prevent adverse impacts from storm water runoff, the State of Maryland has developed performance standards that must be met at development sites, which apply to any construction activity disturbing 5,000 ft^2 or more of earth. The *Maryland Stormwater Design Manual* outline five sizing criteria in the State of Maryland, including water quality volume, recharge volume, channel protection storage volume, overbank flood control volume, and extreme flood volume (MDE 2009c).

Adherence to ESD as outlined in the *Maryland Stormwater Design Manual* and the updated Supplement No. 1 of the manual would ultimately attenuate the potential major long-term, adverse impacts the Proposed Action could have on water resources. The following are the performance standards for using ESD that NSA would meet in its storm water management design:

- The standard for characterizing predevelopment runoff characteristics for new development projects shall be woods in good hydrologic condition
- ESD shall be implemented to the maximum extent practicable to mimic predevelopment conditions

- As a minimum, ESD shall be used to address both water quality volume and recharge volume requirements
- Channel protection obligations are met when ESD practices are designed according to the Reduced Runoff Curve Number (RCN) Method (MDE 2009c).

The criteria for sizing ESD practices are based on capturing and retaining enough rainfall so that the runoff leaving a site is reduced to a level equivalent to a wooded site in good condition as determined using U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) methods (e.g., Technical Release 55, *Urban Hydrology for Small Watersheds*). The basic principle is that a RCN may be applied to post-development conditions when ESD practices are used. The goal is to provide enough treatment using ESD practices to address channel protection storage volume requirements by replicating an RCN for woods in good condition for the 1-year rainfall event (i.e., replicating the amount of runoff that would be generated by woods in good condition for the 1-year rainfall event), thereby eliminating the need for structural BMPs (MDE 2009c).

Groundwater. With no BMPs in place, an increase in impervious areas would reduce the land that is available for groundwater recharge; however, as required by the Stormwater Management Act of 2007 and COMAR 26.17.02, ESD practices would be used to maintain 100 percent of the average annual predevelopment groundwater recharge volume for the site. This would be accomplished by infiltrating runoff from impervious surfaces back into the groundwater through the use of structural (e.g., bioretention) and nonstructural (e.g., filter strips, buffers, and disconnection of rooftops) methods. Therefore, no major adverse effects on groundwater recharge would be expected from the Proposed Action.

Operational activities associated with the Proposed Action could result in long-term, negligible to minor, adverse impacts on groundwater quality as a result of sheet runoff or petroleum spills, particularly from parking areas. However, these impacts would be mitigated through planned implementation of the various applicable Federal and state storm water management requirements and adherence to the SWPPP, so that no water quality violations would be expected. BMPs, such as installation of oil-water separators in parking lots, would minimize the potential for pollutants to reach the groundwater.

Surface Water and Stream Channels. Based on the provisions of the Stormwater Management Act of 2007 and COMAR 26.17.01 and 26.17.02, all jurisdictions within Maryland must implement a storm water management program using ESD to control the quality and quantity of storm water runoff resulting from any new development. Per the performance standards for using ESD for storm water management in Maryland, ESD would be implemented to the maximum extent practicable under the Proposed Action so that post development hydrologic conditions mimic predevelopment conditions. For this to occur, NSA would minimize the generation of storm water and maximize pervious areas for storm water management. Per the *Maryland Stormwater Design Manual*, the post development 10-year storm event peak discharge must not exceed the predevelopment peak discharge (MDE 2009c). Therefore, no long-term, major, adverse impacts on surface water would be expected from the Proposed Action.

The water quality volume is the storage needed to capture and treat the runoff from 90 percent of the average annual rainfall. Based on the storm water sizing criteria formula below, an estimated 2.9 acre-feet of storage on Site M would be necessary to meet the water quality volume requirement for the Proposed Action. This volume can be greatly reduced through the use of nonstructural practices in ESD.

Water Quality Volume (acre-feet) = $[(P)(Rv)(A)]$ 12, where

P = rainfall depth in inches and is equal to 1.0" in the Eastern Rainfall Zone and 0.9" in the Western Rainfall Zone,

R_v = volumetric runoff coefficient [0.05 + 0.009(I), where I is percent impervious cover), and

A = area in acres (MDE 2009c).

Because storm water management design would only need to capture and treat 90 percent of the average annual rainfall runoff, potential long-term, minor, adverse impacts on water quality could occur. During large storm events, total suspended solids, nutrients, and other pollutants could be directly conveyed to Midway Branch and ultimately the Little Patuxent River without sufficient treatment. Therefore, minor adverse impacts from sedimentation, nutrient loading, and decreased water quality could occur. Because these impacts would generally only be expected during large storm events when the storm water design cannot capture and treat all rainfall, these impacts would likely be sparse and intermittent. New construction design for the Proposed Action would require that a 100-foot buffer be established, preserved, and maintained between development and the stream to comply with Maryland's Coastal Zone Management Program and the U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) Green Building standards. The buffer would serve as a water quality filter for the removal or the reduction of sediment, nutrients, and toxic substances found in surface runoff (URS/LAD 2009).

Long-term, direct, minor, adverse effects on water quality would be expected from the generation of additional wastewater by the estimated 4,400 new personnel brought to Fort Meade by the Proposed Action. Based on Fort Meade's current population of 109,000, this would represent an approximate 4 percent increase in the population generating wastewater. The generation of additional wastewater would increase nutrient loads (e.g., nitrogen and phosphorus) within the effluent discharged to the Little Patuxent River. See **Section 4.9.2** for a discussion of the potential impacts of the Proposed Action on Fort Meade's sanitary sewer and wastewater system.

Long-term, negligible to minor, adverse impacts on the Little Patuxent River could be expected due to removal of the golf course on Site M. Since some treated wastewater is used for irrigational purposes on the golf course, the conversion of Site M to administrative facilities would reduce the amount of Fort Meade's wastewater that could be reused for irrigation. Therefore, a negligible to minor increase in effluent to the Little Patuxent River would be expected.

Long-term, minor, beneficial effects on water quality would be expected from the removal of the golf course on Site M. The golf course primarily drains into the Midway Branch, which is of concern due to a lack of a substantial riparian buffer between the tributary and the golf course and the associated pollutants from various herbicides, pesticides, and fertilizers used for golf course maintenance on Site M (U.S. Army 2005). According to NSA's Master Plan, a 100-foot forested buffer would be established on the western side of Midway Branch within Site M. This buffer would result in long-term beneficial impacts on surface water quality by intercepting excess storm water volume, pollutants, and sediments and by providing bank stability within Midway Branch.

Long-term, minor, adverse impacts on stream channels could occur from the implementation of the Proposed Action. Large areas of impervious pavement that once were pervious soils increase the speed at which storm water enters channels. If a stream channel cannot accommodate the increased volume of storm water, areas downstream can flood. In addition, the channel morphology of the receiving streams could adjust to accommodate increased flows often resulting in streambank and channel erosion, channel widening, decline in stream substrate quality, and associated impacts on downstream water quality and habitat. Because storm water management design would only need to capture and treat 90 percent of the average annual rainfall runoff, potential adverse impacts on stream channels could still occur. Development from the Proposed Action would likely result in an increased frequency and magnitude of storm water flows, thereby causing Midway Branch to reach bankfull flow more often, which could lead to channel erosion and enlargement. Because these impacts would generally only be expected during large storm events when the storm water design cannot capture and treat all rainfall, these impacts would likely be minimal. New construction design for the Proposed Action would require that a 100-foot buffer be established, preserved, and maintained between development and the streams.

As previously mentioned, NSA's proposed forested buffer would help take up or slow excessive sheet flow prior to its reaching Midway Branch and would provide bank stability; therefore, no major impacts on the channel morphology of Midway Branch would be expected.

The use of ESD practices to the maximum extent practicable would be implemented to address channel protection storage volume. Channel protection volume shall be based on the runoff from the 1-year 24-hour design storm calculated using the reduced RCN. If the reduced RCN for a drainage area reflects "woods in good condition," then the channel protection volume requirement has been satisfied for that drainage area. When the targeted rainfall is not met, any remaining channel protection volume requirements could be treated using structural practices described in the *Maryland Stormwater Design Manual.*

A segment of the Patuxent River (Patuxent River 1) south of Fort Meade is categorized as a High Quality (Tier II) water by MDE. This segment is approximately a half mile in length and occurs upstream of its confluence with Little Patuxent River (MDE 2010). Since storm water runoff from Site M would eventually drain into the Little Patuxent River via the Midway Branch, this Tier II segment of the Patuxent River would not receive storm water runoff from the project area as the segment lies upstream of Little Patuxent River's confluence with the Patuxent River. Likewise, wastewater from Fort Meade's wastewater treatment plant is discharged into the Little Patuxent River and ultimately the Patuxent River below this segment. Therefore, no impacts on the Patuxent River 1 Tier II water segment would be expected from the Proposed Action.

Best Management Practices. Post-construction runoff could be minimized using a variety of nonstructural BMPs. Structural BMPs would only be used if additional storm water management is needed after ESD practices were used to the maximum extent practicable.

EO 13514directs Federal agencies to improve water use efficiency and management; implement high performance sustainable Federal building design, construction, operation, and management; and advance regional and local integrated planning by identifying and analyzing impacts from energy usage and alternative energy sources. EO 13514 also directs Federal agencies to prepare and implement a Strategic Sustainability Performance Plan to manage its greenhouse gas emissions, water use, pollution prevention, regional development and transportation planning, and sustainable building design; and promote sustainability in its acquisition of goods and services. Section 2(g) requires new construction, major renovation, or repair and alteration of buildings to comply with the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings. The CEQ regulations in 40 CFR 1502.16(e) direct agencies to consider the energy requirements and conservation potential of various alternatives and mitigation measures.

Section 438 of the EISA of 2007, Storm Water Runoff Requirements for Federal Development Projects, directs that the sponsor of any development or redevelopment project involving a Federal facility with a footprint that exceeds 5,000 ft^2 shall use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow. The controls required by USEPA outlined in **Section 3.6.1** would be implemented during design, construction, and operation of the proposed campus development project.

Fort Meade provides guidance for the design, construction, and operation of Green Buildings on the installation through its *Green Building Manual* (USACE Baltimore District 2007), which NSA could choose to implement as nonstructural BMPS for storm water management. These include combinations of the following:

- Landscape parking lot islands to manage storm water (e.g., bio-retention ponds, tree plantings)
- Restore and protect the site area where practical (excluding the building footprint) with native or adapted vegetation to maintain or improve water quality on and off the installation
- Where practical, reuse storm water for non-potable uses in and around buildings to help reduce the quantities of storm water
- Preserve a 100-foot buffer landward from tributary waterways to maintain storm water flow and to reduce adverse impacts from natural runoff, bank erosion, and sedimentation
- Irrigate landscapes with collected and stored rainwater on site
- Establish green/vegetated roofs or walls on buildings and other structures
- Utilize porous pavement.

According to NSA's Real Property Master Plan, green roofs or walls would be utilized for development on Site M (URS/LAD 2009). Additionally, a forested 100-foot buffer would be established on the western side of Midway Branch within Site M. Additional potential practices could include vegetated swales or micro-bioretention to capture and treat runoff from the roads. Likewise, rain gardens and disconnection of rooftop runoff could be used to capture and treat runoff from the facilities.

If the sizing criteria are not met through the implementation ESD to the maximum extent practicable, sizing requirements shall be met using the following structural BMPs:

- Storm water retention ponds (e.g., dry extended detention ponds, wet ponds)
- Storm water wetlands (e.g., shallow wetland, extended detention shallow wetland, pond/wetland system, pocket wetland)
- Infiltration practices (e.g., infiltration basin, infiltration trench)
- Storm water filtering systems (e.g., surface or underground sand filters, organic filters, bioretention)
- Open channel systems (e.g., dry swale, wet swale).

4.6.4 Alternative 1: Implement Phases I and II

Short-term impacts on water resources would be similar to, but greater than those described under the Proposed Action. Assuming proper adherence to USEPA's Technical Guidance on Implementing the Stormwater Runoff Requirements under the Energy Independence and Security Act, the Stormwater Management Act of 2007; COMAR 26.17.01 (Erosion and Sediment Control) and 26.17.02 (Stormwater Management); ESD and the associated Sediment and Erosion Control Plan, Site Development Plan, and site-specific SWPPP; no short-term, major, adverse impacts on water resources would be expected from the implementation of Alternative 1.

Long-term impacts on water resources would be expected to be similar to, but greater than those described under the Proposed Action. Alternative 1 would result in a substantial increase in impervious surfaces, as the existing condition of Site M is mostly golf course with permeable vegetated surfaces throughout and patches of tree cover. It is anticipated that the overall building footprint from Alternative 1 would be approximately 3 million ft^2 of operational administrative facilities. According to the general illustrative plan in NSA's Master Plan, approximately 2.8 million ft^2 (65 acres) of impervious surface, including buildings, roads, and sidewalks, could be constructed in Site M-1 from the implementation of Alternative 1 (Phases I and II). The amount of impervious surfaces can be greatly reduced through ESD and nonstructural BMPs. Additionally, the implementation of Phase II in addition to Phase I would be expected to increase the installation's population by approximately 1,000 new personnel to staff the new operational complex. Therefore, the amount of wastewater generated and associated nutrient loads (e.g., nitrogen and phosphorus) in the effluent discharged to the Little Patuxent River would also be expected to increase.

The water quality volume is the storage needed to capture and treat the runoff from 90 percent of the average annual rainfall. Based on the storm water sizing criteria formula defined in **Section 4.6.2**, an estimated 5.1 acre-feet of storage on Site M would be necessary to meet the water quality volume requirement for Alternative 1. This volume can be greatly reduced through the use of nonstructural practices in ESD.

Assuming proper adherence to USEPA's Technical Guidance on Implementing the Stormwater Runoff Requirements under the EISA, the Stormwater Management Act of 2007, COMAR 26.17.02, and ESD as outlined in the *Maryland Stormwater Design Manual*, no long-term, major, adverse impacts on water resources would be expected from the implementation of Alternative 1. However, long-term, minor, adverse impacts on surface and groundwater quality and channel banks could occur.

4.6.5 Alternative 2: Implement Phases I, II, and III

Short-term impacts on water resources would be similar to, but greater than those described under Alternative 1. Assuming proper adherence to USEPA's Technical Guidance on Implementing the Stormwater Runoff Requirements under the EISA, the Stormwater Management Act of 2007; COMAR 26.17.01 (Erosion and Sediment Control) and 26.17.02 (Stormwater Management); ESD and the associated Sediment and Erosion Control Plan, Site Development Plan, and site-specific SWPPP, no short-term, major, adverse impacts on water resources would be expected from the implementation of Alternative 2.

Long-term impacts on water resources would be expected to be similar to, but greater than those described under Alternative 1. Alternative 2 would result in a substantial increase in impervious surfaces, as the existing condition of Site M is mostly golf course with permeable vegetated surfaces throughout with patches of tree cover. It is anticipated that the overall building footprint from Alternative 2 would be approximately 5.8 million ft^2 of operational administrative facilities. According to the general illustrative plan in NSA's Master Plan, approximately 4.9 million ft^2 (112 acres) of impervious surface, including buildings, roads, and sidewalks, could be constructed in Site M-1 from the implementation of Alternative 2 (Phases I, II, and III). The amount of impervious surfaces can be greatly reduced through ESD and nonstructural BMPs. Additionally, the implementation of Phase III in addition to Phases I and II would be expected to increase the installation's population by approximately 2,000 new personnel to staff the new operational complex. Therefore, the amount of wastewater generated and associated nutrient loads (e.g., nitrogen and phosphorus) within the effluent discharged to the Little Patuxent River would also be expected to increase.

The water quality volume is the storage needed to capture and treat the runoff from 90 percent of the average annual rainfall. Based on the storm water sizing criteria formula defined in **Section 4.6.2**, an estimated 8.9 acre-feet of storage on Site M would be necessary to meet the water quality volume requirement for Alternative 2. This volume can be greatly reduced through the use of nonstructural practices in ESD.

Assuming proper adherence to USEPA's Technical Guidance on Implementing the Stormwater Runoff Requirements under the EISA, the Stormwater Management Act of 2007, COMAR 26.17.02, and ESD as outlined in the *Maryland Stormwater Design Manual*, no long-term, major, adverse impacts on water resources would be expected from the implementation of Alternative 2. However, long-term, minor adverse impacts on surface and groundwater quality and channel banks could occur.

4.7 Biological Resources

4.7.1 Evaluation Criteria

Potential impacts on biological resources are evaluated based on 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, and the duration of ecological impacts. A habitat perspective is used to provide a framework for analysis of general classes of impacts (e.g., removal of critical habitat, noise, human disturbance).

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

To evaluate the effects of noise, considerations were given to the number of individuals or critical species involved, amount of habitat affected, relationship of the Proposed Action area to total available habitat within the region, type of stressors involved, and magnitude of the effects.

Under the ESA, Federal agencies are required to provide documentation that ensures that agency actions will not adversely affect the existence of any federally 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 USFWS (and National Marine Fisheries Service) that ends with concurrence on a determination of the risk of jeopardy from a Federal agency project.

4.7.2 No Action Alternative

Under the No Action Alternative, DOD would not implement the Proposed Action. No impacts on biological resources (e.g., vegetation, wetlands, wildlife, or threatened and endangered species) would be expected under the No Action Alternative.

4.7.3 Proposed Action (Phase I)

Vegetation. Minor, direct, adverse impacts are expected as the result of the Proposed Action on the forested areas on the western portion of Site M-1. Site M-1 includes approximately 137 acres of open and wooded land uses. Clearing and grading, establishing new roads and parking areas, and installing erosion control and storm water management measures are among the first activities to prepare for full development of Site M-1. The clearing of the site will require a significant amount of tree planting and reforestation of the site to meet requirements.

Implementation of the Proposed Action would include the preparation of a FSD Study, which would determine the extent and characteristics of forest area affected by proposed development. Approximately 1,795 acres of Fort Meade's 5,067 acres are presently forest lands. Forest lands located within the entire Site M project area total approximately 104 acres, which represent approximately 13 percent of the total forest lands existing on the installation. The actual total acreage of forested lands and vegetation disturbed would depend on the design and layout of the different structures or facilities, the number of buildings required, the size and layout of parking facilities, and the constraints of each of the proposed sites. Minor, adverse impacts to vegetation would be expected because most of the site is surrounded and divided by the golf course, with the areas between fairways and along the outside perimeter of the golf course being the remnant forest.

The Proposed Action would result in long-term, minor, beneficial impacts from the planting of native shrub and tree species. The native shrub and tree species would be planted where possible to provide a higher quality, albeit reduced quantity of, habitat. Large or historic trees (those that are preferred dominant natives, such as oaks and American beech) would be preserved to the greatest extent possible and additional trees planted around them. Buffers of a minimum of 50 feet, with a preferred arrangement of 3 rows, would be installed in areas along connection corridors and other sensitive areas.

Forestry BMPs and practices to control erosion and sedimentation during clearing and construction activities would be implemented to minimize potential impacts to adjacent forested habitats and water quality. Timber within areas to be developed could be harvested and revenue collected would go into a DOD forestry account to be used for future forestry programs on Army Installations.

Wetlands. Long-term, direct and indirect, adverse impacts are expected as the result of the Proposed Action on the wetland on the eastern portion of Site M-1. A formal wetland delineation in accordance with the USACE 1987 Wetland Delineation Manual was conducted on Site M (HDR|e²M 2010b) and identified wetlands shown in **Figure 3.6-1**. Four wetlands or other waters of the United States were delineated within or in close proximity to Site M. Direct impacts may include reduction in wetland habitat diversity and change in wetlands species composition. Indirect impacts may include nutrient loading, sedimentation and modification to hydrologic regimes. Freshwater wetlands in Maryland are protected by the Non-tidal Wetlands Protection Program, which sets a state goal of no overall net-loss of non-tidal wetlands acreage and functions. Activities in non-tidal wetlands require a non-tidal wetland permit or a letter of exemption, unless the activity is exempt by regulation. Any activity that involves excavating, filling, changing drainage patterns, disturbing the water level or water table, grading and removing vegetation in a non-tidal wetland or within a 25-foot buffer requires a permit from the State.

The INRMP for Fort Meade guides the management and protection of wetlands at Fort Meade (U.S. Army 2007). The INRMP states that wetland area management should follow a dual policy of floodplain and riparian area management and in-situ wetland management. This policy emphasizes preservation, enhancement and expansion of wetlands within Fort Meade.

Coastal Zone Management. No major adverse impacts would be expected. New construction and operation under the Proposed Action meets the goals and objectives of the Maryland Coastal Zone Management Program by:

- To the extent feasible, consider low impact development options during the design phase of the projects
- Avoid construction activities within 100 feet of riparian areas where practical
- Avoid construction activities within 100 feet of wetland areas, where practical (MDE requires a 25 foot buffer area for wetlands) buffer area of 25 feet

- Avoid construction activities within 100 feet of wetlands meeting the criteria of MDE's Special State Concern
- Development and implementation of a site specific Erosion and Sediment Control Plan; and Development and implementation of Storm water Management Plan including SWPPP measures to control storm water runoff.

In addition, Fort Meade would adhere to all Federal, and state permit requirements to protect coastal and marine resources and wetland areas. Any activity that involves excavating, filling, changing drainage patterns, disturbing the water level or water table. Grading and removing vegetation in a non-tidal wetland or within a 25-foot buffer requires a permit from the State of Maryland (U.S. Army 2007). A wetlands survey will be conducted to verify ground conditions and the presence of any wetlands before implementing construction activities.

Based on the above description, the Proposed Action represents minimal foreseeable effects over coastal uses or resources in the State of Maryland. Construction activities represent minor impacts to wetlands. Impervious surfaces would increase in the immediate area of the development, but efforts would be made to minimize the amount, such as adherence to guidelines outlined in the Fort Meade Green Building Manual, IDG, and INRMP. This EIS will be provided to MDE as the Federal Coastal Zone Consistency Determination.

Floodplains. Construction of the facilities in the Proposed Action would not occur within the 100-year floodplain. Therefore, no direct, long-term, adverse impacts on floodplains would be expected as a result of the Proposed Action.

Two design criteria from the *Maryland Stormwater Design Manual* apply to floodplains: the overbank flood protection criteria and the extreme flood criteria. Overbank flood protection volume sizing criteria prevents an increase in the frequency and magnitude of out-of-bank flooding generated by development. Overbank flood protection for the ten-year storm would be required. The intent of the extreme flood criteria is to prevent flood damage from large storm events, to maintain the boundaries of the pre-development 100-year FEMA-designated floodplain, and to protect the physical integrity of BMP control structures.

Wildlife. Short-term, direct, minor adverse impacts would occur on wildlife as a result of temporary noise disturbances associated with construction activities. Some wildlife species occurring in the vicinity of the proposed project area would be expected to have adapted to the variety of noise levels associated with the campus and might move back into the area following site development.

Long-term, direct, moderate, adverse impacts could occur from the mortality of small less-mobile terrestrial species (e.g., reptiles, rodents, and small mammals) as a result of collision with construction equipment. Collision with wildlife would be avoided to the maximum extent possible and less mobile species would be provided time, or would be assisted, in order to avoid impacts with construction equipment.

Long-term, direct, moderate, adverse impacts would occur as a loss of 1.8 million ft^2 of habitat from the building footprint. The preservation of areas associated with Midway Creek over time would provide habitat for species that are currently occupying Site M.

Threatened and Endangered Species. No impacts on threatened and endangered species would be expected as a result of implementing the Proposed Action. There are no Federal- or state-listed threatened or endangered species documented or known to occur on or adjacent to any of the potential development sites.

4.7.4 Alternative 1: Implement Phases I and II

Vegetation. Minor to moderate, direct, adverse effects would be expected as the result of implementation of Alternative 1. Projects associated with Alternative 1 would convert up to 69 acres of land into developed facilities and associated landscape vegetation. Impacts to vegetation under this alternative would be similar to those described for the Proposed Action (Phase I); however, larger wooded areas exist on the western half of Site M-1. The forested area along O'Brien Road is characterized as chestnut oak forest, dominated by several mature oak species (*Quercus* spp.). Existing vegetation at the project sites would be completely removed during construction (with historic trees being preserved to the greatest extent possible), and new vegetation would be planted around the new buildings once construction is complete. Impacts to vegetation would be adverse but not major because the project areas considered are located within a golf course, characterized by forested areas surrounding fairways and greens. Vegetation within the developed golf course is characterized by mowed grasses with scattered trees and shrubs. Natural plant communities in these areas have rather low vegetative diversity.

In keeping with FCA standards, the Installation would preserve 20 percent of the project area as forested. If this is not possible, then alternative sites would be designated for reforestation. Reforestation strategies would include a range of landscape improvements such as on-site street trees, site landscape plantings, and open space plantings in conjunction with other storm water management approaches that could include wetland conservation and enhancement practices. Forestry BMPs and practices to control erosion and sedimentation during clearing and construction activities would be implemented to minimize potential impacts to adjacent forested habitats and water quality.

Wetlands. Impacts to wetlands under this alternative would be similar to those described for the Proposed Action (Phase I). The primary impact on wetlands under Alternative 2 would be associated with storm water runoff. Long-term indirect impacts are anticipated due to an increase in impervious surfaces and storm water runoff, but these impacts are anticipated to be minimized to the greatest extent feasible through strict adherence to the following:

- Federal and state permit requirements
- Site-specific erosion and sedimentation control plans
- INRMP Wetland Management
- Storm water management planning including the implementation of SWPPP and Stormwater Design Criteria in Fort Meade's Green Building Manual
- Fort Meade's Nutrient Management Plan.

Wildlife. Short-term, direct, minor adverse impacts would occur on wildlife as a result of temporary noise disturbances associated with construction activities. Some wildlife species occurring in the vicinity of the proposed project area would be expected to have adapted to the variety of noise levels associated with the campus and might move back into the area following site development.

Long-term, direct, moderate, adverse impacts could occur from the mortality of small less-mobile terrestrial species (e.g., reptiles, rodents, and small mammals) as a result of collision with construction equipment. Collision with wildlife would be avoided to the maximum extent possible and less mobile species would be provided time, or would be assisted, in order to avoid impacts with construction equipment.

Long-term, direct, moderate, adverse impacts would occur as a loss of 3.0 million ft^2 of habitat from the building footprint. Phase II would have a greater impact on wildlife than the Proposed Action due to the increased amount of habitat loss. The preservation of areas associated with Midway Creek over time would provide habitat for species that are currently occupying Site M.

Threatened and Endangered Species. No impacts on threatened and endangered species would be expected as a result of implementing Phase II. There are no Federal- or state-listed threatened or endangered species documented or known to occur on or adjacent to any of the potential development sites.

4.7.5 Alternative 2: Implement Phases I, II, and III

Vegetation. Minor to moderate, direct, adverse impacts on vegetation would be expected as the result of implementation of Alternative 2. The proposed projects, including the consolidated facilities and associated infrastructure, would convert approximately 133 acres of land as part of Phase I, II, and III (41, 28, and 64 acres, respectively). Existing vegetation within the footprint of the proposed projects would be permanently and completely removed during construction (though historic trees would be preserved to the greatest extent possible), and new vegetation would be planted around the buildings once construction is complete.

Wetlands. Impacts to wetlands under this alternative would be similar to those described for the Proposed Action (Phase I). The primary impact on wetlands under Alternative 2 would be associated with storm water runoff. Long-term indirect impacts are anticipated due to an increase in impervious surfaces and storm water runoff. Impacts on wetlands would be adverse but not major because the project areas considered are located in predominantly developed areas and no additional wetlands would be impacted under this alternative.

Wildlife. Short-term, direct, minor adverse impacts would occur on wildlife as a result of temporary noise disturbances associated with construction activities. Some wildlife species occurring in the vicinity of the proposed project area would be expected to have adapted to the variety of noise levels associated with the installation and might move back into the area following site development.

Long-term, direct, moderate, adverse impacts could occur from the mortality of small less-mobile terrestrial species (e.g., reptiles, rodents, and small mammals) as a result of collision with construction equipment. Collision with wildlife would be avoided to the maximum extent possible and less mobile species would be provided time, or would be assisted, in order to avoid impacts with construction equipment.

Long-term, direct, moderate, adverse impacts would occur as a loss of 5.8 million ft^2 of habitat from the building footprints. This Phase would have a greater impact on wildlife than the Proposed Action and Phase II due to the increased amount of habitat loss. The preservation of areas associated with Midway Creek over time would provide habitat for species that are currently occupying Site M.

Threatened and Endangered Species. No impacts on threatened and endangered species would be expected as a result of implementing Phase III. There are no Federal- or state-listed threatened or endangered species documented or known to occur on or adjacent to any of the potential development sites.

4.8 Cultural Resources

4.8.1 Evaluation Criteria

Adverse impacts to cultural resources 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 this Proposed Action, ground-disturbing activities associated with the implementation of the Campus Development for the NSA complex at Site M constitute the most relevant potential effects on cultural resources.

4.8.2 No Action Alternative

Under the No Action Alternative, the implementation of Campus Development at Fort Meade would not occur. Baseline conditions for cultural resources as described above would remain unchanged. Therefore, no major impacts to cultural resources would occur as a result of the implementation of the No Action Alternative.

4.8.3 Proposed Action (Phase I)

The Proposed Action involves development of the eastern half of Site M-1, supporting 1.8 million ft^2 of facilities for a data center and associated administrative space. Although the current design for the Fort Meade Campus Development is conceptual, it is expected that the Proposed Action for Phase I development at Site M-1 would not have major impacts on any previously identified archaeological or architectural resources. However, an undocumented historic cemetery may be present in the northern portion of Site M-1. A 1977 topographic map of Fort Meade shows the presence of a cemetery in the area of golf course fairway 4B, or currently the 3rd hole of the Parks course (see **Figure 3.8-2**). The Proposed Action would potentially have a long-term, major impact to this unrecorded cemetery. Although a ground penetrating radar (GPR) survey conducted in December 2009 in the general location of the undocumented cemetery shown on **Figure 3.8-2** did not verify its presence or absence (HDR|e^2M 2010a), precautions are recommended during construction activities on Site M. It is recommended that the undocumented cemetery location be treated as a design constraint and avoided should Site M be developed for an administrative facility. If these resources cannot be preserved in place through avoidance, ground excavation activities should be conducted prior to construction activities to determine presence or absence of the cemetery. Extra precautions, including archaeological monitoring, would also be exercised in the vicinity of the undocumented cemeteries. Fort Meade has developed procedures for treatment of human remains in the event of their unexpected discovery (USACE Baltimore District 2006), as outlined below.

Unexpected Discovery of Human Remains

1. Immediately stop any excavations that discover human remains and make reasonable efforts to protect the burials and the site.
2. Notify the installation commanding officer and the cultural resource manager immediately following the discovery. Contact Fort Meade Military Police and determine the origin of the discovery.

3. Contact the Department of the Interior's Departmental Consulting Archeologist (DCA), Archeological Assistance Division, National Park Service, P. O. Box 37127, Washington, DC 20013-7127, (202) 343-4101, and advise of the nature of the discovery. Provide the DCA all known information concerning the cultural resource, such as resource type, date, location, and size, as well as any information on its eligibility. The DCA retains the option of notifying and consulting with the ACHP and the SHPO, who may require an on-site examination of the affected remains. The DCA will determine the significance and origins of the remains and what mitigation measures to take.

4. If Fort Meade has reason to know that it has discovered Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony, Fort Meade must provide immediate telephone notification of the nature of the discovery to the installation commander, and provide via certified mail the written discoverer's confirmation of notification (DCON) to the commander, to the Departmental Consulting Archeologist, installation commander, Army FPO, and Army Headquarters. If the remains are of Native American origin, the Commander should do the following:

    a. Take immediate steps, if necessary, to further secure and protect the discovered site, providing appropriate stabilization or covering.

    b. Immediately certify receipt of notification by the discoverer.

    c. Notify by telephone, and follow with written confirmation, the appropriate federally recognized tribes no later than 3 days after certification of the discovery, and the commander must certify in writing that he has received the DCON. This notification must include pertinent information as to kinds of human remains, funerary objects, sacred objects, or objects of cultural patrimony, their condition, and the circumstances of their discovery.

In addition, two potential historic landscapes evaluated for NRHP eligibility (Applewood and Parks golf courses) overlap Phase I development (see **Section 4.8.5** for full discussion).

4.8.4 Alternative 1: Implement Phases I and II

Phases I and II at Site M-1 would not have major impacts on any previously identified archaeological or architectural resources. Impacts to other resources would be similar to those discussed in **Section 4.8.3**.

4.8.5 Alternative 2: Implement Phases I, II, and III

Alternative 2 would incorporate all three phases of development (Phases I, II and III) and encompasses the entire 227-acre development tract referred to as Site M (see **Figure 2.1-1**). Four archaeological resources, including two known archaeological sites (18AN234 and 18AN973) and two undocumented historic cemeteries, are within the area designated for Alternative 2 development. In addition, there are two potential archaeological sites associated with demolished historic buildings (see **Figures 3.8-1** and **3.8-2**). Site 18AN234 consists of a prehistoric site containing Late Archaic/Early Woodland cultural deposits. The site was evaluated during the summer of 2003 and was determined not eligible for the NRHP through subsequent consultation with MHT (USACE Baltimore District 2006). Site 18AN973 (Downs Cemetery and Farmstead) is potentially eligible for the NRHP, although in a separate evaluation, the cemetery component of the site was recommended not eligible for the NRHP. Based on information from the 2006 ICRMP, it is unclear if MHT concurred with this recommendation. In addition to the potential cemetery identified in **Section 4.8.3**, the 1977 topographic map of Fort Meade shows the presence of a cemetery in the area of golf course fairway 13A, or currently the 5th hole of the Applewood course, within Site M.

Currently, no architectural resources at Fort Meade are listed on the NRHP; although the Fort Meade Historic District and a Water Treatment Plant (Bldg. 8688) have been determined eligible by MHT. Initially, no architectural resources were identified within the construction footprint or within the visual APE of the proposed Fort Meade Campus Development at Site M. However, in its public scoping letter (see **Appendix B**), MHT requested that four potential historic properties be formally evaluated for NRHP eligibility and that appropriate DOE forms be submitted to assist in reaching a consensus on eligibility determinations for these resources. These potential architectural resources include the Applewood and Parks golf courses, the Post Sergeant Major's House (Bldg 6926), and the Golf Course Clubhouse (Bldg 6865) (MDP-MHT 2009) (see **Figures 3.8-1** and **3.8-2**).

The Applewood or Parks golf courses have not been identified as historic resources; however, both were built by the military in the 1950s and therefore, may be eligible for the NRHP as historic landscape(s). A subsequent evaluation of the golf courses conducted by DOD concluded that they did not meet the criteria for NRHP eligibility and recommended them as ineligible for listing on the NRHP (HDR|e²M 2010b). The Post Sergeant Major's House and the Golf Course Clubhouse were demolished in the mid-1990s. It should be noted, that while the Post Sergeant Major's House has been demolished, archaeological deposits associated with occupation may still be present and intact.

As identified above, Alternative 2 would potentially have a major impact on three historic properties. These include one previously recorded archaeological site (18AN973/Downs Cemetery and Farmstead) and two undocumented cemeteries. In addition, potential archaeological components associated with Post Sergeant Major's House could potentially be affected. Although a GPR survey conducted in December 2009 in the general location of the undocumented cemeteries shown on **Figure 3.8-2** did not verify their presence or absence (HDR|e²M 2010a), it is recommended that construction activities follow the procedure for unexpected discovery of human remains described in **Section 4.8.3**. It is recommended that 18AN973 (Downs Cemetery and Farmstead) and the Post Sergeant Major's House also be treated as a design constraint and avoided should Site M be developed for an administrative facility. If these resources cannot be preserved in place through avoidance, additional studies would be required to be conducted to evaluate these sites for NRHP eligibility.

4.9 Infrastructure and Sustainability

4.9.1 Evaluation Criteria

The analysis to determine potential impacts on infrastructure, infrastructure systems, and sustainability considers primarily whether a proposed action would exceed capacity or place unreasonable demand on a specific utility. Impacts might arise from energy needs created by either direct or indirect workforce and population changes related to installation activities. Pursuant to EOs 13514 and 13423, impacts from energy usage and alternative energy sources are also evaluated. Impacts would be considered major if implementation of the Proposed Action resulted in exceeded capacity of a utility, long-term interruption of the utility, violation of a permit condition, or violation of an approved plan for a utility. It is assumed that construction contractors would be well-informed of utility locations prior to any ground-disturbing activities that could result in major unintended utility disruptions or human safety hazards, and all ground-disturbance required for utility line installation and facility construction would be accomplished in accordance with Federal and state safety guidelines. In addition, any permits required for excavation and trenching would be obtained prior to the commencement of construction and demolition activities.

The placement of utilities in utility corridors at the NSA campus would provide a comprehensive utility management approach for main utility arteries. Most of the mechanical utility systems, which include water, natural gas, and steam, would be sized based on the largest existing utility sizes that are sufficient for both existing and future growth (URS/LAD 2009).

4.9.2 No Action Alternative

Under the No Action Alternative, no adverse impacts would be expected. The DOD would not develop Site M on a phased, multiyear basis. NSA operations, as well as similar or related operations of other Intelligence Community agencies, would continue at their present locations and there would be no change in infrastructure.

4.9.3 Proposed Action (Phase I)

The Proposed Action (Phase I) would result in the use of many of the existing infrastructure and utility resources discussed in **Section 3.9.2**. Phase I would include the development infrastructure that would support the proposed facilities and increased personnel including electrical substations and generator plants; chiller and boiler plants; a water storage tower; water, gas, and communications services; storm water management; security systems; and multi-level parking facilities.

Water Supply

Short-term, negligible to major, and long-term, major, adverse impacts on water supply would be expected. The NSA currently receives 1.2 mgd from the WTP, which equals approximately 16 percent of the current WTP design capacity and approximately 35 percent of the current WTP production capacity. Additionally, there are two water supply wells adjacent to the NSA campus that serve the National Cryptologic Museum and are permitted for withdrawal of an annual average of 0.018 mgd (DOD 2009a, URS/LAD 2009). Water demand would increase slightly during construction activities associated with the Proposed Action, which would result in short-term, negligible, adverse impacts. However, potential increases in water demand associated with construction activities would be temporary and are not anticipated to exceed existing capacity. The existing NSA campus and the new facility would temporarily be in operation at the same time, until the transition from the existing NSA campus to the new facility was completed and portions of the existing NSA campus taken off-line as a result of personnel in those portions relocating to the new facility. During this time period (5 to 7 years), water demand would increase significantly, and impacts on water supply would be short-term, major, and adverse. Potential increases in water demand associated with the operation of these two facilities concurrently would not be expected to exceed existing capacity.

It is assumed that the two server centers would be cooled by a 50 MW closed-loop chilled water system (i.e., cooling tower), that would use internal circulation with a minimum of two water cycles, and six- to eight-cycle treatment is being considered. Upon completion of the Proposed Action, there would be a long-term, major increase in potable water demand due to operation of the cooling system and an increase in personnel at Site M. A preliminary estimate of the amount of water required for operation of the cooling tower is approximately 1 mgd (based on 20,000 gallons per day (gpd), per MW). Approximately 6,500 personnel would be located at the proposed facilities at Site M. It is assumed that one-third of the 6,500 personnel (approximately 2,166) are already on Fort Meade and the remaining additional personnel (approximately 4,333) would come from positions at other Intelligence Community locations throughout the Baltimore-Washington metropolitan area. Using the per capita water consumption of 75 gpd (Fort Belvoir 2007), the estimated amount of potable water required for the addition of approximately 4,333 personnel would be 325,000 gpd (0.32 mgd). The total estimated long-term increase in potable water demand, including the amount of potable water required for operation of the cooling tower and addition of approximately 4,333 personnel would be 1.32 mgd. This estimate would equal 18 percent of the current WTP design capacity and 39 percent of the current WTP production capacity and, therefore, would not be expected result in exceedance of existing capacity.

Implementation of BMPs and sustainable design techniques would reduce the demand on the water supply and help minimize adverse impacts (see **Section 4.9.6**). As the Proposed Action is implemented, the NSA would continue to maintain compliance with all Federal, state, and local regulations regarding water supply.

Sanitary Sewer and Wastewater System

The existing NSA campus and the new facility would temporarily be in operation at the same time, until the transition from the existing NSA campus to the new facility was completed. During this time period (5 to 7 years), the demand for wastewater treatment would increase, and impacts on the sanitary sewer and wastewater system would be short-term, minor, and adverse. Potential increases in wastewater treatment associated with the operation of these two facilities concurrently would not be expected to exceed existing capacity.

Long-term, minor, adverse impacts on sanitary sewer and wastewater systems would be expected. The increase of personnel would result in a long-term increase in demand for wastewater collection and treatment. The WWTP operates under an NPDES permit (Permit No. 07-DP-2533). The capacity of the WWTP is limited by more than half of the original design capacity because a more stringent nitrogen load cap was imposed by MDE and to remain in compliance with the NPDES permit. In order to meet the increased wastewater demand resulting from the increase in personnel, the WWTP would need to be upgraded. Currently, the average flow to the WWTP is 2.2 mgd. If the average flow to the WWTP were to exceed 3.0 mgd, Fort Meade would be required to notify the MDE and modify their existing NPDES permit. MDE would be notified again if flow were to exceed 4.5 mgd.

A 2007 Wastewater Systems Report was conducted for Fort Meade that considered NSA expansion on Site M totaling 8,400 persons, which would require an additional average daily demand of approximately 0.5 mgd. The report identified the following actions that would be needed to increase capacity of the WWTP:

- Retrofit the existing WWTP treatment process and replace filters to meet NPDES biological nutrient removal and the Chesapeake Bay Initiative
- Upgrade Site Safety and Security at the WWTP
- Upgrade Instrumentation and Controls at the WWTP
- Upgrade wastewater collection pump stations
- Inflow/infiltration control (URS/LAD 2009).

In addition to upgrading the WWTP, the current 18-inch gravity main (line 'C') that runs through the golf courses would need to be expanded in size and relocated east of Sites M-1 and M-2. The relocated line would provide the primary sanitary sewer discharge for Site M. The discharge would then continue to flow through existing sanitary lines and pump stations before reaching the WWTP. New sanitary building connection lines for facilities in Sites M-1 and M-2 would be connected to site mains running along the new roads and ultimately connect to line 'C'. The sanitary flow from an existing 12-inch gravity main, northeast of Site M-1, currently connected to the existing 18-inch line, could be redirected, as needed, to accommodate the gravity mains and optimize gravity flow. In addition the WWTP line connection options would include the WWTP line exiting the DISA facility or construction of a separate dedicated line for the facility proposed for Site M.

The northwestern corner of Site M-1 slopes generally to the west, away from the sanitary sewer line that runs through Sites M-1 and M-2. There are two options for sanitary sewer connection in this area. One option would be to connect the existing services to the west, in the 9800 Area. However, additional flows from this option could potentially create a need to upgrade the existing sanitary sewer facilities in the 9800 Area and beyond. The second option would be to use a pump station to force the flows east to the sanitary sewer facilities, which would eliminate the need to upgrade the existing facilities in the 9800 Area. It would also maintain the single connection point to Fort Meade services south of Sites M-1 and M-2 (URS/LAD 2009).

Storm Water Drainage System

Short- and long-term, negligible to minor, adverse impacts on storm water drainage systems would be expected. Ground disturbance resulting from the Proposed Action would temporarily increase the potential for soil erosion and sediment transport during sheet flow runoff. Soil compaction and increased impermeable surfaces (e.g., new structures, pavements, and sidewalks) would decrease storm water permeation into the ground and thereby permanently increase sheet flow runoff into the storm water drainage system.

According to the Code of Maryland Regulations regarding storm water management, construction projects that disturb more than 5,000 ft^2 of earth require a Storm Water Management Plan. In addition, the NSA would be required to follow the latest MDE guidelines and the Maryland Storm Water Design Manual (Volumes I and II) when developing storm water criteria for new development on Site M (see **Section 4.6** for a discussion of MDE guidelines and the Maryland Storm Water Design Manual).

Implementation of BMPs and sustainable design techniques would limit adverse impacts on the storm water drainage system. The Fort Meade Environmental Division has developed a Green Building Manual to assist new construction in meeting Leadership in Energy and Environmental Design (LEED) silver and above ratings at the installation. ESD techniques are strongly recommended in the manual. The MDE approval process for new development would ensure ESD techniques would be evaluated and implemented, where practical, to reduce the impervious footprint (see **Section 4.9.6**).

Electrical System

Short- and long-term, negligible to major, adverse impacts from the use of energy would be expected. The amount of electrical power required for operation of the proposed facilities is 50 MW. The supplier of the electrical power has not yet been determined. BGE is the local electric utility; however, the source of the electric power is subject to NSA power purchase agreements with available suppliers. The existing NSA campus and the new facilities would temporarily be in operation at the same time, until the transition from the existing NSA campus to the new facility was completed. During this time period (5 to 7 years), electricity demand would temporarily increase, and impacts on the electrical system would be negligible to major. In addition, there would be a long-term increase in electricity demand associated with operation of the proposed facilities upon completion of the transition period. The level of the short- and long-term impacts would depend on the available capacity of the supplier. Two substations (East Substations) would be constructed on Site M-1. A primary-power generator plant would be directly connected to the East Substations. The East Substations and primary-power generator plant would support the entire Site M. The numbers of primary and redundant electrical and telecommunication ductbanks within the recommended utility easements would be sized based on an additional 50 percent ductbank spare capacity in order to provide opportunity for future growth and flexibility (URS/LAD 2009).

Implementation of BMPs and sustainable design techniques and the use of onsite renewable energy and green power would limit adverse impacts on the electrical system (see **Section 4.9.6**).

As stated in **Section 2.2.3.1**, part of the Proposed Action includes the construction of emergency generator facilities to ensure a redundant power supply. There are three alternatives for emergency power generation equipment including, (1) stationary internal combustion engines, (2) natural gas-fired combustion turbines, and (3) natural gas-fired microturbines; however, natural gas-fired microturbines are not considered to be a viable alternative because of their high capital cost and the time it takes the microturbines to generate useful power. Therefore, only the impacts from stationary internal combustion engines and natural gas-fired combustion turbines are evaluated in this EIS (see **Section 4.4**).

Natural Gas System

Short- and long-term, minor, adverse impacts on natural gas systems would be expected. The current natural gas capacity is 445,000 ft^3/hr supplied by seven BGE meters. The capacity can be exceeded by 25 percent and its current demand by 300 percent. The existing NSA campus and the new facilities would temporarily be in operation at the same time, until the transition from the existing NSA campus to the new facility was completed. During this time period (5 to 7 years), natural gas demand would temporarily increase, and impacts on the natural gas system would be anticipated to be minor. In addition, there would be a long-term increase in natural gas demand associated with operation of the proposed facilities upon completion of the transition period. The supplier and amount of natural gas required for operation of the proposed facilities has not yet been determined; however, if natural gas would be provided by the existing supplier, the amount of natural gas required would not exceed existing capacity. If natural gas would not be provided by the existing supplier, the significance of the impacts would depend on the available capacity of the supplier. A new gas line connection would be tapped into the existing 8-inch line that runs adjacent to Site M, along O'Brien Road, and would loop Site M-1, Site M-2, the 9800 Area, the South Campus, and the Big 3. Facilities at Site M requiring natural gas would connect to the gas mains in the utility easement (URS/LAD 2009).

Solid Waste

Short- and long-term, minor, adverse impacts would be expected. Any increases in solid wastes associated with the construction phases of the Proposed Action or with operating the existing NSA campus and the new facilities concurrently until the transition from the existing facility to the new facility was completed would be minimal, temporary in nature, and would be disposed of in accordance with relevant Federal, state, and local regulations. Construction materials would be recycled or reused to the greatest extent possible. Construction debris that could not be recycled or reused would be taken off-installation by the general contractor to an approved construction and demolition landfill within the vicinity of the installation. There would be a long-term increase in solid waste due to an increase in personnel at Site M-1; however, all solid waste would be disposed of in accordance with current NSA waste contracts. If the recipient landfill is the King George Landfill, this landfill's available capacity was approximately 88 percent in 2000. Therefore the increase in solid waste associated with the increase in personnel would not be expected to exceed current capacity.

Implementation of BMPs and sustainable design techniques would reduce the amount of solid waste taken offsite and would limit adverse impacts on solid waste management (see **Section 4.9.6**).

Communication System

No adverse impacts would be expected. Modern telecommunications fiber optics and cabling infrastructure would be provided to the proposed facilities at Site M-1. Telecommunication ductbanks would be extended to the new development parcels in the easements established adjacent to new roads. The ductbanks would be sized to handle the system that is needed for new development at Site M-1 and future development at Site M. A revised telecommunications plan for the extension of these systems would be developed after the land uses were approved in conjunction with the design of the new facilities at Site M-1.

Liquid Fuel Supply

Long-term, negligible, direct, adverse impacts from use of liquid fuel would be expected because the amount of liquid fuel stored onsite would increase. Site M would be served by one or more boiler facilities, which would have a required total fuel capacity of approximately 246,000 gallons. Stationary internal combustion engines, powered by diesel fuel, would provide emergency electrical power. The diesel fuel would need to be stored in permanent ASTs. Each AST would be approximately 20,000 gallons in size, and the total diesel fuel storage capacity would be between approximately 440,000 and 480,000 gallons. It is anticipated that any increases in demand on liquid fuel systems would not exceed capacity. The liquid fuel would be transferred, stored, and disposed of in accordance with all applicable Federal and state requirements.

Heating and Cooling System

Long-term, beneficial impacts on heating and cooling capabilities would be expected. The proposed boiler and chiller plants would be modern and energy-efficient, thereby providing heating and cooling to Site M at a reduced energy cost. It is assumed that boilers would be rated up to 98 million British thermal units per hour. The proposed chiller plant would consist of a closed-loop system with evaporative loss at a rate to be determined as design progresses. The proposed boiler and chiller plants would be constructed in the northeastern portion of Site M-1 to serve the proposed facilities at Site M.

Pavements

Long-term, minor to moderate impacts would be expected. The parking demand requirement generated by each facility would be based on the number of employees that the facility could house. Parking would be provided to meet 92 percent of the maximum demand for each facility (i.e., 9 parking spaces for every 10 employees that could normally be expected to occupy each facility). This proportion would allow for 1 in 10 employees to be out sick, on travel, ride share, or use an alternate form of transportation each day. It also anticipates that some employees might be absent in the morning while others leave early in the afternoon. Portions of the total parking provided would be designated for visitors and for handicapped employees and visitors. A row of parking garages would be constructed along the northern side of Road B. The parking garages would provide 85 percent of the parking required for the proposed facilities. The remaining 15 percent of the parking would be in surface parking lots in front of the facilities along the ceremonial road. Each parking garage would accommodate approximately 422 parked vehicles on each of the five levels (2,110 parking spaces total). The lower level of the parking garage would be at the ground surface and perimeter walls, and all levels would be sufficiently open to allow ample daylight and airflow throughout the garage (URS/LAD 2009).

The sidewalk system would be expanded to provide a continuous safe and comfortable pedestrian experience between the proposed facilities and parking areas. Crosswalks would be constructed at major pedestrian crossings of roadways. Vehicular/pedestrian conflicts would be addressed by constructing bridges over the roadways between garages and the proposed facilities at Site M. The walkways and cross walks would be designed to comply with the provisions of the American with Disabilities Act (URS/LAD 2009).

Implementation of BMPs and sustainable design techniques would limit adverse impacts potentially resulting from increased pavements (see **Section 4.9.6**).

4.9.4 Alternative 1: Implement Phases I and II

Under Alternative 1, the NSA would conduct all of the actions described under the Proposed Action (Phase I), and in addition, would implement Phase II, which would include the development of 1.2 million ft^2 of operational administrative facilities.

Alternative 1 would have similar impacts on the sanitary sewer and wastewater system, storm water drainage system, electrical system, natural gas system, communication system, security systems, liquid fuel supply, heating and cooling systems, and pavements as the Proposed Action (see **Section 4.9.3**). Additional impacts are described in the following paragraphs.

Water Supply

Alternative 1 would have similar short- and long-term, adverse impacts on water supply as the Proposed Action (See **Section 4.9.3**). However, long-term, adverse impacts would be slightly greater in magnitude due to increased personnel and subsequent increase in potable water demand.

Upon completion of Alternative 1, a total of approximately 8,000 personnel (6,500 from Phase I and 1,500 from Phase II) would be located at the proposed facilities at Site M. It is assumed that one-third of the 8,000 personnel (approximately 2,667) are already on Fort Meade and the remaining additional personnel (approximately 5,333) would come from positions at other Intelligence Community locations throughout the Baltimore-Washington metropolitan area. Using the per capita water consumption of 75 gpd (Fort Belvoir 2007), the estimated amount of potable water required for the addition of approximately 5,333 personnel would be 400,000 gpd (0.40 mgd). The total estimated long-term increase in potable water demand, including the amount of potable water required for operation of the cooling system for the two service centers (Phase I) and addition of approximately 5,333 personnel would be 1.40 mgd. This estimate would equal 19 percent of the current WTP design capacity and 41 percent of the current WTP production capacity and, therefore, would not be expected result in exceedance of existing capacity.

Implementation of BMPs and sustainable design techniques would reduce the demand on the water supply and limit adverse impacts (see **Section 4.9.6**). As Alternative 1 is implemented, the NSA would continue to maintain compliance with all Federal, state, and local regulations regarding water supply.

Solid Waste

Alternative 1 would have similar short- and long-term, adverse impacts on solid waste as the Proposed Action (see **Section 4.9.3**). However, short-term, adverse impacts would be slightly greater in magnitude due to demolition activities, resulting in additional solid waste generation. Demolition materials would be recycled or reused to the greatest extent possible. Demolition debris that could not be recycled or reused would be taken off-installation by the general contractor to an approved construction and demolition landfill within the vicinity of the installation. Implementation of BMPs and sustainable design techniques would reduce the amount of solid waste taken offsite and would limit adverse impacts on solid waste management (see **Section 4.9.6**).

4.9.5 Alternative 2: Implement Phases I, II, and III

Under Alternative 2, the NSA would conduct all of the actions described under Alternative 1 (Phases I and II), and in addition, would implement Phase III, which would include the development of 2.8 million ft^2 of operational administrative facilities. Upon completion of Alternative 2 (all three phases), the total number of increased personnel at Site M would be 11,000 people and all of Site M (5.8 million ft^2) would be developed.

Alternative 2 would have similar impacts on the storm water drainage system, electrical system, natural gas system, communication system, security systems, liquid fuel supply, heating and cooling systems, pavements, and solid waste as Alternative 1 (see **Section 4.9.4**). Additional impacts are described in the following paragraphs.

Water Supply

Alternative 2 would have similar short- and long-term, adverse impacts on water supply as the Proposed Action (See **Section 4.9.3**). However, long-term, adverse impacts would be slightly greater in magnitude due to increased personnel and subsequent increase in potable water demand.

Upon completion of Alternative 2, a total of approximately 11,000 personnel (6,500 from Phase I, 1,500 from Phase II, and 3,000 from Phase III) would be located at the proposed facilities at Site M. It is assumed that one-third of the 11,000 personnel (approximately 3,667) are already on Fort Meade and the remaining additional personnel (approximately 7,333) would come from positions at other Intelligence Community locations throughout the Baltimore-Washington metropolitan area. Using the per capita water consumption of 75 gpd (Fort Belvoir 2007), the estimated amount of potable water required for the addition of approximately 7,333 personnel would be 550,000 gpd (0.55 mgd). The total estimated long-term increase in potable water demand, including the amount of potable water required for operation of the cooling system for the two service centers (Phase I) and addition of approximately 7,333 personnel would be 1.55 mgd. This estimate would equal 21 percent of the current WTP design capacity and 46 percent of the current WTP production capacity and, therefore, would not be expected result in exceedance of existing capacity.

Implementation of BMPs and sustainable design techniques would reduce the demand on the water supply and limit adverse impacts (see **Section 4.9.6**). As Alternative 2 is implemented, the NSA would continue to maintain compliance with all Federal, state, and local regulations regarding water supply.

Sanitary Sewer and Wastewater System

The 2007 Wastewater Systems Report conducted for Fort Meade considered expansion on Site M totaling 8,400 persons. Upon completion of Alternative 2, approximately 11,000 personnel would be located at the proposed facilities at Site M. It is estimated that one-third of the personnel (approximately 3,667 people) that would staff the new development are already on Fort Meade. The remaining personnel (approximately 7,333 people) would come from positions at other Intelligence Community locations throughout the Baltimore-Washington metropolitan area. If the suggested upgrades to the WWTP discussed in **Section 4.9.3** would not sufficiently increase capacity to support the addition of approximately 7,333 personnel, further upgrades and expansion of the WWTP would be needed to limit major adverse impacts on the sanitary sewer and wastewater system. If the suggested upgrades to the WWTP discussed in **Section 4.9.3** sufficiently increased the capacity to support the addition of approximately 7,333 personnel, Alternative 2 would have long-term, minor, adverse impacts on the sanitary sewer and wastewater system. Implementation of BMPs and sustainable design techniques would further reduce the demand on the sanitary sewer and wastewater system and limit adverse impacts (see **Section 4.9.6**). In addition, a study would be conducted to address insufficient wastewater line capacities.

Solid Waste

Alternative 2 would have similar short- and long-term, adverse impacts on solid waste as the Proposed Action (see **Section 4.9.3**). However, short-term, adverse impacts would be slightly greater in magnitude due to demolition of the golf course clubhouse which would result in additional solid waste generation. Demolition materials would be recycled or reused to the greatest extent possible. Demolition debris that could not be recycled or reused would be taken off-installation by the general contractor to an approved construction and demolition landfill within the vicinity of the installation. Implementation of BMPs and sustainable design techniques would reduce the amount of solid waste taken offsite and would limit adverse impacts on solid waste management (see **Section 4.9.6**).

4.9.6 BMPs and Sustainable Design Techniques

EO 13514, *Federal Leadership In Environmental, Energy, And Economic Performance*, dated October 5, 2009, directs Federal agencies to improve water use efficiency and management; implement high performance sustainable Federal building design, construction, operation and management; and advance regional and local integrated planning by identifying and analyzing impacts from energy usage and alternative energy sources. EO 13514 also directs Federal agencies to prepare and implement a Strategic Sustainability Performance Plan to manage its greenhouse gas emissions, water use, pollution prevention, regional development and transportation planning, sustainable building design and promote sustainability in its acquisition of goods and services. Section 2(g) requires new construction, major renovation, or repair and alteration of buildings to comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*. The CEQ regulations at 40 CFR 1502.16(e) directs agencies to consider the energy requirements and conservation potential of various alternatives and mitigation measures.

Section 503(b) of Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, instructs Federal agencies to conduct their environmental, transportation, and energy-related activities under the law in support of their respective missions in an environmentally, economically, and fiscally sound, integrated, continuously improving, efficient, and sustainable manner. EO 13423 sets goals in energy efficiency, acquisition, renewable energy, toxic chemical reduction, recycling, sustainable buildings, electronics stewardship, fleets, and water conservation (USDOE 2007). Sustainable design measures such as the use of "green" technology (e.g., photovoltaic panels, solar collection, heat recovery systems, wind turbines, green roofs, and habitat-oriented storm water management) would be incorporated where practicable.

The measures detailed in this section are intended to implement these requirements. One mechanism for measuring the sustainability of a proposed project is the Leadership in Energy and Environmental Design (LEED) developed by the Green Buildings Council. The LEED Green Building Rating System is organized into six major credit categories (1) sustainable sites, (2) water efficiency, (3) energy and atmosphere, (4) materials and resources, (5) indoor environmental quality, and (6) innovation and design processes. Most credit categories have both prerequisites and credits. Credits can be pursued to achieve points, and depending on the points a project earns, there are four levels of certification under the LEED Rating System including Certified (lowest level), Silver, Gold and Platinum (highest level). At a minimum sustainability features that can be cost-effectively integrated to meet LEED Green Building

Rating System Silver would be required for the Proposed Action.[3] The LEED credit categories and specific strategies related to those categories regarding infrastructure include the following:

- Sustainable Sites: heat island effect, green roofs, and storm water design
- Water Efficiency: innovative wastewater technologies and water-use reduction
- Energy and Atmosphere: energy-efficient building systems (i.e., centralized heating and cooling systems), onsite renewable energy, and green power
- Materials and Resources: recycled materials and local/regional materials (URS/LAD 2009).

Heat Island Effect. "Heat island" refers to built up areas that have hotter surface and air temperatures than nearby rural areas. Heat island effect occurs when impermeable surfaces such as buildings, roads, and other infrastructure replace open land and vegetation (USEPA 2009a). In order to reduce heat island effect at Site M, a majority of parking areas would be constructed under cover (under buildings, decks, or roofs). In addition, site hardscape would be made of highly reflective materials with a Solar Reflectance Index value of at least 29, which would equate to light colored materials such as gray or white concrete. If use of such materials is not be feasible, the NSA could incorporate open-grid paving systems (pavement that is pervious to water), which contribute to a reduction of the heat island effect and increase storm water infiltration. Heat island effect could also be reduced at Site M by shading paved surfaces with trees, solar panels, or other features. Each area of the development would be evaluated to determine the most appropriate options for reducing heat island effect in non-roof areas (URS/LAD 2009).

Green Roofs. Green roofs are vegetative layers grown on a rooftop that provide shade and remove heat from the air through evapotranspiration, reducing temperatures of the roof surface and surrounding air (USEPA 2009b). Green roofs provide added insulation for buildings, help reduce storm water runoff, improve storm water runoff quality, and minimize heat island effect. The NSA would evaluate the costs and benefits of various roof options, including using roofs for alternative energy generation to minimize impacts potentially resulting from an increase in facilities, storm water runoff, and pavements (URS/LAD 2009).

Storm Water Design. Facilities and associated infrastructure would be designed using a variety of techniques to control the quantity and quality of water being released. Specifically, storm water retention ponds would be developed to capture and filter runoff. Bioswales and rain gardens could be used to help channel runoff and filter water before it is released to ponds offsite. Bioswales are storm water runoff conveyance systems that absorb low flows or carry runoff from heavy rains and snowmelt to storm sewer inlets or surface waters (USDA/NRCS 2007). Rain gardens are small gardens which are designed to withstand the extremes of moisture and concentrations of nutrients, particularly nitrogen and phosphorus that are found in storm water runoff. Rain gardens are ideally sited close to the source of the runoff and serve to slow the storm water as it travels downhill, giving the storm water more time to infiltrate (LIDC 2007). The NSA would evaluate the use of storm water cisterns that would capture storm water runoff and make it available for reuse onsite for irrigation purposes or as a substitute for potable water in toilets, urinals, or process water (URS/LAD 2009).

ESD techniques could be appropriate if opportunities exist to reduce the life-cycle cost of the site's storm water infrastructure. Some examples of ESD strategies include grading to encourage sheet flow and lengthen flow paths; maintaining natural drainage divides to keep flow paths dispersed; disconnecting impervious areas such as pavement and roofs from the storm drain network, allowing runoff to be

[3] The information regarding the LEED Rating System contained in this EIS refers to LEED for New Construction Version 2.2. The LEED Rating System is undergoing a major revision which includes a more stringent rating system, especially in the area of energy efficiency. The strategies that contribute to a LEED Silver rating might be different in the new version.

conveyed over pervious areas instead; preserving the naturally vegetated areas and soil types that slow runoff, filter out pollutants, and facilitate infiltration; directing runoff into or across vegetated areas to help filter runoff and encourage recharge; using rain barrels and cisterns, soil amendments, tree box filters, vegetated buffers, and vegetated roofs (URS/LAD 2009).

Innovative Wastewater Technologies. The NSA would consider the feasibility of innovative wastewater technologies that minimize the discharge of wastewater into sewers. Permitting implications associated with treatment and reuse efforts would need to be assessed (URS/LAD 2009).

Water Use Reduction. The Proposed Action would include low-flow and no-flow water fixtures in buildings, where applicable. This includes low-flow faucets, shower heads, and toilets and no-flow urinals. Incorporation of these technologies will help reduce the overall project demand for water from Fort Meade utility systems and achieve up to three LEED points under the current rating system (URS/LAD 2009). Use of a six- to eight-cycle treatment and gray water are being considered for the server centers' cooling system.

Energy-Efficient Building Systems. The proposed facilities at Site M would be oriented to maximize passive solar heating and daylighting (using the Sun to brighten the interior of a building) to help lower energy costs and reduce lighting needs. To the extent feasible, light shelves would also be used that would shade south-facing windows in summer months while bouncing light into the building. Installing daylight sensors in the proposed facilities could also help reduce energy use by dimming interior lights on sunny days. The implementation of these strategies is dependent on the ability for facilities to incorporate windows and maintain proper security levels. To help further reduce the carbon footprint and reduce energy bills, the Proposed Action would include energy-efficient building systems such as the following:

- Energy-efficient lighting fixtures
- High-efficiency heating, ventilation, and air conditioning systems with variable speed motors, fans, and pumps
- Cogeneration systems that use waste heat from one system/process to power or heat other systems
- Highly insulated and efficient building envelopes
- Centralized heating and cooling systems (URS/LAD 2009).

The NSA would assess the feasibility of incorporating geothermal systems under parking garages and parking lots or as part of storm water retention ponds to further reduce energy demands across the project. The NSA could conduct pilot projects for this type of system under a garage area or parking area to evaluate the utility of the system and the energy savings that could be achieved (URS/LAD 2009).

Onsite Renewable Energy and Green Power. The NSA would consider the feasibility of incorporating renewable energy systems throughout the NSA campus. This would include the installation of photovoltaic systems and solar hot water heaters on rooftops or over parking structures. It could also include the application of integrated solar photovoltaics on building façades. Incorporation of renewable energy onsite would not only help to off-set rising energy bills, it might present opportunities to test and advance new energy technologies and eventually provide energy independence for the facility. The NSA could conduct pilot projects for photovoltaic and wind alternatives to evaluate their effectiveness. Knowledge gained through pilot projects would provide insights into how these green technologies could be incorporated more broadly across the NSA campus and in areas that are scheduled to be demolished. Previously developed areas could be candidates for conversion to alternative energy farms, depending on nearby structures (URS/LAD 2009).

In addition to onsite renewable energy generation, NSA would consider entering into a power purchase agreement with BGE to supply power from renewable or sustainable sources in accordance with EO 13514 and its Strategic Sustainability Performance plan.

Recycled Materials. The proposed facilities would be designed to accommodate recycling programs for the following items at a minimum: paper, cardboard, glass, plastics, and metals. The Proposed Action would incorporate materials with high recycled content. This would help reduce the demand for raw materials. Materials with high recycled content includes steel, ceiling panels, gypsum wallboard, and glass. The exact percentage of these materials would be determined based on the final building designs (URS/LAD 2009).

Local/Regional Materials. Materials used for the Proposed Action would be from local or regional sources (manufactured, harvested, extracted, or processed within 500 miles of the project area). This would encourage local markets and help reduce air pollutants and energy used to transport goods. Common materials that can be found within 500 miles of Site M include carpet, steel, wallboard, and glass. The exact percentage of these materials would be determined based on the final building designs (URS/LAD 2009).

4.10 Hazardous Materials and Wastes

4.10.1 Evaluation Criteria

Effects on hazardous materials or hazardous waste management would be considered adverse if the Proposed Action or proposed alternatives resulted in noncompliance with applicable Federal or state regulations, or increased the amounts generated or procured beyond current waste management procedures and capacities. Effects on the Environmental Restoration Program (ERP) would be considered adverse if the Proposed Action or proposed alternatives disturbed or created contaminated sites resulting in negative effects on human health or the environment, or if the Proposed Action or proposed alternatives made it more difficult or costly to remediate existing contaminated sites. Effects on fuels management would be adverse if the established management policies, procedures, and handling capacities could not accommodate the activities associated with the Proposed Action or proposed alternatives, or if the Proposed Action or proposed alternatives resulted in the disturbance or creation of contaminated sites causing negative effects on human health or the environment. Additional adverse effects include actions that make it more difficult or costly to remediate hazardous waste or petroleum waste sites.

4.10.2 No Action Alternative

The No Action Alternative would result in no change to the existing hazardous materials and waste management conditions. No effects on hazardous materials and waste management would be expected as a result of not implementing the Proposed Action, Alternative 1, or Alternative 2.

4.10.3 Proposed Action (Phase I)

Hazardous Materials and Petroleum Products. Short-term, negligible, adverse effects would be expected during the implementation of the Proposed Action. Construction activities would require the use of certain hazardous materials such as paints, welding gases, solvents, preservatives, and sealants. Additionally, hydraulic fluids, diesel, and gasoline would be used in many of the construction vehicles and other equipment needed for the implementation of the Proposed Action. It is anticipated that the quantities of hazardous materials and petroleum products needed during the construction would be minimal, and their use would be limited to a short duration. No hazardous materials or petroleum products are currently stored within the area of the Proposed Action; therefore, no hazardous materials and petroleum products would need to be removed. No hazardous material or petroleum product releases or contamination has been documented within the area of the Proposed Action. No long-term, direct or indirect effects would be expected because only minimal quantities of hazardous materials and petroleum products would be required following construction (e.g. household cleaners and diesel for emergency generators [see ***Storage Tanks and Oil/Water Separators*** subsection]). All hazardous materials and petroleum products associated with the Proposed Action would be managed in accordance with the NSA's Hazardous Materials Management Program in compliance with Federal and state regulations.

Hazardous and Petroleum Wastes. Short-term, negligible, adverse effects would be expected during the implementation of the Proposed Action. Construction activities would generate minor quantities of hazardous and petroleum wastes; however, these quantities would not be expected to exceed the capacities of existing hazardous and petroleum waste disposal streams at Fort Meade. Contractors would be responsible for the disposal of hazardous and petroleum wastes in accordance with Federal and state laws, as well as the NSA's Hazardous Materials Management Program. No hazardous or petroleum wastes are currently stored within the area of the Proposed Action; therefore, no hazardous or petroleum wastes would need to be removed. No hazardous or petroleum waste disposal areas have been documented within the area of the Proposed Action; however, if any soil containing hazardous or petroleum wastes were discovered during construction activities, the contractor would be required to immediately stop work, report the discovery to the installation, and implement appropriate safety measures. Commencement of field activities would not continue in this area until the issue was investigated and resolved.

No long-term effects would be expected from operation of campus development under this alternative. Following construction, levels of hazardous and petroleum wastes generated in the area of the Proposed Action would be negligible and be disposed of in accordance with DOD, Federal, and state regulations.

Storage Tanks and Oil/Water Separators. Short-term, negligible, adverse effects would be expected during the implementation of the Proposed Action. Temporary ASTs that would store equipment fuel and non-potable water would be installed to support the construction of the Proposed Action. These ASTs would be removed following the completion of construction, and all contractors would utilize proper hazardous materials management practices (e.g. secondary containment) and adhere to the NSA's Hazardous Materials Management Program to prevent and limit releases from the ASTs. No ASTs, USTs, or OWSs are currently within the area of the Proposed Action; therefore, none would need to be removed. No former ASTs or USTs that have leaked have been reported within the area of the Proposed Action; however, in the event that petroleum-contaminated soil is discovered during construction activities, the contractor would be required to immediately stop work, report the discovery to the installation, and implement appropriate safety measures. Commencement of field activities would not continue in this area until the issue was investigated and resolved.

Long-term, negligible effects would be expected. As part of the Proposed Action, between 22 and 24 natural gas-fired combustion turbines or stationary internal combustion engines would be installed to provide emergency electrical power. Natural gas-fired combustion turbines would be powered by natural gas, which would not require the use of ASTs or USTs; however, stationary internal combustion engines would be powered by diesel fuel, which would need to be stored in permanent ASTs at each generator. Each AST would be approximately 20,000 gallons in size, and total diesel fuel storage capacity would be between approximately 440,000 and 480,000 gallons. In addition, Site M would be served by one or more boiler facilities, which would require the use of ASTs that would have a total capacity of approximately 246,000 gallons. No other permanent storage tanks would be installed as part of the Proposed Action.

All permanent storage tanks installed as part of the Proposed Action would be used with appropriate BMPs, such as secondary containment systems, leak detection systems, and alarm systems, and adhere to the NSA's Hazardous Materials Management Program to ensure that contamination from a spill would not occur. If a spill occurs, the installation Spill Prevention Control and Countermeasures Plan outlines the appropriate measures for spill situations.

Asbestos-Containing Materials. No effects would be expected. No current buildings are within the area of the Proposed Action; therefore, no ACMs would be disturbed. U.S. Army policy prohibits the use of ACMs for new construction when asbestos-free substitute materials exist.

Radon. No short-term effects would be expected. Long-term, negligible effects would be expected in the event that indoor radon testing is conducted and indicates that elevated radon concentrations are inside any of the buildings of the Proposed Action. Appropriate mitigation measures, such as installing radon pumps to exhaust vapors outside or installing passive radon systems to lower radon levels, would be required.

Lead-Based Paint. No effects would be expected. No buildings are within this area of the Proposed Action; therefore, no LBP would be disturbed. U.S. Army regulations prohibit the use of LBP in new construction.

Pesticides. No effects would be expected. No pesticides would be mixed, stored, or disposed of during the implementation of the Proposed Action. Future pesticide applications would be conducted in adherence with the NSA Integrated Pest Management Plan. Minor pesticide contamination was noted within the area of the Proposed Action; however, the level of contamination was reported as not significant enough to impact the future use of Site M and would not require remedial action.

Polychlorinated Biphenyls. No effects would be expected. The Proposed Action does not include the use of any PCBs, and no PCB-containing transformers have been noted within the area of the Proposed Action. Any items that contain PCBs would be handled in accordance to U.S. Army policy and the NSA's Hazardous Materials Management Program.

Environmental Restoration Program. Short-term, minor, adverse effects would be expected. Portions of an active IRP Site (FGGM 95) is within the area of the Proposed Action. Sampling investigations at this IRP site are in progress to determine the extent of contamination. Future remedial actions would be conducted as needed based on the results of the ongoing sampling investigations.

Prior to the start of construction activities for the Proposed Action, all appropriate remediation measures would be completed at IRP Site FGGM 95. Remediation measures might involve disturbing contaminated media, disposing of contaminated soil, and treating contaminated groundwater. Because the remediation of the IRP site would expose workers to potential contamination, a health and safety plan would be prepared in accordance with Occupational Safety and Health Administration (OSHA) requirements. Workers performing soil removal activities within the IRP site would be required to have OSHA 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training. In addition to this training, supervisors would be required to have an OSHA Site Supervisor certification.

During construction activities for the Proposed Action, if any soil containing hazardous or petroleum wastes were to be discovered, the contractor would be required to immediately stop work, report the discovery to the installation, and implement appropriate safety measures. Commencement of field activities would not continue in this area until the issue was investigated and resolved. The remediation of FGGM 95 would be a long-term, minor, beneficial effect.

Ordnance. Short-term, minor, adverse and long-term, minor, beneficial impacts on ordnance would be expected. The area of the Proposed Action overlaps a portion of the former mortar range training area of active MMRP Site FGGM-003-R-01. Prior to the start of construction activities, the ongoing remedial investigation for UXO, munitions debris, munitions constituents, and munitions and explosives of concern at FGGM-003-R-01 would be completed and any remediation recommendations from the investigation would be instituted. To date, the remedial investigation has found only practice materials within the area of Proposed Action. As such, the discovery of UXO within the area of the Proposed Action is remote. Should any ordnance be encountered during the construction of the Proposed Action, the contractor would be required to immediately stop work, report the discovery to the installation, and implement appropriate safety measures. All ordnance would be collected and disposed of in accordance with Federal and U.S. Army regulations. Commencement of field activities would not continue in this area until the issue was resolved.

4.10.4 Alternative 1: Implementation of Phase I and II

Impacts on hazardous materials and wastes from construction activities would be similar to those described under the Proposed Action (see **Section 4.10.3**). Short-term, negligible, adverse effects on hazardous materials and petroleum products; hazardous and petroleum wastes; and storage tanks and oil/water separators would be expected during the implementation of Alternative 1. Similar to the Proposed Action, no impacts on ACM, LBP, or PCBs would be expected during the implementation of Alternative 1. Impacts from radon, pesticides, and ordnance would be the same as those described under the Proposed Action.

Impacts on the ERP would be similar to those described for the Proposed Action. Short-term, minor, adverse effects from the active IRP Site (FGGM 95) and long-term, minor, beneficial effects from the remediation of this IRP site would be expected.

The demolition activities of Alternative 1 would not result in any additional impacts on hazardous materials and wastes. There are no hazardous materials, petroleum products, hazardous or petroleum wastes, ACM, radon, LBP, or PCBs in the Alternative 1 area.

4.10.5 Alternative 2: Implementation of Phase I, II, and III

Impacts on hazardous materials and wastes from construction activities would be similar to, but greater than those described under Alternative 1 (see **Section 4.10.4**). Largely similar short-term, negligible, adverse effects on hazardous materials and petroleum products and hazardous and petroleum wastes would be expected. However, unlike the Proposed Action, minimal quantities of hazardous materials and petroleum products and minimal quantities of hazardous and petroleum wastes are currently stored within several buildings at the area of Alternative 2. Hazardous materials and petroleum products and hazardous and petroleum wastes currently within the area of Alternative 2 would be removed prior to the start of demolition and construction activities and in accordance with Federal, state, and U.S. Army policy. The removal of these hazardous materials and petroleum products from the area of Alternative 2 would be a long-term, negligible, beneficial effect.

Short-term, minor, adverse and long-term, minor, beneficial effects on ACM and LBP would be expected. It is anticipated that the demolition of Buildings 8860 and 8880 would generate ACM and LBP wastes. Any ACMs encountered during building demolition and cleanup would be handled in accordance with established U.S. Army policy and the Asbestos Management Program for Fort Meade. Any LBP encountered during the building demolition and cleanup would be handled in accordance with established U.S. Army policy and the Fort Meade Lead Hazard Management Plan. All personnel involved in the demolition of these buildings would be trained to reduce potential exposure to, and release of, asbestos and LBP. The removal of these buildings would be a long-term, minor, beneficial effect.

Impacts on the ERP would be similar to those described for the Proposed Action. Short-term, minor, adverse effects from the active IRP Site (FGGM 95) and long-term, minor, beneficial effects from the remediation of the IRP site would be expected. Impacts on storage tanks and oil/water separators, radon, pesticides, and PCBs would be the same as those described under the Proposed Action.

Impacts on ordnance would be similar to, but greater than those described under the Proposed Action. Unlike the Proposed Action, the area of Alternative 2 includes portions of both the former mortar range training area and the former mortar range of active MMRP Site FGGM-003-R-01. As such, there would be an increased potential for the discovery of ordnance during construction and demolition activities associated with Alternative 2. Similar precautionary measures as discussed under the Proposed Action would be taken prior to and during construction and demolition activities to reduce the potential for the discovery of ordnance.

4.11 Socioeconomics and Environmental Justice

4.11.1 Evaluation Criteria

Socioeconomics. This section addresses the potential for direct and indirect impacts that the Proposed Action could have on local or regional socioeconomics. Impacts on local or regional socioeconomics are evaluated according to their potential to stimulate the economy through the purchase of goods or services and increases in employment. Similarly, impacts are evaluated to determine if overstimulation of the economy (e.g., housing availability is inadequate to accommodate increases in permanently-based workforce) could occur as a result of the Proposed Action.

Environmental Justice. Ethnicity and poverty data are examined for Anne Arundel County District 4 and compared to the ROI and the State of Maryland to determine if a low-income or minority population could be disproportionately affected by the Proposed Action.

4.11.2 No Action Alternative

Under the No Action Alternative, DOD would not develop Site M on a phased, multi-year basis and would not construct and operate approximately 1.8 million ft^2 of administrative facilities. NSA/CSS operations, as well as similar or related operations of other intelligence community agencies would continue at their present locations. The No Action Alternative would not alter the economic climate or the demographics of the area. Therefore, no impacts on socioeconomics or environmental justice would occur.

4.11.3 Proposed Action (Phase I)

Construction of Phase I would be completed by 2015 and include the construction of three office modules, one operations center, two module interconnections, and data center with a total cost estimated at $2.07 billion. To determine the impacts on the local economy an Economic Impact Forecast System (EIFS) was used along with other socioeconomic indicators presented in **Section 3.11**.

The methodology for the EIFS was developed by the DOD in the 1970s to identify and address the regional economic effects of proposed military actions (USACE undated). EIFS provides a standardized system to quantify the effect of military actions and to compare various options or alternatives in a standard, nonarbitrary approach. The EIFS assesses potential effects on four principal indicators of regional economic effect: business volume, employment, personal income, and population. As a "first tier" approximation of effects and their significance, these four indicators have proven very effective.

Assumptions for the impacts section and the EIFS model and are as follows: (1) of the 6,500 personnel, one-third currently work at Fort Meade and the remaining two-thirds would be from a consolidation of DOD employees from other locations in the Baltimore-Washington metropolitan area; (2) average income for civilian employees is $80,425 per the BRAC EIS (USACE Mobile District 2007, DOD 2008b) cost of the Proposed Action totals $5.23 billon, $2.07 billion during Phase I, $1.11 billion during Phase II, and $2.05 billion during Phase III (see **Table 2.2-1**); (3) the ROI is defined as Anne Arundel County, Howard County, Montgomery County, and Prince George's County; (4) those employees being consolidated to Fort Meade would seek housing off installation; (5) all actions would occur within 1 year. These assumptions provide for the maximum impact that would occur as a result of the Fort Meade Campus Development. Impacts on socioeconomics and environmental justice would likely be less as construction would take more than 1 year and some of the workers would not need to relocate as they are already within commuting distance of Fort Meade. It should also be noted that impacts from the development of Site M would stretch into additional counties within the Baltimore Metropolitan Area and the Washington Metropolitan Area, but to a lesser extent than the counties within the defined ROI. Also, estimates from the EIFS model may be overstated due to the procurement of expensive equipment that might be purchased outside of the ROI.

Demographics and Housing Characteristics. Of the 6,500 employees associated with the Proposed Action, the two-thirds who would consolidate to Fort Meade would represent, at worst, a 0.14 percent increase in the population of the ROI. The EIFS model assumes the average family size is 2.49 persons, resulting in a maximum estimated total of 10,789 additional residents within the ROI, or a population increase of 0.34 percent. The number of vacant housing units in the ROI, at 112,395 units, should be adequate to accommodate the additional employees who would require housing. If each of the employees being consolidated to Fort Meade were to require a housing unit the stock of vacant housing units within the ROI would decrease by 6 percent. The decrease of vacant housing units within the five counties and Baltimore City is displayed in **Table 4.11-1**. Anne Arundel, Howard, and Carroll counties would experience the largest depletion of vacant housing stock if considering existing employee commuting trends.

Table 4.11-1. Distribution of Possible Fort Meade Families within the ROI

ROI	Percentage of Workforce	New Families	Increase in New Families	Percent of Vacant Housing Units Needed
ROI	100%	4,333	0.6%	3.9%
Anne Arundel County	39%	1,690	1.3%	14.9%
Howard County	22%	953	1.4%	20.5%
Baltimore County/City	14%	607	0.2%	0.8%
Carroll County	7%	303	0.7%	14.0%
Prince George's County	5%	217	0.1%	1.1%

Source: Friedberg 2009; U.S. Census Bureau 2000, 2007

Note: 13 percent of the workforce lives outside of the ROI.

Those employees who would be consolidated to Fort Meade might currently live within the Baltimore Metropolitan Area or the Washington Metropolitan Area and not require relocation, but to analyze maximum impact it is assumed all consolidated employees would require housing. Also, additional locations outside of the ROI for employees to reside would increase the number of available vacant. The Proposed Action would result in an increased tax base as a result of employees moving to the area. Impacts on the local demographic and housing characteristics would be direct, moderate, long-term, and beneficial on the number of vacant housing units.

Employment Characteristics. According to the EIFS model, development of Phase I at Fort Meade would result in 46,667 additional jobs throughout the region with additional income to employees totaling $2.07 billion (USACE undated). The job total represents both direct and indirect increases in employment. Complete results of the EIFS model can be seen in **Table 4.11-2**. It should be noted that these estimates could be inflated (overstatement of total sales volume and income) due to the procurement of additional expensive items, such as emergency generators, that may be purchased outside of the ROI.

Table 4.11-2. Results from the EIFS Model

	Sales Volume	Income	Employment
Direct	$2,039,321,000	$833,332,800	15,253
Indirect	$7,321,162,000	$1,404,390,000	31,424
Total	**$9,360,483,000**	**$2,237,723,000**	**46,667**

Source: USACE undated

Notes: Assuming 6,500, non-military positions with an average salary of $80,425

Direct and indirect impacts from the construction of the Proposed Action are expected to be major, short- and long-term, and beneficial to the local economy. Beneficial impacts would include construction expenditures for building materials, construction workers' wages and taxes, and purchases of goods and services in the area. Building materials for this project are assumed to be sourced locally when available, as a result direct, moderate to major, short- and long-term beneficial impacts are expected to the building materials industry. Increases to the local construction workforce and industry would result in direct, moderate to major, short-term beneficial impacts.

For this analysis, it is projected that the majority of construction workers and equipment would come from within the ROI. The ROI has a construction workforce representing 6 percent of the ROI's total workforce, see **Table 3.11-3**. As a result of construction, moderate to major, short- and long-term, beneficial impacts are expected to the surrounding economies due to construction related expenditures. In addition, workers are not anticipated to relocate to the area since existing levels of construction workers could accommodate the Proposed Action. Additional job expansion would be expected to occur in manufacturing as a result of the demand for equipment, infrastructure and other materials needed for the Proposed Action. These manufacturing jobs might occur outside of the ROI.

The 6,500 personnel would represent 0.4 percent of the workforce in the ROI. Indirect, long-term, moderate, and beneficial impacts would be expected from the addition of personnel wages and taxes and the purchases of goods and services.

Commercial Real Estate. For analysis of impacts on the commercial real estate market the square footage of leased real estate that would be vacated as a result of the Proposed Action was analyzed. Construction of Phase I would result in 367,800 ft^2 of leased commercial real estate in Anne Arundel County being vacated by NSA as they relocate their operations to Fort Meade. Throughout the entire ROI, 527,800 ft^2 (which includes the 367,800 ft^2 of office space in Anne Arundel County) of leased commercial real would be vacated by NSA as they relocate their operations to Fort Meade.

The 367,800 ft^2 of existing occupied office space in Anne Arundel County would become vacant; therefore, the amount of vacant office space would increase from 20 percent of existing Class A Office Space to 24 percent (see **Figure 4.11-1**). The amount of office space currently under construction or proposed for future properties would not be directly impacted as a result of the Proposed Action although indirect impacts might occur. The increase in vacant office space might result in the average lease price of office real estate throughout Anne Arundel County to decrease as a result of increased supply. The Proposed Action could also cause some developers to defer planned developments if they determine that there is lower demand for Class A office space.

The 527,800 ft^2 of office space within the ROI would become vacant as a result of the Proposed Action. This would increase the amount of vacant Class A Office Space by 1 percent (from 18 to 19 percent) (see **Figure 4.11-2**). The ROI, with its larger amount of existing Class A Office Space would absorb the increase in vacant office space more easily than if all 527,800 ft^2 were to become vacant in Anne Arundel County. As a result developers throughout the ROI might be less likely to delay or postpone new office space projects as the increase in vacant office space would not cause large increases in the vacant inventory of office spaces.

Short-term, moderate, direct and indirect, adverse impacts on the Class A Office Space market would be expected as a result of the Proposed Action. The property-owners from vacant office space would experience a direct impact from the decrease in revenue. The indirect impacts might include decreases in local employee payroll taxes (if the employees relocating to Ft. Meade move to Anne Arundel County from another county), developers being more tentative to develop new properties (if the existing vacancies increase drastically), and office parks and buildings being less desirable (if significant portions of the properties are vacant). Long-term impacts would be less likely as the real estate market fluctuates naturally, returning itself to equilibrium based upon supply and demand.

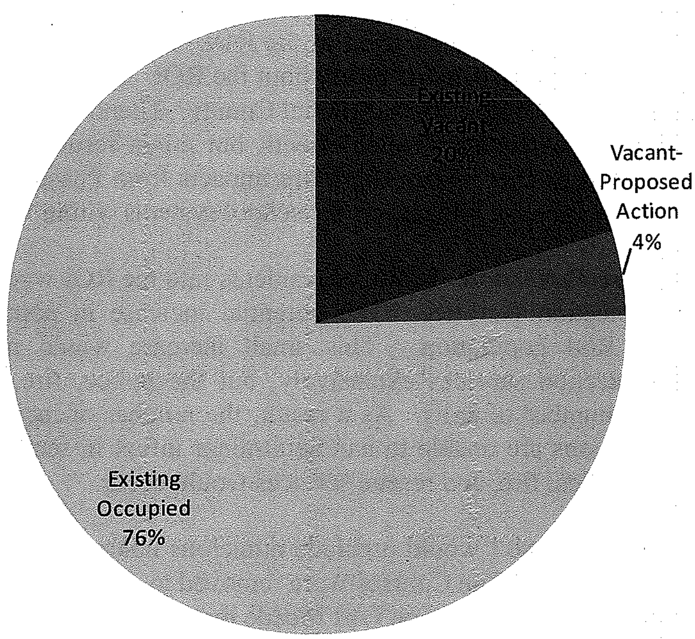


Figure 4.11-1. Potential Vacancy Rate of Anne Arundel County after Completion of Proposed Action

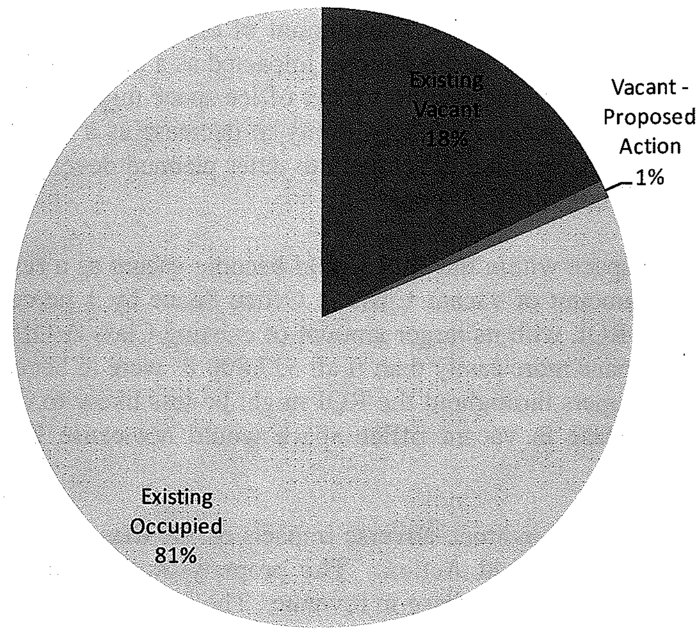


Figure 4.11-2. Potential Vacancy Rate of ROI after Completion of Proposed Action

School Characteristics. According to the EIFS model, an estimated 2,123 school-age children would accompany the consolidated personnel (the EIFS model assumes that 1 spouse and an average of 1/2 child accompany each personnel). These 2,123 additional school-age children represent, at worst, a 0.5 percent increase in the total number of students enrolled in the ROI. A large majority of the personnel already currently reside in and are widely distributed throughout the ROI. In addition, there is available capacity in some local school districts, including Anne Arundel County. Therefore, the increase in students would not be large enough to cause extensive adverse effects, but might result in increased class sizes which would increase the student to teacher ratio. Therefore impacts from Phase I would be expected to result in long-term, indirect, minor, adverse impacts on the school systems within the ROI.

Law Enforcement and Fire Protection. Influx of residents into the ROI would cause impacts on the law enforcement and fire protection facilities. The potential increase in population represents less than 0.5 percent of the total ROI population. This small increase would not strain the existing law enforcement and fire protection services extensively, but the police, fire, and rescue services might receive in increase in the number of calls. As a result, the number of incidents they respond to might increase. If existing operations are unable to handle a minor influx in services indirect, minor, adverse, long-term impacts on the police, fire, and rescue services would occur.

Recreation. Construction of Phase I would preclude numerous holes on the golf course. During BRAC related construction, seven holes of The Courses were removed to allow for construction (USACE Mobile District 2007). Any recreational resources on Fort Meade that are removed as part of the Proposed Action would be replaced. Reduced access to golf facilities on Fort Meade would result in long-term, minor, adverse impacts on golfers' use of the course and other golf-related activities.

Environmental Justice. The Proposed Action would not result in disproportionate impacts on minority or low income populations. Considering the Proposed Action would have beneficial impacts on the socioeconomics of the region, impacts on environmental justice would not be expected.

4.11.4 Alternative 1: Implement Phases I and II

Construction of Alternative 1 would be competed in 2020 and would include all infrastructure under Phase I and an additional 1.2 million ft^2 of administrative operational facilities as part of Phase II. The number of personnel for Phase I and Phase II would total 8,000. Total cost for construction of the additional 1.2 million ft^2 of administrative operational facilities is estimated at an additional $1.11 billion, bringing total investment for Phase I and Phase II to $3.18 billion and 3.0 million ft^2 of total area of building footprints.

Demographics and Housing Characteristics. Alternative 1 would have impacts similar to the Proposed Action on the local demographics and housing characteristics. More personnel would be employed at Fort Meade as a result of Alternative 1. Due to the longer build time of Alternative 1 the additional employees would move to the area over a longer time period. Assuming that one-third of the 8,000 employees are currently located on Fort Meade and two-thirds of the employees would be consolidation from other office locations, there would be approximately 2,666 employees currently on-Installation and approximately 5,334 employees consolidating from other locations. In a worst case scenario all 5,334 employees consolidating onto Fort Meade would need to relocate their residence to the area. These employees would be distributed throughout the ROI similar to current Fort Meade workforce distribution. Distribution of the 5,334 according to **Table 3.11-1** would be as follows: 2,080 employees in Anne Arundel County, 1,173 employees in Howard County, 747 employees in Baltimore City/County, 374 employees in Carroll County, 267 employees in Prince George's County, and 693 employees in other counties. As a result the impacts on the local demographic and housing characteristics would be direct, moderate, long-term, and beneficial.

Employment Characteristics. Alternative 1 would require a greater number of construction workers compared with the Proposed Action, but the total number of construction workers needed would not increase to a level that would outstrip the supply of the ROI. Increases to the local construction workforce and industry would result in direct, moderate to major, short-term beneficial impacts.

School Characteristics. Alternative 1 would result in impacts on the school systems of the ROI being slightly greater than the Proposed Action as more employees would move to the ROI. According to the EIFS model an estimated 2,614 school-age children would accompany the consolidated personnel (the EIFS model assumes that 1 spouse and an average of 1/2 child accompany each personnel). These 2,614 additional school-age children represent, at worst, a 0.6 percent increase in the total number of students enrolled in the ROI. A large majority of the personnel currently reside in and are widely distributed throughout the ROI. Therefore, long-term, indirect, moderate, adverse impacts on the school systems within the ROI would be expected.

Law Enforcement and Fire Protection. Alternative 1 would result in similar impacts on law enforcement and fire protection within the ROI.

Recreation. Long-term, minor, direct, adverse impacts on golf facilities within Fort Meade would be expected as a result of reduced access to golf facilities on Fort Meade under Alternative 1.

Environmental Justice. The Proposed Action would not result in disproportionate impacts on minority or low income populations. Considering the Proposed Action would have beneficial impacts on the socioeconomics of the region, impacts on environmental justice would not be expected.

4.11.5 Alternative 2: Implement Phases I, II, and III

Construction of Alternative 2 would be completed by 2029 and would Phases I, II, and III. Alternative 2 would include an additional 2.8 million ft^2 bringing the total area of building footprints to 5 million ft^2. Personnel under Alternative 2 would total 11,000. Construction of Alternative 2 would result in an additional expenditure of $2.05 billion bringing the total cost of construction for all three Phases to $5.23 billion.

Demographics and Housing Characteristics. Alternative 2 would have impacts similar to the Proposed Action on the local demographics and housing characteristics. More personnel would be located at Fort Meade as a result of Alternative 2. Due to the longer build time of Alternative 2 the additional employees would move to the area over a longer time period. Assuming that one-third of the 11,000 employees are currently located on Fort Meade and two-thirds of the employees would consolidate from other locations, there would be approximately 3,366 employees currently on-installation and approximately 7,334 employees consolidating from other locations. In a worst case scenario all 7,334 employees consolidating onto Fort Meade would need to relocate their residence to the area. These employees would be distributed throughout the ROI similar to current Fort Meade workforce distribution. Distribution of the 7,334 according to **Table 3.11-1** would be as follows: 2,860 employees in Anne Arundel County, 1,163 employees in Howard County, 1,027 employees in Baltimore City/County, 513 employees in Carroll County, 367 employees in Prince George's County, and 1,404 employees in other counties. As a result, the impacts on the local demographic and housing characteristics would be direct, minor, long-term, and beneficial.

Employment Characteristics. Alternative 2 would require a greater number of construction workers compared with the Proposed Action, but the total number of construction workers needed would not increase to a level that would outstrip the supply of the ROI. Increases to the local construction workforce and industry would result in direct, moderate to major, short-term beneficial impacts.

School Characteristics. Alternative 2 would result in impacts on the school systems within the ROI being greater than the impacts under the Proposed Action as more employees would move to the ROI. According to the EIFS model an estimated 3,594 school-age children would accompany the consolidated personnel (the EIFS model assumes that 1 spouse and an average of 1/2 child accompany each personnel). These 3,594 additional school-age children represent, at worst, a 0.8 percent increase in the total number of students enrolled in the ROI. A large majority of the personnel currently reside in and are widely distributed throughout the ROI. Therefore, impacts on the school systems within the ROI would be indirect, moderate, adverse, and long-term.

Law Enforcement and Fire Protection. Alternative 2 would result in similar impacts on law enforcement and fire protection within the ROI.

Recreation. Long-term, minor, direct, adverse impacts on golf facilities within Fort Meade would be expected as a result of reduced access to golf facilities on Fort Meade under Alternative 2.

Environmental Justice. Alternative 2 would not result in disproportionate impacts on minority or low income populations. Considering the Proposed Action would have beneficial impacts on the socioeconomics of the region, impacts on environmental justice would not be expected.

SECTION 5

CUMULATIVE AND OTHER IMPACTS

5. Cumulative and Other Impacts

This cumulative impacts analysis summarizes expected environmental effects for the combined impacts of past, present, and reasonably foreseeable future projects. **Section 2.4** presented projects that are considered temporally or geographically related to the Proposed Action, and, as such, have the potential to result in cumulative impacts. Projects identified for detailed consideration for potential cumulative impacts include the following:

- Construction and operation of various utilities upgrades on the NSA campus, including a utility plant, a generator facility, and a central boiler plant. It is estimated that utilities upgrades would result in the loss of approximately 6 acres of open space (DOD 2009a).
- BRAC actions at Fort Meade, which would include the construction of 3.0 million ft^2 of facility and parking space, the addition of 5,700 people to the Fort Meade workforce, and the loss of approximately 25 acres of forest (USACE Mobile District 2007). The DISA and DMA facilities will be east and south, respectively, of Site M.
- Expansion of the 8900 area west of Site M to include construction of a 24, 244 ft^2 WSOC facility.
- EUL actions at Fort Meade, which could include the construction of office buildings (2 million ft^2 on 173 acres of land), the addition of approximately 10,000 people, and the loss of approximately 205 acres of forested areas (USACE Mobile District 2007).
- Ongoing actions at Midway Common MFH at Fort Meade, which is considered for potential cumulative impacts because this neighborhood is in close proximity Site M.
- Expansion of the DINFOS, which would add approximately 60,273 ft^2 of administrative and teaching space, add approximately 8,000 ft^2 of training space, and renovate approximately 50,630 ft^2 of teaching space (Brundage 2009a).
- Construction of a BGE Substation southwest of MD 32 and southeast of the BW Parkway. The construction of the BGE Substation could result in the removal of forested area on the project site.
- Construction of mixed-use commercial and residential development off of Fort Meade property, including National Business Park, Clarks Hundred, Seven Oaks, Odenton Town Center, and Parkside projects.

This cumulative impacts section presents the resource-specific impacts related to the past, present, and reasonably foreseeable actions identified above.

5.1 Cumulative Impacts Under the Proposed Action

Land Use

The Proposed Action would be consistent with present and foreseeable land uses on Fort Meade and would have minimal potential to combine with other projects, such as utilities upgrades, DISA or DMA construction, or DINFOS expansion, to produce incompatible land uses. Furthermore, the Proposed Action would not be expected to impact surrounding sensitive land uses, such as Midway Common MFH.

Short- to long-term, moderate, adverse, cumulative impacts would be expected from the loss of open space and conversion of forested land. The Proposed Action would result in the loss of 82 acres of open space, BRAC actions would result in the loss of 175 acres of open space (USACE Mobile District 2007), EUL actions would result in the loss of 540 acres, the utilities upgrades would result in the loss of 6 acres of open space (DOD 2009a), and the BGE Substation could result in the loss of as much as 83 acres. Cumulatively, assuming maximum impact, the loss of open space could be as much as 886 acres, or 32 percent of open space on Fort Meade. By far, the largest project on Fort Meade in terms of land area is the EUL project.

Short- to long-term, moderate, adverse, cumulative impacts on recreational land uses would be expected from loss of the golf course. Nine holes of the golf course were lost due to development under BRAC activities, and the Proposed Action is anticipated to result in the loss of the remaining holes on the golf course. As analyzed in the 2007 BRAC/EUL EIS, there are parcels of Fort Meade that are anticipated to be available for future golf course development under the DOD EUL program (USACE Mobile District 2007).

The Proposed Action and BRAC actions would be expected to have long-term, beneficial and adverse, cumulative impacts on surrounding land uses. Construction associated with the Proposed Action and BRAC actions would stimulate changes in land use surrounding Fort Meade. Adverse impacts as a result of this include loss of open space and forested areas as office, retail, and residential areas are constructed. Beneficial impacts include the redevelopment of areas in need of revitalization, such as the Odenton Growth Management Area. Construction activities on land surrounding Fort Meade would indirectly support the Proposed Action and BRAC actions.

Transportation

Short-term, minor, adverse, cumulative impacts on transportation could occur if multiple construction projects were occurring simultaneously. Long-term, major, adverse, cumulative impacts on transportation systems would be expected in the absence of roadway improvements. The analysis of the No Action Alternative in **Section 4.2.5** includes the BRAC, EUL, and DINFOS projects and other regional growth (e.g., National Business Park, Clarks Hundred, Seven Oaks, Odenton Town Center, and Parkside) in the future baseline for traffic impacts. The No Action Alternative and Proposed Action analyses show that major adverse cumulative impacts on roadways as a result of increased personnel. Roadway improvements would be expected to raise LOSs at failing intersections (i.e., LOS E or LOS F) to acceptable levels.

Noise

Implementation of the Proposed Action and other concurrent actions would have short-term, minor, adverse, cumulative impacts on the noise environment during construction activities, particularly construction of DISA and DMA, and expansion of the DINFOS because of their proximity to Site M. Construction noise under the Proposed Action would be expected to have no adverse effects on noise-sensitive receptors outside of the installation boundary, as the construction noise levels would be lower than the estimated ambient noise levels. The northern portion of the Patuxent Research Refuge is adjacent to several noise-generating activities (i.e., Tipton Airport, a small arms range, and MD 32) (see **Section 3.3.2**); therefore, existing ambient levels in this area would be expected to be slightly higher than is typical for a refuge. Pile-driving activities would only be conducted from 8 a.m. to 5 p.m. on weekdays; therefore, negligible effects on the refuge would be expected from pile-driving activities under the Proposed Action.

The Proposed Action would also result in long-term, negligible to minor, adverse, cumulative impacts on the noise environment. The planned utilities upgrades on the NSA campus will result in construction of a new backup power plant and expansion of another backup power plant. Additionally, new facilities, such as DISA, DMA, and the DINFOS expansion, will also likely have emergency power generation capabilities. Cumulative noise from power plants would only occur when more than one power plant is undergoing maintenance or in use for emergency power. These levels would be intermittent, limited in duration, and have little impact on areas outside Fort Meade. The past, current, and reasonably foreseeable noise environment in and around Site M is dominated by traffic noise from the adjacent roadways, which will continue into the future. The change in noise for all noise-sensitive receptors would be minor and not likely distinguishable from future noise environments under the No Action Alternative.

Air Quality

Historically, the heavily populated and urban areas within the northeast corridor of the United States have had more anthropogenic emissions than other areas of the country. These emissions, when combined with the stagnation impact from the coastal weather patterns, lead to higher concentrations of regional air pollutants, which result in the current nonattainment designation. Since 1990, when the CAA came into full force, states (both collectively and individually) have implemented plans (i.e., SIPs) to reduce emissions in a strategic way to meet the NAAQS. Since that time, there has been a steady decrease in both emissions and atmospheric concentrations of air pollutants.

Emissions from the Proposed Action would be cumulative to both past and present emissions. Current regional activities would be the dominant source of emissions. The Proposed Action would have both short- and long-term, negligible, adverse, cumulative impacts on air quality. Impacts on air quality would primarily be due to the use of heavy construction equipment during construction and operational emissions from new boilers and standby generators. Other projects would occur within the region and would produce some measurable amounts of air pollutants. Specifically, BRAC actions at Fort Meade would occur during the same timeframe as the Proposed Action. These actions, as evaluated in the BRAC/EUL EIS, would have minor adverse impacts on air quality resulting primarily from short-term construction activities and long-term increased commuters (USACE Mobile District 2007).

The Proposed Action, utilities upgrades, BRAC actions, EUL actions, DINFOS expansion, BGE substation, and other development activities within the region would have some level of construction-related emissions. The State of Maryland takes into account the impacts of all past, present, and reasonably foreseeable future projects in the region and associated emissions during the development of their SIP. Within the SIP, the State of Maryland has a detailed budget for all sources of air emissions including those from construction. Estimated emissions generated by the Proposed Action would be below *de minimis* levels and not regionally significant. Therefore, these construction-related impacts would contribute negligibly to cumulative short-term impacts on air quality.

In addition to construction emissions, the Proposed Action would introduce new stationary sources of air emissions within the region. Other new stationary sources, such as the backup power plants and central boiler for the NSA utilities upgrades and small boilers and generators for individual facilities associated with BRAC actions, would also produce some measurable amounts of air pollutants. Permitting requirements for the Proposed Action could vary based on the types and sizes of new stationary sources, timing of the projects, and the types of controls ultimately selected. These could differ in specific features from the ones described in this EIS. However, during the final design stage and the permitting process either (1) the actual equipment, controls, or operating limitations would be selected to reduce the PTE below the major source threshold; or (2) the NNSR permitting process would require emission offsets be obtained at a 1 to 1.3 ratio from other previously decommissioned sources within the region. This cap-and-trade-type system is inherent to Federal and state air regulations and leads to a forced reduction in regional emissions. Therefore, long-term impacts from proposed stationary sources associated with the Proposed Action would contribute negligibly to cumulative long-term impacts on air quality.

The Baltimore Regional Transportation Board is responsible for developing conformity demonstrations for transportation plans and programs within this area. This includes all planned transportation projects in the region. The Transportation Improvement Program (TIP) for the Baltimore Region contains a list of all proposed transportation projects to be built in the region. The transportation conformity demonstration for these plans evaluates the ability of the transportation project inventory contained in the TIP, emission controls, and subsequent mobile emissions budget ability to comply with the SIP. Because the Campus Development Project at NSA is not an approved transportation project, transportation conformity is not required. Vehicle emissions were included in the emission estimations and in the general conformity demonstration. It would be necessary for the Metropolitan Planning Organization to include the changes in vehicle patterns for all actions in the region when developing the new TIP.

Geological Resources

No cumulative impacts on geological resources would be expected from construction activities. Direct impacts on topography, geology, and soils from construction are localized to the site that is being developed. Construction sites that are greater than 5,000 ft^2 require development of BMPs, storm water management plans, and erosion- and sediment-control plans to minimize the potential for impacts offsite. Long-term cumulative impacts would occur as a result of the conversion of as much as 880 acres of undeveloped land, which is an irreversible and irretrievable conversion of natural soils to urban land.

Water Resources

Short-term, minor, cumulative, adverse impacts on water resources could occur from all construction activities. Implementation of soil erosion and sedimentation controls and storm water pollution prevention at construction sites would minimize the potential for adverse impacts from individual construction sites and therefore reducing potential cumulative impacts on water resources.

Long-term, minor to moderate, cumulative, adverse impacts on water resources would be expected from the overall increases in impervious surfaces on Fort Meade. The Proposed Action would result in the construction of 1.8 million ft^2 of new facilities and pavements. Additionally, the utilities upgrades would result in an estimated 183,000 ft^2 (DOD 2009a), BRAC actions would result in an estimated 3.0 million ft^2, EUL actions would result in an estimated 2.0 million ft^2 (USACE Mobile District 2007), and the DINFOS expansion would result in 68,273 ft^2 (Brundage 2009b), for a cumulative total of at least 7.0 million ft^2 of new impervious surfaces on Fort Meade. It is unknown what size the BGE substation footprint would be. Off-installation development would also create impervious surfaces. Over the next 5 to 10 years, development activities in National Business Park, Clarks Hundred, Odenton Town Center, and Parkside could result in as much as 8.8 million ft^2 of new residential, retail, and office space (Sernovitz 2009b, McIlroy 2006, and AAEDC undated).

The removal of forest and other vegetation and the subsequent creation of impervious surfaces can increase storm water flows during rain events, introducing contaminants (e.g., oils, fertilizers, pesticides) into surfaces water bodies and possibly worsening downstream flooding if water channels are transporting more water in a shorter period of time. Cumulatively, the Proposed Action and other projects identified would increase impervious surfaces and could exacerbate water quality and flooding problems that are already occurring in the Little Patuxent River and other downstream areas. The cumulative increase in impervious surfaces would be considered a minor contribution in the context of the whole watershed but could be noticeable on a more localized level. Adherence to the ESD as outlined in the *Maryland Stormwater Design Manual* and the updated Supplement No. 1 of the manual would be expected to attenuate potentially long-term, major, adverse impacts on water resources.

Biological Resources

Short- and long-term, direct and indirect, adverse, cumulative impacts would be expected on vegetation and wildlife as a result of the development of currently undeveloped forested sites. The Proposed Action would result in the development of 82 acres. The utilities upgrades will result in the development of 6 acres of forest (DOD 2007a), BRAC actions will result in the development of 25 acres of forest, EUL actions will result in the development of 205 acres of forest (USACE Mobile District 2007), and the BGE substation could result in the development of as much as 83 acres of forest though the actual acreage of forest lost is likely to be much less. It is unknown how many acres of forest will be impacted by off-installation development activities. Development activities could include buildings, parking, sidewalks, or landscaping. Cumulative impacts would include increased segmentation of existing wildlife habitat on and around Fort Meade, increased potential for wildlife mortality associated with collision during construction, a reduction in the quality of wildlife habitat available, and the permanent removal of some vegetative cover. There would remain good habitat available on Fort Meade in Forest Conservation Areas and at the nearby Patuxent Research Refuge.

There is potential for long-term, cumulative impacts on wetlands to occur. Wetland losses in the United States have resulted from draining, dredging, filling, leveling, and flooding for urban, agricultural, and residential development. Construction activities associated with the Proposed Action could result in a potential increase in surface runoff as a result of an increase in impervious surfaces. The BRAC actions, EUL actions, and utilities upgrades also have the potential to result in indirect impacts on wetlands as a result of surface runoff. Implementation of BMPs, storm water management plans, and erosion- and sediment-control plans, as required by Federal and state regulations, would minimize the potential for impacts on wetlands and other surface water bodies.

No cumulative impacts on threatened or endangered species would be expected since they do not occur on Fort Meade.

Cultural Resources

Potentially major, permanent, cumulative impacts on archaeological sites and architectural resources have likely occurred from past construction on and off NSA and Fort Meade property as areas were disturbed for construction activities. No direct impacts on archaeological resources, historic resources, or traditional cultural properties would be expected under the Proposed Action because none have been identified within the APE. No impacts on cultural resources have been identified in association with the utilities upgrades, BRAC actions, EUL actions, MFH construction and renovation activities, DINFOS expansion, the BGE substation, or off-installation development projects. There is a potential cemetery (unconfirmed) on Site M and a known cemetery (Meeks Cemetery) in the vicinity of Midway Common MFH. No cumulative adverse impacts on these cemeteries would be expected, assuming potential graves and cemetery boundaries would be identified and avoided during any ground-disturbing activities.

Infrastructure

The Proposed Action and other projects identified would generally be expected to have short-term, minor, adverse, cumulative impacts resulting from increased demand on utility systems. Short-term impacts associated with construction activities, which would last only during construction and would not be significant.

The BRAC actions, EUL actions, and the DINFOS project would have long-term minor to major impacts on infrastructure systems as the Proposed Action. New buildings and associated increase in personnel would be expected to increase demands on potable water systems, sanitary sewer systems, storm water systems, electrical systems, natural gas systems, solid waste management, communications, security systems, liquid fuel supply, heating and cooling systems, and pavements. Cumulatively, the increased demand on infrastructure systems would likely result in utility systems being serviced, upgraded, and expanded, as needed, to meet increased demands.

Cumulatively, the NSA utilities upgrades (i.e., utility plant, generator facility, and central boiler plant) would result in long-term, moderate, beneficial impacts by upgrading backup electrical and primary heating systems that service the NSA campus. Additionally, the BGE substation could result in long-term, beneficial, cumulative impacts by providing the necessary primary or backup electrical power for the proposed development of Site M. The BGE Substation would also be expected to have long-term, beneficial, cumulative impacts on electrical power supply to Anne Arundel County by providing capacity for growth.

Hazardous Materials and Wastes

No cumulative adverse impacts would be expected as a result of hazardous materials and wastes. Increased amounts of hazardous materials and petroleum products would be used during the construction and operations associated with the Proposed Action. The Proposed Action and all other projects identified for cumulative impacts analysis on Fort Meade would be expected to use hazardous materials and generate hazardous wastes during construction activities, but all uses would be in accordance with existing laws, regulations, and management plans. Hazardous materials, wastes, and petroleum products would be contained and disposed of according to procedures already in place at NSA and Fort Meade.

Socioeconomics and Environmental Justice

The Proposed Action, BRAC actions, and EUL actions would have short- and long-term, major, beneficial, cumulative impacts on socioeconomics. Cumulatively, an additional 22,195 personnel would be relocated to Fort Meade (approximately 6,500 from Proposed Action, 5,695 personnel from BRAC actions, and 10,000 personnel from EUL actions). Other projects considered for cumulative impacts would add negligible personnel and so are not considered further. With an increase of approximately 22,195 personnel within the ROI and Anne Arundel County, there would be an increase in regional economic activity, as well as an increase in demand for housing and local community services (e.g., schools, emergency services). These on-installation projects would also indirectly stimulate the economy through an increase in government contractors moving into the area. The National Business Park and Clarks Hundred office parks are anticipated to provide office space for government contractor tenants (Sernovitz 2009b). The Seven Oaks community is anticipated to provide housing for some of the incoming personnel (Siegel 2008). Future construction for Odenton Town Center and Parkside would also help the area around Fort Meade accommodate the increased population as those areas are developed.

If existing regional resources are strained and population increases occur at a pace that cannot be accommodated by existing infrastructure, there would be a negative socioeconomic impact (i.e., overcrowding). As infrastructure expands to accommodate the increase, this leads to a further increase in construction of schools and hospitals with an increase in associated personnel. An example would be that if more schools need to be built as a result of the increased in personnel, more teachers would need to be hired.

The Proposed Action, BRAC activities, and EUL activities would have short-term, major, direct, beneficial impacts on socioeconomic resources through increased construction labor employment and purchase of related goods and services. Job creation as a result of expanded infrastructure and an increase in the demand for social services would have a long-term, beneficial socioeconomic impact. The overall economic impact would be beneficial because Fort Meade expansion would stimulate more spending within the ROI by both Fort Meade and its employees.

5.2 Comparison of Cumulative Impacts under the Proposed Action and Alternatives

Cumulative impacts under Alternative 1 and Alternative 2 would be similar to those described for the Proposed Action but generally more adverse because there would be more building construction and land disturbance. **Table 5.2-1** provides a summary and brief comparison of cumulative impacts under the Proposed Action and other alternatives.

5.3 Unavoidable Adverse Impacts

The Proposed Action would result in development of land that is currently open space or used as a golf course. Minor adverse impacts on vegetation, wildlife, and storm water would be unavoidable because that habitat would be lost and replaced with impervious surfaces. It is anticipated that potentially adverse impacts on geological resources and water resources (i.e., sedimentation, erosion, storm water runoff, and stream crossing) could be minimized during site design and use of BMPs. Construction and demolition activities also unavoidably generate solid waste.

The Proposed Action would increase stationary (i.e., power plant) and mobile (i.e., automobiles) sources of noise and air emissions. Increased automobiles also increase pressure on already stressed transportation networks. These are also unavoidable adverse impacts, though traffic congestion can be reduced through roadway improvements.

5.4 Relationship Between Short-Term Uses and Long-Term Productivity

Short-term uses of the biophysical components of the human environment include direct impacts, usually related to construction activities, that occur over a period of less than 5 years. Long-term uses of the human environment include those impacts that occur over a period of more than 5 years, including permanent resource loss.

This EIS identifies potential short-term adverse impacts on the natural environment as a result of construction activities. These potential adverse impacts include soil erosion, storm water runoff into surface water and wetlands, and removal of vegetation and wildlife habitat. Removal of forest for construction of facilities would be considered an adverse impact on the long-term productivity of forests on Fort Meade.

5.5 Irreversible and Irretrievable Commitments of Resources

An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be reversed or recovered, even after an activity has ended and facilities have been decommissioned. A commitment of resources is related to use or destruction of nonrenewable resources, and the impacts that loss will have on future generations. For example, if Prime Farmland is developed, there would be a permanent loss of agricultural productivity.

Construction and operation of the proposed campus would involve the irreversible and irretrievable commitment of materials, energy, biological resources, landfill space, and human resources. The impacts on these resources would be permanent.

Table 5.2-1. Comparison of Cumulative Impacts under the Proposed Action and Alternatives

Resource Area	Other Actions & Proposed Action (Phase I)	Other Actions & Alternative 1 (Phases I and II)	Other Actions & Alternative 2 (Phases I, II, and III)	Other Actions & No Action Alternative
Land Use	Cumulative land uses would be compatible. Short- to long-term moderate adverse cumulative impacts from loss of 886 acres (32%) of open space on Fort Meade. Short- to long-term moderate adverse cumulative impacts from loss of 18 holes of the golf course.	Impacts similar to but more adverse than Proposed Action. Cumulative loss of 938 acres (34%).	Impacts similar to but more adverse than Proposed Action and Alternative 1. Cumulative loss of 1,125 acres (41%).	No cumulative impacts expected.
Transportation	Short-term minor cumulative adverse impacts during construction. Long-term major adverse impacts (in the absence of roadway improvements) from increased personnel.	Impacts similar to but more adverse than Proposed Action.	Impacts similar to but more adverse than Proposed Action and Alternative 1.	Long-term major adverse impacts (in the absence of roadway improvements) from increased personnel.
Noise	Short-term minor cumulative adverse impacts during construction. Long-term negligible to minor adverse cumulative impacts from operation of power plant.	Impacts similar to but slightly more adverse than Proposed Action.	Impacts similar to but slightly more adverse than Proposed Action and Alternative 1.	No cumulative impacts expected.
Air Quality	Short-term negligible cumulative adverse impacts during construction.	Impacts similar to but slightly more adverse than Proposed Action.	Impacts similar to but slightly more adverse than Proposed Action and Alternative 1.	No cumulative impacts expected.

Resource Area	Other Actions & Proposed Action (Phase I)	Other Actions & Alternative 1 (Phases I and II)	Other Actions & Alternative 2 (Phases I, II, and III)	Other Actions & No Action Alternative
Geological Resources	Long-term adverse cumulative impact from permanent conversion of 886 acres of natural soil to urban land.	Impacts similar to but more adverse than Proposed Action. Cumulative loss of 938 acres of natural soil to urban land.	Impacts similar to but more adverse than Proposed Action and Alternative 1. Cumulative loss of 1,125 acres of natural soil to urban land.	No cumulative impacts expected.
Water Resources	Short-term minor cumulative adverse impacts during construction. Long-term minor to moderate adverse cumulative impacts from 6.9 million ft^2 increase in impervious surfaces.	Impacts similar to but slightly more adverse than Proposed Action.	Impacts similar to but slightly more adverse than Proposed Action and Alternative 1.	No cumulative impacts expected.
Biological Resources	Short-term minor adverse cumulative impacts during construction. Long-term minor adverse cumulative impacts resulting from loss of vegetation and wildlife habitat. Potential long-term minor adverse cumulative impacts on wetlands.	Impacts similar to but slightly more adverse than Proposed Action.	Impacts similar to but slightly more adverse than Proposed Action and Alternative 1.	No cumulative impacts expected.

Resource Area	Other Actions & Proposed Action (Phase I)	Other Actions & Alternative 1 (Phases I and II)	Other Actions & Alternative 2 (Phases I, II, and III)	Other Actions & No Action Alternative
Cultural Resources	Previous development has likely significantly impacted archaeological and architectural resources. No additional cumulative impacts identified. Identification and avoidance of cemeteries is necessary to avoid impacts (i.e., potential cemetery on Site M, Meeks Cemetery).	Impacts similar to Proposed Action. Identification and avoidance of cemeteries is necessary to avoid impacts (i.e., potential cemetery on Site M, Meeks Cemetery).	Impacts similar to Proposed Action and Alternative 1. Identification and avoidance of cemeteries is necessary to avoid impacts (i.e., potential cemetery on Site M, Meeks Cemetery, potential cemetery on Site M-2, Downs Cemetery).	No cumulative impacts expected.
Infrastructure	Short-term minor cumulative adverse impacts during construction. Long-term negligible to minor adverse cumulative impacts as a result of increased use of utilities and infrastructure. Long-term minor beneficial impacts on water supply as a result of decreased irrigation for the golf course. Long-term moderate beneficial cumulative impacts as a result of upgraded infrastructure systems.	Impacts similar to but slightly more adverse than Proposed Action.	Impacts similar to but slightly more adverse than Proposed Action and Alternative 1. Long-term adverse cumulative impacts on the wastewater system could occur if planned upgrades are insufficient for installation population.	No cumulative impacts expected.
Hazardous Materials and Wastes	No cumulative impacts expected.	No cumulative impacts expected.	Long-term minor beneficial cumulative impacts could occur if contaminated sites, such as on Site M-2, are remediated.	No cumulative impacts expected.

Resource Area	Other Actions & Proposed Action (Phase I)	Other Actions & Alternative 1 (Phases I and II)	Other Actions & Alternative 2 (Phases I, II, and III)	Other Actions & No Action Alternative
Socioeconomics and Environmental Justice	Short-term major beneficial cumulative impacts from construction expenditures. Long-term major beneficial cumulative impacts from additional 22,195 people in Fort Meade area. Long-term minor adverse cumulative impacts on school from increased class sizes.	Impacts similar to but slightly more intense than Proposed Action.	Impacts similar to but slightly more intense than Proposed Action and Alternative 1. Cumulative population increase is estimated at 26,695.	No cumulative impacts expected.

Materials. Material resources irretrievably used for the Proposed Action include steel, concrete, and other building materials. Such materials are not in short supply and would not be expected to limit other unrelated construction activities. The irretrievable use of material resources would not be considered significant. The preferential use of recycled building materials would reduce the overall amount of materials used for building construction.

Energy. Energy resources used for the Proposed Action would be irretrievably lost. These include fossil fuels (e.g., gasoline, diesel, natural gas, No. 2 fuel oil) and electricity. During construction, gasoline and diesel fuel would be used for the operation of construction vehicles and equipment. Long-term operation of new facilities would use electricity generated by combusting fossil fuels, both for primary and backup power. Overall, consumption of energy resources would not place a significant demand on their availability in the region. Therefore, no major impacts would be expected.

Biological Resources. The Proposed Action would result in some irretrievable loss of vegetation and wildlife habitat. The loss of vegetation would remove potential wildlife habitat and could degrade some remaining scenic and natural qualities of Fort Meade. This result would be a permanent loss or conversion of decreasing open spaces.

Landfill Space. The generation of construction and demolition debris and subsequent disposal of that debris in a landfill would be an irretrievable adverse impact. Construction contractors would be expected to recycle at least 40 percent of the debris that is generated. If a greater percentage is recycled, then irretrievable impacts on landfills would be reduced. There are numerous rubble landfills and construction and demolition processing facilities that could handle the waste generated. However, any waste that is generated by the Proposed Action that is disposed of in a landfill would be considered an irretrievable loss of that landfill space.

Human Resources. The use of human resources for construction 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 represents employment opportunities and is considered beneficial.

SECTION 6

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B.A. Communications
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Geological Resources
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B.A. Political Science
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Description of the Proposed Action and Alternatives
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Cumulative Impacts
B.S. Environmental Science
Years of Experience: 7

SECTION 7

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APPENDIX A

APPLICABLE LAWS, REGULATIONS, POLICIES, AND PLANNING CRITERIA

Appendix A

Applicable Laws, Regulations, Policies, and Planning Criteria

When considering the affected environment, 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) and Army Regulations (AR) to be considered when preparing Environmental Assessments (EAs) and Environmental Impact Statements (EISs). These laws are summarized below. NEPA (42 United States Code [U.S.C.] Section 4321–4347) is a Federal statute requiring the identification and analysis of potential environmental effects 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.

The U.S. Army's implementing regulation for NEPA is 32 CFR Part 651, *Environmental Analysis of Army Actions*. Army Regulation (AR) 200-1, *Environmental Protection and Enhancement*, states that the U.S. Army will comply with applicable Federal, state, and local environmental laws and regulations, including NEPA. AR 200-1 addresses environmental responsibilities of all Army organizations and agencies and covers environmental protection and enhancement and provides the framework for the Army Environmental Management System. This regulation implements Federal, state, and local environmental laws and DOD policies for preserving, protecting, conserving, and restoring the quality of the environment. This regulation is used in conjunction with 32 Code of Federal Regulations (CFR) Part 651 (32 CFR 651), which provides Army policy on NEPA requirements (42 USC 4321–4347), and supplemental program guidance, which the proponent of this regulation may issue as needed to assure that programs remain current.

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.

Land Use

The term "land use" refers to real property classifications that indicate either natural conditions or the types of human activities occurring on a defined parcel of land. In many cases, land use descriptions are codified in local zoning laws. However, there is no nationally recognized convention or uniform terminology for describing land use categories. The U.S. Army uses the 12 land use types for installation land use planning, and these land use types roughly parallel those employed by municipalities in the civilian sector.

Noise

Federal and local governments have established noise guidelines and regulations for the purpose of protecting citizens from potential hearing damage and from various other adverse physiological, psychological, and social effects associated with noise. The U.S. Department of Housing and Urban Development (HUD), in coordination with the Department of Defense (DOD) and the FAA, has established criteria for acceptable noise levels for aircraft operations relative to various types of land use. The U.S. Army, through AR 200-1, *Environmental Protection and Enhancement*, implements Federal laws concerning environmental noise form U.S. Army activities.

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 (NAAQS) 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 USEPA as being in attainment or nonattainment for pollutants in relation to their compliance with NAAQS. Geographic regions established for air quality planning purposes are designated as Air Quality Control Regions (AQCRs). 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 may 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.

Human Health and Safety

The Federal Occupational Safety and Health Administration (OSHA) (29 USC 651) was passed in 1970 to ensure worker and workplace safety. Employers are to provide a workplace free of safety and health hazards, such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions. This is done through establishing safety standards, inspections, training, and providing educational materials.

The AR 385-10, *The Army Safety Program*, implements OSHA requirements through prescribing policy, responsibilities, and procedures to protect and preserve Army personnel and property against accidental loss. It provides for safe and healthful workplaces, procedures, and equipment critical to Army operations and 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 is described as 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, and deep or thick effective rooting zones, and that 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 USEPA issued a Final Rule for the CWA concerning technology-based Effluent Limitations Guidelines and New Source Performance Standards for the Construction and Development point source category. All NPDES storm water permits issued by the USEPA or states must incorporate requirements established in the Final Rule. As of February 1, 2010, all new construction sites are required to meet the non-numeric effluent limitations and design, install, and maintain effective erosion and sedimentation controls. In addition, construction site owners and operators that disturb 1 or more acres of land are required to use best management practices (BMPs) to ensure that soil disturbed during construction activities does not pollute nearby water bodies. Effective August 1, 2011, construction activities disturbing 20 or more acres must comply with the numeric effluent limitation for turbidity in addition to the non-numeric effluent limitations. The maximum daily turbidity limitation is 280 nephelometric turbidity units (ntu). On February 2, 2014, construction site owners and operators that disturb 10 or more acres of land are required to monitor discharges to ensure compliance with effluent limitations as specified by the permitting authority. Construction site owners are encouraged to phase ground-disturbing activities to limit the applicability of the monitoring requirements and the turbidity limitation. The USEPA's limitations are based on its assessment of what specific technologies can reliably achieve. Permittees can select management practices or technologies that are best suited for site-specific conditions.

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.

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (October 5, 2009), directed the USEPA to issue guidance on Section 438 of the Energy Independence and Security Act (EISA). The EISA establishes into law new storm water design requirements for Federal construction projects that disturb a footprint of greater than 5,000 square feet of land. Under these requirements, predevelopment site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. Predevelopment hydrology would be calculated and site design would incorporate storm water retention and reuse technologies to the maximum extent technically feasible. Post-construction analyses will be conducted to evaluate the effectiveness of the as-built storm water reduction features. These regulations are applicable to DOD Unified Facilities Criteria. Additional guidance is provided in the USEPA's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act.*

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 insure 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 threatened or endangered, and the U.S. Fish and Wildlife Service (USFWS) maintain 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's Fish and Wildlife office. Some species also have laws specifically for their protection (e.g., Bald Eagle Protection Act).

The Migratory Bird Treaty Act (MBTA) of 1918, amended in 1936, 1960, 1968, 1969, 1974, 1978, 1986, and 1989, 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 sell, barter, purchase, or 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 13112, *Invasive Species* states that Federal Agencies subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to: (i) prevent the introduction of invasive species; (ii) detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; (iii) monitor invasive species populations accurately and reliably; (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded; (v) conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species; and (vi) promote public education on invasive species and the means to address them. Furthermore the EO directs Agencies not to authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

EO 13186, *Conservation of Migratory Birds* (January 10, 2001) creates a more comprehensive strategy for the conservation of migratory birds by the Federal government. The EO provides a specific framework for the Federal government's compliance with its treaty obligations to Canada, Mexico, Russia, and Japan. The EO provides broad guidelines on conservation responsibilities and requires the development of more detailed guidance in a Memorandum of Understanding (MOU). The EO will be coordinated and implemented by the USFWS. The MOU will outline how Federal agencies will promote conservation of migratory birds. The EO 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 and cultural rights and practices of Native Americans. These evaluations must be made in consultation with native traditional religious leaders.

The Archaeological Resource Protection Act (ARPA) of 1979 protects archaeological resources on public and Indian lands. It provides felony-level penalties for the unauthorized excavation, removal, damage, alteration, or defacement of any archaeological resource, defined as material remains of past human life or activities which are at least 100 years old. Before archaeological 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 archaeological resources between governmental agencies, the professional archaeological 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 Office (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 NHPA 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 of 1990 establishes rights of 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 first the property of lineal descendants if they can be determined, and second, the tribe owning the land where the items were discovered, of 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 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 Indian religious practitioners' access to and ceremonial use of 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 13175, *Consultation and Coordination with Indian Tribal Governments* (November 6, 2000), was issued to provide for regular and meaningful consultation and collaboration with Native American tribal officials in the development of Federal policies that have tribal implications, and to strengthen the United States government-to-government relationships with Native American tribes. EO 13175 recognizes the following fundamental principles: Native American tribes exercise inherent sovereignty over their lands and members, the United States government has a unique trust relationship with Native American tribes and deals with them on a government-to-government basis, and Native American tribes have the right to self-government and self-determination.

EO 13287, *Preserve America* (March 3, 2003), orders the Federal Government 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. The EO 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 adverse human health and/or environmental effects their activities have on minority and low-income populations, and develop agency-wide 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 this EO lies with each Federal agency.

Infrastructure

EO 13514, *Federal Leadership In Environmental, Energy, And Economic Performance*, directs Federal agencies to improve water use efficiency and management; implement high performance sustainable Federal building design, construction, operation and management; and advance regional and local integrated planning by identifying and analyzing impacts from energy usage and alternative energy sources. EO 13514 also directs Federal agencies to prepare and implement a Strategic Sustainability Performance Plan to manage its greenhouse gas emissions, water use, pollution prevention, regional development and transportation planning, sustainable building design and promote sustainability in its acquisition of goods and services.

Hazardous Materials and Waste

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 authorize USEPA to respond to spills and other releases of hazardous substances to the environment, and authorize 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 bio-based, 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 authorize 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. EO 12856 requires Federal agencies to comply with the provisions of EPCRA. If a Federal agency acquires a contaminated site it can be held liable for the 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 may claim the "innocent purchaser" defense under CERCLA. According to Title 42 U.S. Code (U.S.C.) 9601(35), to use this defense, the current owner/operator must show that 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.

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. TSCA and its regulations govern the manufacture, processing, distribution, use, marking, storage, disposal, cleanup, and release reporting requirements for numerous chemicals like PCBs. 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 can cause adverse health effects in humans. 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 U.S. buildings 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.

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APPENDIX B

PUBLIC SCOPING

November 2009. Executive Order 12372 (Intergovernmental Review of Federal Programs). Proposals under this program are not subject to Executive Order 12372.

Executive Order 13132 (Federalism). This notice does not contain policies with Federalism implications as defined in Executive Order 13132.

Executive Order 12866 (Regulatory Planning and Review). This notice is not a significant regulatory action under Sections 3(f)(3) and 3(f)(4) of Executive Order 12866, as it does not materially alter the budgetary impact of a grant program and does not raise novel policy issues. This notice is not an "economically significant" regulatory action under Section 3(f)(1) of the Executive Order, as it does not have an effect on the economy of $100 million or more in any one year, and it does not have a material adverse effect on the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities.

Administrative Procedure Act and Regulatory Flexibility Act. Prior notice and comment are not required under 5 U.S.C. 553, or any other law, for rules relating to public property, loans, grants, benefits or contracts (5 U.S.C. 553(a)). Because prior notice and an opportunity for public comment are not required pursuant to 5 U.S.C. 553 or any other law, the analytical requirements of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) are inapplicable. Therefore, a regulatory flexibility analysis is not required and has not been prepared.

Dated: June 29, 2009.

Patrick Gallagher,

Deputy Director.

[FR Doc. E9–15816 Filed 7–1–09; 8:45 am]

BILLING CODE 3510–13–P

COMMISSION OF FINE ARTS

Notice of Meeting

The next meeting of the U.S. Commission of Fine Arts is scheduled for 16 July 2009, at 10 a.m. in the Commission offices at the National Building Museum, Suite 312, Judiciary Square, 401 F Street, NW., Washington, DC 20001–2728. Items of discussion may include buildings, parks and memorials.

Draft agendas and additional information regarding the Commission are available on our Web site: *http://www.cfa.gov.* Inquiries regarding the agenda and requests to submit written or oral statements should be addressed to Thomas Luebke, Secretary, U.S. Commission of Fine Arts, at the above address or call 202–504–2200. Individuals requiring sign language interpretation for the hearing impaired should contact the Secretary at least 10 days before the meeting date.

Dated 26 June 2009 in Washington, DC.

Thomas Luebke,

Secretary.

[FR Doc. E9–15634 Filed 7–1–09; 8:45 am]

BILLING CODE 6330–01–M

DEPARTMENT OF DEFENSE

Office of the Secretary

Intent To Prepare an Environmental Impact Statement for Campus Development Project Within the Fort Meade Complex, MD

AGENCY: Department of Defense.

ACTION: Notice of intent; notice of public meeting; request for comments.

SUMMARY: The Department of Defense (DOD) announces its intent to prepare an Environmental Impact Statement (EIS) as part of the environmental planning process for a Campus Development Project at Fort George G. Meade, Maryland (hereafter referred to as Fort Meade). The DOD proposes the development of a portion of Fort Meade (referred to as "Site M") as an operational complex and to construct and operate consolidated facilities to meet the National Security Agency's (NSA) continually evolving requirements and for Intelligence Community use. The purpose of the Proposed Action is to provide facilities that are fully-supportive of the Intelligence Community's mission. The need for the action is to consolidate multiple agencies' efforts to ensure capabilities for current and future mission accomplishments as directed by Congress and the President.

Publication of this notice begins a scoping process that identifies and determines the scope of environmental issues to be addressed in the EIS. This notice requests public participation in the scoping process and provides information on how to participate.

DATES: There will be an open house at 4 p.m. followed by a scoping meeting from 5 p.m. to 7 p.m. on Tuesday, July 21, 2009, at Fort Meade Middle School, 1103 26th Street, Fort Meade, Maryland 20755. Comments or questions regarding this EIS should be submitted by 45 days from the date of publication in the **Federal Register** to ensure sufficient time to consider public input in the preparation of the Draft EIS.

ADDRESSES: The open house and scoping meeting will be held at the Fort Meade Middle School, 1103 26th Street, Fort Meade, Maryland 20755. Oral and written comments will be accepted at the scoping meeting. You can also submit written comments to "Campus Development EIS" c/o E2M, 2751 Prosperity Avenue, Suite 200, Fairfax, VA 22031 or submitted by e-mail to *CampusEIS@e2m.net.*

FOR FURTHER INFORMATION CONTACT: Mr. Jeffrey Williams at (301) 688–2970, or e-mail *jdwill2@nsa.gov.*

SUPPLEMENTARY INFORMATION:

Background: The NSA is a tenant DOD agency on Fort Meade. NSA is a high-technology organization that is on the frontier of communications and data processing. In order to meet mission growth requirements as well as provide consolidated facilities that are fully-supportive of the Intelligence Community's mission, development of a modern operational complex is needed at the NSA campus on Fort Meade.

Proposed Action and Alternatives: The Campus Development Project was initiated to provide a modern operational complex to meet the growth requirements of NSA and consolidated facilities for Intelligence Community use. Development is proposed for a portion of Fort Meade (referred to as "Site M") adjacent to the NSA campus. Site M is divided into northern (Site M1, 137 acres) and southern (Site M2, 99 acres) portions. DOD proposes that development of Site M occur in three option phases over a horizon of approximately 20 years.

- *Phase I.* Development would occur in the near term on the western half of Site M1, supporting 1.8 million square feet of facilities for NSA to consolidate mission elements, enabling services, and support services across the campus based on function; servicing the need for more collaborative environment and optimal adjacencies, including associated infrastructure (*e.g.,* electrical substation and generator plants providing 60 megawatts of electricity) and administrative functions for up to 6,500 personnel.
- *Phase II.* Development would occur in the mid-term on the eastern half of Site M1, supporting 1.2 million square feet of administrative facilities.
- *Phase III.* Development would occur on Site M2 in the long term, supporting an additional 2.8 million square feet of administrative facilities, bringing built space to 5.8 million square feet for up to 11,000 personnel.

Alternatives identified include each of the development phases identified above, as well as three options for redundant emergency backup power generation and various pollution control systems. These alternatives will be further developed during preparation of the Draft EIS as a result of public and agency input and environmental analyses of the activities. The No Action Alternative (not undertaking the Campus Development Project) will also be analyzed in detail.

This notice of intent is required by 40 Code of Federal Regulations (CFR) 1508.22 and briefly describes the proposed action and possible alternatives and our proposed scoping process. The EIS will comply with the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality regulations in 40 CFR parts 1500–1508, and DOD Instruction 4715.9 (Environmental Planning and Analysis).

Significant Issues: Environmental issues to be analyzed in the EIS will include potential impacts on air quality, natural resources, water use, solid waste, transportation, and cumulative impacts from increased burdens to the installation and neighboring community based on projected growth.

Scoping Process: Public scoping is an early and open process for identifying and determining the scope of issues to be addressed in the EIS. Scoping begins with this notice, continues through the public comment period (see **DATES**), and ends when the DOD has completed the following actions:

—Invites the participation of Federal, State, and local agencies, any affected Indian tribe and other interested persons
—Determines the actions, alternatives, and impacts described in 40 CFR 1508.25
—Identifies and eliminates from detailed study those issues that are not significant or that have been covered elsewhere
—Indicates any related environmental assessments or environmental impact statements that are not part of the EIS
—Other relevant environmental review and consultation requirements
—Indicates the relationship between timing of the environmental review and other aspects of the proposed program
—At its discretion, exercises the options provided in 40 CFR 1501.7(b).

Once the scoping process is complete, the DOD will prepare a Draft EIS, and will publish a **Federal Register** notice announcing its public availability. If you want that notice to be sent to you, please contact the DOD Project Office point of contact identified in **FOR FURTHER INFORMATION CONTACT**. You will have an opportunity to review and comment on the Draft EIS. Additionally, the DOD anticipates holding a public meeting after publication of the Draft EIS in the vicinity of Fort Meade, Maryland to present the Draft EIS and receive public comments regarding the document. The DOD will consider all comments received and then prepare the Final EIS. As with the Draft EIS, the DOD will announce the availability of the Final EIS and once again give you an opportunity for review and comment.

Dated: June 29, 2009.

Morgan E. Frazier,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. E9–15621 Filed 7–1–09; 8:45 am]

BILLING CODE 5001–06–P

DEPARTMENT OF DEFENSE

Office of the Secretary

[Docket ID: DOD–2009–OS–0092]

Privacy Act of 1974; Systems of Records

AGENCY: Defense Finance and Accounting Service, DoD.

ACTION: Notice to Add a New System of Records.

SUMMARY: The Defense Finance and Accounting Service (DFAS) is proposing to add a system of records notice to its inventory of record systems subject to the Privacy Act of 1974, (5 U.S.C. 552a), as amended.

DATES: This Action will be effective without further notice on August 3, 2009 unless comments are received that would result in a contrary determination.

ADDRESSES: Send comments to the FOIA/PA Program Manager, Corporate Communications, Defense Finance and Accounting Service, 8899 East 56th Street, Indianapolis, IN 46249–0150.

FOR FURTHER INFORMATION CONTACT: Ms. Linda Krabbenhoft at (720) 242–6631.

SUPPLEMENTARY INFORMATION: The Defense Finance and Accounting Service notices for systems of records subject to the Privacy Act of 1974 (5 U.S.C. 552a), as amended, have been published in the **Federal Register** and are available from the address above.

The proposed system report, as required by 5 U.S.C. 552a(r) of the Privacy Act of 1974, as amended, was submitted on June 29, 2009, to the House Committee on Government Reform, the Senate Committee on Governmental Affairs, and the Office of Management and Budget (OMB) pursuant to paragraph 4c of Appendix I to OMB Circular No. A–130, 'Federal Agency Responsibilities for Maintaining Records About Individuals,' dated December 12, 2000, 65 FR 239.

Dated: June 29, 2009.

Morgan E. Frazier,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

T7205a

SYSTEM NAME:

Defense Business Management System (DBMS).

SYSTEM LOCATION:

Defense Information Systems Agency (DISA), Defense Enterprise Computing Center (DECC)—Ogden; 7879 Wardleigh Road; Bldg 891, Hill Air Force Base, UT 84056–5997.

CATEGORIES OF INDIVIDUALS COVERED BY THE SYSTEM:

DoD civilian employees who are paid with Operations & Maintenance (O&M) or Working Capital Funds by the Defense Finance and Accounting Service.

CATEGORIES OF RECORDS IN THE SYSTEM:

Individual's name, address, telephone number, Social Security Number (SSN), appropriation, accounting, reimbursable billing, cost accounting, job order accounting data, and financial reports.

AUTHORITY FOR MAINTENANCE OF THE SYSTEM:

5 U.S.C. 301, Departmental Regulations; 31 U.S.C. Chapter 35, Accounting & Collection; and E.O. 9397 (SSN).

PURPOSE(S):

The system will provide a means of reporting all costs entering the general ledger; account for appropriated funds; provide a means of reconciling financial records; and for the preparation of most financial reports. Records will be used for extraction or compilation of data and reports for management studies and statistical analyses for use internally or externally as required by Department of Defense (DoD) or other government agencies such as the Department of the Treasury.

ROUTINE USES OF RECORDS MAINTAINED IN THE SYSTEMS INCLUDING CATEGORY'S OF USERS AND THE PURPOSES OF SUCH USES:

In addition to those disclosures generally permitted under 5 U.S.C. 552a(b) of the Privacy Act of 1974, these records contained therein may specifically be disclosed outside the DoD as a routine use pursuant to 5 U.S.C. 552a(b)(3) as follows:

The Department of Treasury for all reporting purposes.

The notice below was published in the Special Notices section of the *Baltimore Sun* on July 12, 2009.

Notice of Intent and Request for Comments: Environmental Impact Statement (EIS) for the Campus Development Project at Fort Meade

The Department of Defense (DOD) announces its intent to prepare an EIS as part of the environmental planning process for campus development at Fort George G. Meade, Maryland. The DOD proposes the development of a portion of Fort Meade (referred to as "Site M") as an operational complex and to construct and operate facilities to meet the National Security Agency's (NSA) continually evolving requirements and for Intelligence Community use. The purpose of the Proposed Action is to provide facilities that are fully-supportive of the Intelligence Community's mission. The need for the action is to co-locate key partnering organization's efforts to ensure capabilities for current and future mission accomplishments as directed by Congress and the President. The DOD proposes to develop a portion of Fort Meade (a 236-acre parcel referred to as "Site M") as an operational complex and to construct and operate co-located facilities for Intelligence Community use. The Proposed Action includes development of Site M in three optional phases over a 20-year period, with construction of 1.8 million square feet of facilities occurring as part of Phase I. Phase I development allows NSA to co-locate mission elements, enabling services, and support services across the campus based on function, servicing the need for a more collaborative environment and optimal adjacencies, including associated infrastructure (e.g., electrical substation and generator plants providing 60 megawatts of electricity) and administrative functions. The EIS will consider three alternative development options, in which total build-out could reach 5.8 million square feet, and the No Action Alternative.

The DOD is in the scoping stage for preparation of a Draft EIS and invites the public to comment on the alternatives considered and the scope of the environmental analysis. On July 21, 2009, the DOD will hold an open house from 4:00 to 5:00 p.m. and a scoping meeting from 5:00 to 7:00 p.m. at the Meade Middle School, 1103 26th Street, Fort Meade, MD 20755. Oral and written comments will be received at the scoping meeting and considered in preparation of the Draft EIS. You can also submit written comments addressed to "Campus Development EIS," c/o e²M, 2751 Prosperity Avenue, Suite 200, Fairfax, VA 22031. Written comments are requested by August 17, 2009, to ensure sufficient time to consider public input in preparation of the Draft EIS. You may also send a fax to (240) 554-2511 or email CampusEIS@e2m.net.

Your comments on this Proposed Action are requested. Written and oral comments may be published in the EIS. Any personal information provided will be used only to identify your desire to make a statement during the public comment portions of the EIS process or to fulfill requests for copies of the EIS or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the Draft or Final EIS. However, only the names of private citizens will appear in the EIS; personal addresses and phone numbers will not be published.

The notice below was published on page A14 in the *Washington Post* on July 12, 2009.

Notice of Intent and Request for Comments: Environmental Impact Statement (EIS) for the Campus Development Project at Fort Meade

The Department of Defense (DOD) announces its intent to prepare an EIS as part of the environmental planning process for campus development at Fort George G. Meade, Maryland. The DOD proposes the development of a portion of Fort Meade (referred to as "Site M") as an operational complex and to construct and operate facilities to meet the National Security Agency's (NSA) continually evolving requirements and for Intelligence Community use. The purpose of the Proposed Action is to provide facilities that are fully-supportive of the Intelligence Community's mission. The need for the action is to co-locate key partnering organization's efforts to ensure capabilities for current and future mission accomplishments as directed by Congress and the President. The DOD proposes to develop a portion of Fort Meade (a 236-acre parcel referred to as "Site M") as an operational complex and to construct and operate co-located facilities for Intelligence Community use. The Proposed Action includes development of Site M in three optional phases over a 20-year period, with construction of 1.8 million square feet of facilities occurring as part of Phase I. Phase I development allows NSA to co-locate mission elements, enabling services, and support services across the campus based on function, servicing the need for a more collaborative environment and optimal adjacencies, including associated infrastructure (e.g., electrical substation and generator plants providing 60 megawatts of electricity) and administrative functions. The EIS will consider three alternative development options, in which total build-out could reach 5.8 million square feet, and the No Action Alternative.

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Your comments on this Proposed Action are requested. Written and oral comments may be published in the EIS. Any personal information provided will be used only to identify your desire to make a statement during the public comment portions of the EIS process or to fulfill requests for copies of the EIS or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the Draft or Final EIS. However, only the names of private citizens will appear in the EIS; personal addresses and phone numbers will not be published.

Fort Meade Campus Development Project
Interested Party List

Federal Agency Contacts

Office of Environmental Policy & Compliance
U.S. Department of the Interior
Main Interior Building (MS 2342)
1849 C Street, NW
Washington, DC 20240

Mr. Michael T. Chezik
U.S. Department of the Interior
Office of Environmental Policy & Compliance
Custom House, Room 244
200 Chestnut Street
Philadelphia, PA 19106

Mr. Brian Higgins, PhD, PE.
Washington Headquarters Services
Department of Defense
1314 Mayflower Drive
McLean, VA 22101-3402

Mr. William Arguto
USEPA, Region 3
1650 Arch Street (Mail Code EA30)
Philadelphia, PA 19103-2029

Ms. Dionne Briggs
U.S. Fish and Wildlife Service
12100 Beech Forest Road
Laurel, MD 20708

Ms. Lisa Goncalves
U.S. Fish and Wildlife Service
230 Bald Eagle Drive
Laurel, MD 20708

Mr. Brad Knudsen
U.S. Fish and Wildlife Service
Patuxent Research Refuge
10901 Scarlet Tanager Loop
Laurel, MD 20708-4027

Ms. Mary Ratnaswamy
U.S. Fish and Wildlife Service
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

Mr. Jacob Hoogland
National Park Service
Environmental Quality Branch
1201 Eye Street, NW
Org 2310
Washington, DC 20005

Mr. Peter May
National Park Service
Lands and Resources Division
1100 Ohio Drive, SW
Washington, DC 20242

Mr. Stephen Syphax
National Park Service
National Capital Parks East
1900 Anacostia Drive, SE
Washington, DC 20020

Mr. Jeff Trulick
USACE, Baltimore District
Regulatory Branch
PO Box 1715
Baltimore, MD 21203

Mr. Michael Butler
Fort Meade DPW-ED
239 Chisholm Avenue
Fort Meade, MD 20755

Mr. Marcus Brundage
Fort Meade DPW-ED
239 Chisholm Avenue
Fort Meade, MD 20755

Mr. Chad Jones
Director, Public Affairs Office (PAO)
Fort Meade
Building 4550, Room 120
Fort Meade, MD 20755-5025

COL Daniel Thomas
Fort Meade
Building 4551
Fort Meade, MD 20755

The Honorable Roscoe Bartlett
U.S. House of Representatives
Maryland's Sixth District
2412 Rayburn House Office Building
Washington, DC 20515-2006

The Honorable Benjamin Cardin
U.S. Senate
Tower 1, Suite 1710
100 South Charles Street
Baltimore, MD 21210

The Honorable Elijah Cummings
U.S. House of Representatives
Maryland's Seventh District
2235 Rayburn House Office Building
Washington, DC 20515

The Honorable Frank Kratovil, Jr.
U.S. House of Representatives
Maryland's First District
112 W. Pennsylvania Avenue, Suite 102
Bel Air, MD 21014

The Honorable Steny Hoyer
U.S. House of Representatives
Maryland's Fifth District
6500 Cherrywood Lane, Suite 310
Greenbelt, MD 20770

The Honorable Barbara Mikulski
U.S. Senate
60 West Street, Suite 202
Annapolis, MD 21401-2448

The Honorable C.A. Dutch Ruppersberger
U.S. House of Representatives
Maryland's Second District
375 W. Padonia Road, Suite 200
Timonium, MD 21093

The Honorable John Sarbanes
U.S. House of Representatives
Maryland's Third District
600 Baltimore Avenue, Suite 303
Towson, MD 21204

The Honorable Chris Van Hollen
U.S. House of Representatives
Maryland's Eighth District
51 Monroe Street, Suite 507
Rockville, MD 20850

The Honorable Albert R. Wynn
U.S. House of Representatives
Maryland's Fourth District
2470 Rayburn Building
Washington, DC 20515

State and Local Agency Contacts

Ms. Lori Byrne
Maryland Department of Natural Resources
Tawes State Office Building E-1
580 Taylor Avenue
Annapolis, MD 21401

Mr. Steven W. Koehn
Maryland Department of Natural Resources
Maryland Forest Service
Tawes State Office Building E-1
580 Taylor Avenue
Annapolis, MD 21401

Ms. Karen G. Irons, P.E.
Maryland Department of the Environment
Air Quality Permits Program
1800 Washington Boulevard
Baltimore, MD 21230-1720

Ms. Shari Wilson, Secretary
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230

Ms. Linda Janey
Maryland Department of Planning
Capital Planning and Review Division
301 West Preston Street, Suite 1104
Baltimore, MD 21201-2305

Mr. Bob Rosenbush
Maryland Department of Planning
301 West Preston Street
Room 1104
Baltimore, MD 21201-2305

Mr. Roger L. Richardson
Maryland Department of Agriculture
50 Harry S. Truman Parkway
Annapolis, MD 21401

Mr. J. Rodney Little
Maryland Historic Trust
Division of Historical and Cultural Programs
100 Community Place
Crownsville, MD 21032-2023

John D. Porcari
Maryland Department of Transportation
7201 Corporate Center Drive
P.O. Box 548
Hanover, MD 21076

Mr. David Edgerley
Maryland Department of Business and Economic Development
217 East Redwood Street
Baltimore, MD 21202

Mr. George G. Cardwell
Anne Arundel County
Office of Planning and Zoning
Heritage Office Complex
2664 Riva Road, MS 6403
Annapolis, MD 21401

Ginger Ellis
Anne Arundel County
Office of Environmental and Cultural Resources
2664 Riva Road
Annapolis, MD 21401

Annapolis and Anne Arundel County Chamber of Commerce
49 Old Solomons Island Road
Suite 204
Annapolis, MD 21401

The Honorable Jack Johnson
Governor
14741 Oden Bowie Dr, Suite 5032
Upper Marlboro, MD 20772-3050

The Honorable Pam Beidle
Maryland House of Delegates
Anne Arundel County, District 32
House Office Building, Room 161
6 Bladen Street
Annapolis, MD 21401

The Honorable G. James Benoit
Anne Arundel County
District 4
44 Calvert Street, 1st Floor
Annapolis, MD 21401

The Honorable James E DeGrange
Maryland State Senate
Anne Arundel County, District 32
James Senate Office Building, Room 101
11 Bladen Street
Annapolis, MD 21401

The Honorable Edward Reilly
Maryland State Senate
Anne Arundel County, District 33
James Senate Office Building, Room 321
11 Bladen Street
Annapolis, MD 21401

The Honorable James King
Maryland House of Delegates
Anne Arundel County, District 33A
House Office Building, Room 163
6 Bladen Street
Annapolis, MD 21401

The Honorable John R. Leopold
44 Calvert Street
Annapolis, MD 21401

The Honorable Mary Ann Love
Maryland House of Delegates
Anne Arundel County, District 32
House Office Building, Room 165
6 Bladen Street
Annapolis, MD 21401

The Honorable Tony McConkey
Maryland House of Delegates
Anne Arundel County, District 33A
House Office Building, Room 157
6 Bladen Street
Annapolis, MD 21401

The Honorable Martin O'Malley
Maryland House of Delegates
100 State Circle
Annapolis, MD 21401-1925

The Honorable Jim Rosapepe
Maryland Senate
Prince Georges & Anne Arundel County,
District 21
James Senate Office Building, Room 314
11 Bladen Street
Annapolis, MD 20470

The Honorable Theodore Sophocleus
Maryland House of Delegates
Anne Arundel County, District 32
House Office Building, Room 162
6 Bladen Street
Annapolis, MD 21401

The Honorable Ken Ulman
3430 Courthouse Drive
Ellicott City, MD 21043

Chamber of Commerce
West Anne Arundel County
8379 Piney Orchard Parkway, Suite E
Odenton, MD 21113

Baltimore Metropolitan Council
2700 Lighthouse Point East, Suite 310
Baltimore, MD 21224-4774

Economic Alliance of Greater Baltimore
111 S. Calvert Street, Suite 2220
Baltimore, MD 21202-6180

Chamber of Commerce
Baltimore/Washington Corridor
312 Marshall Avenue, Suite 104
Laurel, MD 20707-4824

Prince Georges County Public Affairs
14741 Govenor Oden Bowie Drive
Upper Marlboro, MD 20772

Howard County Maryland Public Affairs
3430 Courthouse Drive
Ellicot City, MD 21043

Molly Connolly
AACPS Board of Education
2644 Riva Road
Annapolis, MD 21401

Ms. Zoe Draughon
Restoration Advisory Board
2108 Brink Court
Odenton, MD 21113

Ms. Debbie Faux
Department of Public Works
Residential Communities Initiative
4463 Leonard Wood Avenue
Fort Meade, MD 20755

Stakeholders Groups

Mr. Frederick Tutman
Patuxent Riverkeeper
18600 Queen Anne Road
Rear Barn
Upper Marlboro, MD 20774

BWI Business Partnership
1344 Ashton Road
Suite 101
Hanover, MD 21076

Picerne Military Housing
PO Box 530
Fort Meade, MD 20755

Ms. Julie Snyder
Fort Meade Alliance
2660 Riva Road, Suite 200
Annapolis, MD 21401

Tribal Contacts

Maryland Department of Human Resources
Maryland Commission on Indian Affairs
311 W. Saratoga Street, Room 272
Baltimore, MD 21201

Piscataway Conoy Confederacy and
Subtribes
PO Box 1484
LaPlata, MD 20646

Cedarville Band of Piscataway Indians
American Indian Cultural Center
16816 Country Lane
Waldorf, MD 20601

Chief Kenneth Adams
Upper Mattaponi Tribe
13383 King William Road
King William, VA 23086

Chief Stephen Adkins
Chickahominy Tribe
8200 Lott Cary Road
ProvidenceForge, VA 23140

Chief Gene Adkins
Eastern Chickahominy Tribe
3120 Mt Pleasant Road
Providence Forge, VA 23140

Chief Barry W. Bass
Nansemond Tribe
PO Box 2515
Suffolk, VA 23432

Chief Kenneth Branham
Monacan Indian Nation
PO Box 1136
Madison Heights, VA 24572

Chief Carl "Lone Eagle" Custalow
Mattaponi Tribe
1467 Mattaponi Reservation Center
West Point, VA 23181

Chief Dee Ketchum
Delaware Tribe of Indians
Delaware Tribal Headquarters
220 NW Virginia Avenue
Bartlesville, OK 74003

Chief William P. Miles
Pamunkey Tribe
Route 1, Box 2220
King William, VA 23086

Chief G. Anne Richardson
Rappahannock Tribe
5036 Indian Neck Road
Indian Neck, VA 23148

Additional Names Added After Campus Development Scoping Process

K. E. Fleischmann
4737 Bounty Court
Ellicott City, MD 21043

Jean Friedberg
Fort Meade Regional Growth Management Commission
6751 Columbia Gateway Drive, Suite 500
Columbia, MD 21046

Vaso Karanikolis
USACE CENAB_PL
PO Box 1715
Baltimore, MD 21203-1715

Kent Menser
Office of the County Executive
Howard County
6751 Gateway Drive, Suite 500
Columbia, MD 21046

Jeff Niesz
Pepco Energy Service
1300 North 17th Street, Suite 1600
Arlington, VA 22209

Bert Rice
Fort Meade PAIO
1217 Hillcrest Road
Odenton, MD 21113-2005

Mark Wherry
USACE
PO Box 548
Annapolis Junction, MD 20701-0508

Private Citizen

Scott R. Wolford
Columbia, MD 21045

NATIONAL SECURITY AGENCY
FORT GEORGE G. MEADE, MARYLAND 20755-6000

July 10, 2009

Mr. William Arguto
USEPA, Region 3
1650 Arch St. (Mail Code EA30)
Philadelphia, PA 19103-2029

RE: Proposed Campus Development Program

In accordance with the National Environmental Policy Act (NEPA), the National Security Agency (NSA) is announcing its intent to prepare an Environmental Impact Statement (EIS) for campus development at Fort George G. Meade, Maryland. This project was initiated in order to meet the NSA's continually evolving requirements. The DOD proposes to develop a portion of Fort Meade (referred to as "Site M") as an operational complex and to construct and operate co-located facilities for Intelligence Community use. A Notice of Intent (NOI) was published in the *Federal Register* on July 2, 2009 (attached). The NOI summarizes the Proposed Action and the Alternatives to be considered in the EIS.

The purpose of this correspondence is to solicit your comments regarding environmental aspects of the proposed project. To assist us in complying with NEPA and Executive Order 12372, *Intergovernmental Review of Federal Programs*, and in identifying environmental issues that might affect the design or implementation of the project, we request that you provide appropriate comments within your area of expertise, by August 17, 2009, to the following address:

Jeffrey Williams
Environmental and Safety Services
Department of Defense
9800 Savage Road, Suite 6404
Fort Meade, MD 20755-6404

You can also send comments via email to CampusEIS@e2m.net or send a facsimile to (240) 554-2511.

You are also invited to attend an open house from 4:00 to 5:00 p.m. and a scoping meeting from 5:00 to 7:00 p.m. on July 21, 2009. The open house and scoping meeting will be held at the Fort Meade Middle School, 1103 26th Street, Fort Meade, MD 20755. Oral and written comments regarding this proposal will be accepted at the scoping meeting.

Your input and comment are greatly appreciated. If you have any questions, please contact me at (301) 688-2970, or email CampusEIS@e2m.net. Thank you for your interest.

Sincerely,

Jeffrey D. Williams

Jeffrey D. Williams
Senior Environmental Engineer

Enclosure:
Notice of Intent, as published in the *Federal Register*

ANNE
ARUNDEL
COUNTY
MARYLAND

County Executive John R. Leopold
P.O. Box 2700 ·Annapolis, MD 21404
410·222·1821

August 15, 2009

Jeffrey Williams
Environmental and Safety Services
Department of Defense
9800 Savage Road, Suite 6404
Fort George G. Meade, Maryland 20755-6404

Dear Mr. Williams:

Thank you for providing Anne Arundel County, Maryland with the opportunity to offer comments during the agency scoping phase of the proposed Environmental Impact Statement (EIS). We understand that an EIS will be prepared to evaluate the impact and create a more informed decision regarding the proposed expansion of the National Security Agency's (NSA) activity at Fort George G. Meade, Maryland. It is also our understanding, based on the scoping meeting and the description provided in the July 2, 2009 Federal Register/Vol. 74, No. 126, that NSA is proposing to locate and occupy up to 5.8 Million Square Feet (MSF) on Site M, commonly referred to as the golf course at Fort Meade. This action will be composed of three separate phases, involve up to 11,000 personnel, and occur over a period of 20 years.

The DEIS should address all issues identified in the National Environmental Policy Act (40 CFR parts 1500-1508 and DOD Instruction 4715.9). Additionally, and of upmost importance to Anne Arundel County, the Draft EIS for this proposed federal action must address issues regarding impacts to the existing and programmed transportation network (both highway and transit), employment shifts, fiscal and public revenue impacts, public utilities (both water and sewer), storm water management both in terms of quality and quantity, and public safety as well as identify methods by which these issues can be resolved.

Transportation Network Impacts: At present, there are no fully funded highway improvements, identified in any capital program, located in the vicinity of Fort Meade. Present traffic generated by current activities at Fort Meade impact local roadway capacity. Traffic generated by the Base Realignment and Closure (BRAC) and Enhanced Use Lease action at Fort Meade will further reduce available capacity. At present there has been little formal response by the Department of Defense to mitigate or off set either the current or the anticipated impacts. Additional traffic generated by the proposed NSA action will only increase the demand leading to greater durations of network failures. Further significant impacts to the highway network can result in public safety impacts, increased congestion, deterioration of air quality and motorist safety. Anne Arundel County requests that the EIS address this issue and demonstrate how it will be mitigated.

Employment and Demographic Impacts: The Federal Register notice identified that the proposed Federal Action would locate 11,000 personnel at Site M in addition to the BRAC action personnel from the Defense Information Systems Agency (DISA), Defense Media Activity (DMA), and the Defense Adjudication Activities. We understand that the 11,000 employment estimate for NSA is composed of new hires, relocated personnel from activities located outside of Fort Meade and relocated personnel from the current NSA campus. Because employment estimates of this magnitude have implications for demographic forecasts that are used to develop federally mandated air quality forecasts, we must have a defendable understanding regarding the composition of the 11,000 employees that would be located at Site M as a result of this Federal Action. Anne Arundel County requests that the EIS provide sufficient detail allowing planning staffs to make appropriate adjustments in demographic forecasts so that reasonable travel demand and air quality modeling can be performed.

Fiscal and Revenue Impacts: We understand that a component of the 11,000 employees which have been noted in the Notice of Intent to be located on Site M are currently sited in activities located away from Fort Meade. We assume that these employees occupy space in leased buildings. Adding more unleased office space into the local office space inventory will have a detrimental impact on the office market, leading to a depression in rents and a reduction in revenues for both property owners and local governments. Additionally, employment increases generated by this action will lead to a greater gap between available affordable housing in the market for that product. Anne Arundel County requests that the EIS identify and address the impact associated with both employment shift and household creation which will result from this action across the region impacted by this Federal Action.

Public Utilities Impacts: At present, we understand that Fort Meade provides potable water and sanitary sewer service to tenants and commands located on the garrison. We also understand that both facilities are in need of capacity increases and modernization and that the Department of the Army has directed privatization of the system (currently a contract award is expected by September 30, 2009). These improvements are needed to support increased employment and population at Fort Meade, plus employment increases generated by the BRAC/EUL action as approved by the Record of Decision for that Federal Action. Improvements to the waste water treatment plan at Fort Meade will require changes in the allowed discharge limits as permitted by the Maryland Department of the Environment. An increase in the discharge amount for Fort Meade likely reduces the amount permitted for other publicly owned treatment plants using the Patuxent River. Anne Arundel County requests that the EIS address this issue and identify methods which can be implemented to resolve it.

Storm Water Management and Water Quality: A brief inspection of aerial photography of the lands near the NSA campus and Site M shows that the Midway Branch is either near or within the anticipated project area. The assessment, restoration, and protection of this subwatershed, available riparian habitat, and stream reach should be a priority in any development plans proposed for the site. Anne Arundel County requests that the EIS address this issue and identify methods which can be implemented to improve water quality in this subwatershed.

Public Safety: The Anne Arundel County Fire Department has conducted a study of impacts to response times created by growth in population and employment. Of particular note in that study was the impact of new growth on response times from the Jessup/Maryland City area in which Fort Meade is located and from which response would be provided to emergencies occurring in the area around Fort Meade. The TriData study analysis for the Jessup/Maryland City Area highlights current weaknesses as "Long response times with 90th percentile greater than 11 minutes." TriData also comments on declining volunteer participation. Under opportunities, TriData suggests that "BRAC may help justify additional EMS services." Finally, under threats, TriData goes on to state "BRAC may add additional EMS demand" and "BRAC could cause Fort Meade to require additional mutual aid". The County currently averages 15 EMS calls per month on Fort Meade property. Demand forecasts for Jessup/Maryland City calls for a 7% increase annually. The analysis for the Severn Area indicates a 90th percentile response time of over 11 minutes. Service demands in the Severn area continues to rapidly grow. BRAC and airport expansions will increase demand. Demand forecasts for the Severn area is estimated at 10% annually. These analyses do not include the additional 11,000 employees located on Site M. Nor can it completely estimate the increase in traffic generated by the proposed Federal Action which would further reduce response times due to congestion of the connecting roadways. Anne Arundel County recommends that the EIS address this issue and identify methods that can be implemented to improve response times that will be reduced due to the increase in demand generated by the employment as well as the new households created by that employment.

Anne Arundel County looks to NSA to implement the requirements noted in DoD Instruction No. 4715.9 Section 6.2.4 which identifies the need to develop and maintain an intergovernmental and public consultation procedure for this proposed Federal Action. This Federal Action will clearly be an activity that will have "...significant impacts on the human environment..." as it will impact both the natural and built environment. The County understands the importance of the Federal Action proposed for NSA at Fort Meade. We also see that this action, in addition to the BRAC/EUL and other increases in personnel and households at Fort Meade have a cumulative impact on the natural and built environment that has not been taken into account comprehensively. We look forward to working with NSA in making the consultation process successful.

Should you have any questions, regarding our comments, please contact me or George Cardwell, Planning Administrator via e-mail at pzcard44@aacounty.org or via phone at (410) 222-7440.

Sincerely,

Robert C. Leib

Robert C. Leib
Special Assistant for BRAC/Education

cc: Larry R. Tom, Planning & Zoning Officer
Robert Ray, Chief, Anne Arundel County Fire Department
Ronald Bowen, Director, Department of Public Works
Carole Sanner, Assistant Planning & Zoning Officer, OPZ
George Cardwell, Planning Administrator, OPZ

Maryland Department of Transportation
The Secretary's Office

Martin O'Malley
Governor

Anthony G. Brown
Lt. Governor

Beverley K. Swaim-Staley
Acting Secretary

August 25, 2009

Mr. Jeffrey D. Williams
Environmental and Safety Services
Department of Defense
9800 Savage Road
Suite 6404
Fort Meade MD 20755-6404

Dear Mr. Williams:

Thank you for your recent correspondence regarding the National Security Agency's (NSA) intent to prepare an Environmental Impact Statement in connection with development of its campus at Fort George G. Meade (FGGM).

Please be advised that the Maryland Department of Transportation (MDOT), along with its modal administrations, will submit comments on the proposed undertaking in a subsequent letter. Conceptual information provided in the Notice of Intent indicates plans for considerable development on the site, and signals the need for thoughtful consideration of potential project impacts. As NSA is closely involved with the many and varied challenges associated with the current Base Realignment and Closure (BRAC) consolidation efforts at FGGM, MDOT anticipates that NSA intends to identify project alternatives and mitigation strategies reflective of its association with BRAC 2005. The projects and strategies will need to be appropriate for the size and scope of the proposed development.

Thank you again for your letter regarding NSA's intention to prepare an Environmental Impact Statement. If you have any questions or additional items to discuss in connection with this initiative, please do not hesitate to contact Mr. Sean Massey, MDOT's BRAC Coordinator, at 410-865-1283, toll free at 888-713-1414, or via e-mail at smassey@mdot.state.md.us.

Sincerely,

Beverley K. Swaim-Staley
Acting Secretary

cc: Mr. Sean Massey, BRAC Coordinator, Office of Planning and Capital Programming, Maryland Department of Transportation
Mr. Andrew J. Scott, Special Assistant to the Secretary for Economic Development, Maryland Department of Transportation

My telephone number is 410-865-1000
Toll Free Number 1-888-713-1414 TTY Users Call Via MD Relay
7201 Corporate Center Drive, Hanover, Maryland 21076

Maryland Department of Planning
Maryland Historical Trust

August 31, 2009

Jeffery Williams
Environmental and Safety Services
Department of Defense
9800 Savage Road, Suite 6404
Fort Meade, MD 20755-6404

Re: MHT Review of Proposed Campus Development Program – "Site M" – Fort George G. Meade
MD20090717-1052 -- Anne Arundel County

Dear Mr. Williams:

Thank you for providing the Maryland Historical Trust, The State Historic Preservation Office (MD SHPO), with the opportunity to review the above-referenced undertaking with respect to potential effects on historic properties, pursuant to Section 106 of the National Historic Preservation Act. Below are our comments and recommendations regarding possible impacts to cultural resources.

Archeology: MHT files indicate that two archeological sites, 18AN973 and 18AN234, are located within the proposed Site M project area. Site 18AN234 has already been determined to be ineligible for listing in the National Register of Historic Places and requires no further investigation. Site 18AN973, on the other hand, contains the nineteenth-century Downs Cemetery as well as the remains of a late nineteenth-century farmstead (see pages 92-97 of the Technical Appendix to the Fort Meade Cultural Resource Management Plan -- *Phase I Archeological Survey of Approximately 2,210 Acres at Fort George G. Meade, Anne Arundel County, Maryland* [Hornum et al. 1995]. As noted in the 1995 report, the 1860 Martenet and 1878 Hopkins maps depict structures at this location belonging to "Wm. Downs" and "J. Downs," respectively. On page 287 of the 1995 report, it is recommended that the cemetery be preserved in place and that Phase II evaluative investigations take place at site 18AN973 prior to any construction/development.

Due to the presence of site 18AN973, we are requesting that we be provided with current site development plans and documentation regarding the proposed treatment of the Downs Cemetery (avoidance, relocation, etc...). Once we have received this information, we will be able to continue our review of the proposed undertaking and determine what archeological investigations, if any, will be necessary. If the site plans indicate that site 18AN973 may be impacted by the proposed development, then a Phase II investigation will be recommended. All Phase II studies must be carried out by a qualified professional archeologist and performed in accordance with the *Standards and Guidelines for Archeological Investigations in Maryland* (Shaffer and Cole 1994), and all Phase II efforts must be sufficient to: a) identify the site's vertical and horizontal boundaries; b) interpret the site's cultural affiliations, functions, and significance; c) evaluate the site's integrity; d) conclusively determine the site's eligibility for the National Register of

100 Community Place Crownsville, Maryland 21032-2023
Telephone: 410.514.7600 Fax: 410.987.4071 Toll Free: 1.800.756.0119 TTY Users: Maryland Relay
Internet: www.marylandhistoricaltrust.net

Historic Places; and e) define the need for further archeological work, if necessary. In addition, if the development of Site M requires the removal and relocation of the Downs Cemetery, then further coordination with MHT will be necessary to determine an appropriate course of action.

Historic Built Environment: The area of potential effect (APE) is located within the Maryland Inventory of Historic Properties (MIHP) boundary for Fort Meade (MIHP AA-0034). Also located within the APE are two possibly eligible historic resources Building 6926/Post Sergeant Major's House, MIHP AA-0008, and Building 6865/Golf Course Clubhouse, MIHP AA-0009. Depending on their significance and integrity, such properties may be eligible for listing in the National Register of Historic Places. The golf course is a landscape resource that has not previously been identified but could be eligible for the National Register and should also be evaluated for its eligibility. Please provide a Determination of Eligibility (DOE) form evaluating all the existing structures and landscape.

All DOE forms must be completed by a qualified architectural historian, preservationist, or historian and be accompanied by supporting materials as described in *General Guidelines for Compliance-Generated Determinations of Eligibility* and *Standards and Guidelines for Architectural and Historical Investigations in Maryland.* DOE forms must contain sufficient descriptions of buildings, structures, areas of land use, and the overall landscape of a property to evaluate its significance under National Register Criterion C and its historic integrity. This should include information about feature age, form, stylistic elements, methods of construction, materials, and condition. Forms must also contain sufficient historical context to evaluate a property under National Register Criteria A and B. This should include information derived from historic maps and land records; examination of the existing buildings, structures, and landscape as historical sources; and relevant information from existing reports and other secondary sources. Once we receive the required DOE Form, we will make a formal determination about the eligibility of the project area and provide detailed recommendations about how to proceed with the Section 106 process.

A list of preservation consultants as well as additional information regarding state historic preservation law and the *Standards and Guidelines* can be found on our website at http://mht.maryland.gov. If you have any questions or require further information, please do not hesitate to contact either Dixie Henry (for inquiries regarding archeological resources) at 410-514-7638 \ dhenry@mdp.state.md.us or Amanda Apple (for inquiries regarding the historic built environment) at 410-514-7630 \ aapple@mdp.state.md.us.

Sincerely,

Dixie Henry

Dixie Henry
Preservation Officer
Maryland Historical Trust

DLH/ARA/200902733
cc: Bob Rosenbush (MDP)

MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Boulevard • Baltimore, Maryland 21230
410-537-3000 • 1-800-633-6101 • http://www.mde.state.md.us

MDE

October 7, 2009

Mr. Jeffrey Williams
National Security Agency
9800 Savage Road, Suite 6404
Fort Meade, MD 20755

RE: MDE Application Identifier: ES20090721-0029
State Application Identifier: MD20090717-1052
Project: Scoping Prior to EIS: proposed staged development of Site M

Dear Mr. Williams:

Thank you for the opportunity to review the above referenced project. The document was circulated throughout the Maryland Department of the Environment (MDE) for review.

The project is generally consistent with our plans, programs and objectives contingent upon certain actions being taken as noted below:

1. If a project receives federal funding, approvals and/or permits, and will be located in a nonattainment area or maintenance area for ozone, carbon monoxide, or fine particulate matter (pm 2.5), the applicant should determine whether emissions from the project will exceed the thresholds identified in the federal rule on general conformity. If the project emissions will be greater than these thresholds, contact the Planning Division of the Air Quality Planning Program, Air and Radiation Management Administration, at (410) 537-3240 for further information regarding threshold limits.

Additionally, the project is consistent with our plans, programs and objectives, and the comments below are submitted for your consideration:

2. Any above ground or underground petroleum storage tanks that may be utilized must be installed and maintained in accordance with applicable State and federal laws and regulations. Contact the Oil Control Program at (410) 537-3442 for additional information.

3. Any solid waste including construction, demolition and land clearing debris, generated from the subject project, must be properly disposed of at a permitted solid waste acceptance facility, or recycled if possible. Contact the Solid Waste Program at (410) 537-3318 for additional information.

4. The Hazardous Waste Program should be contacted at (410) 537-3343 prior to construction activities to ensure that the treatment, storage or disposal of hazardous wastes and low-level radioactive wastes at the facility will be conducted in compliance with applicable State and federal laws and regulations.

Finally, comments regarding water quality standards are enclosed.

Again, thank you for giving MDE the opportunity to review this project. If you have any questions or need additional information, please feel free to call me at (410) 537-4120.

Sincerely,

Joane D. Mueller

Joane D. Mueller
MDE Clearinghouse Coordinator
Office of Communications

Enclosure
cc: Bob Rosenbush, State Clearinghouse

Project

Maryland Department of the Environment - Science Services Administration

REVIEW FINDING: **R1 Generally Consistent with Qualifying Comments (ES2009 0721-0029)**

The following additional comments are intended to alert interested parties to issues regarding water quality standards. The comments address:

A. Water Quality Impairments: Section 303(d) of the federal Clean Water Act requires the State to identify impaired waters and establish Total Maximum Daily Loads (TMDLs) for the substances causing the impairments. A TMDL is the maximum amount of a substance that can be assimilated by a waterbody such that it still meets water quality standards.

Planners should be aware of existing water quality impairments identified on Maryland's 303(d) list. Fort George G. Meade is situated in the 02131105 (Little Patuxent River), and 02131002 (Severn River) watersheds, which are currently impaired by several substances and subject to regulations regarding the Clean Water Act.

Planners may find a list of nearby impaired waters by entering the 8-digit basin code into an on-line database linked to the following URL: http://www.mde.state.md.us/Programs/WaterPrograms/TMDL/Maryland%20303%20dlist/2008_303d_search/index.asp

This list is updated every even calendar year. Planners should review this list periodically to help ensure that local decisions consider water quality protection and restoration needs. **Briefly, the current impairments that are relevant to the Project include the following:**

Little Patuxent River (02131105)

Nutrients:	**Non-tidal. A TMDL is pending development.**
Sediments:	**Non-tidal. A TMDL is pending development.**
Biological:	**Non-tidal. A TMDL is pending development.**

Severn River (02131002)

Bacteria:	**Tidal. A TMDL has been written and approved by EPA for several shellfish harvesting areas.**
Nutrients:	**Tidal. A TMDL is pending development.**
Toxics:	**Tidal. A TMDL for PCB in fish tissue is pending development.**
Biological:	**Non-tidal. A TMDL is pending development.**

B. TMDLs: Development and implementation of the Comprehensive Plan should take into account consistency with TMDLs developed for the impaired waterbodies referenced above. Government decisions made prior to the development of a TMDL should strive to ensure no net increase of impairing substances. TMDLs are made available on an updated basis at the following web site:
www.mde.state.md.us/Programs/WaterPrograms/TMDL/Sumittals/index.asp

Special protections for high-quality waters in the local vicinity, which are identified pursuant to Maryland's anti-degradation policy;

C. Anti-degradation of Water Quality: Maryland requires special protections for waters of very high quality (Tier II waters). The policies and procedures that govern these special waters are commonly called "anti-degradation policies."

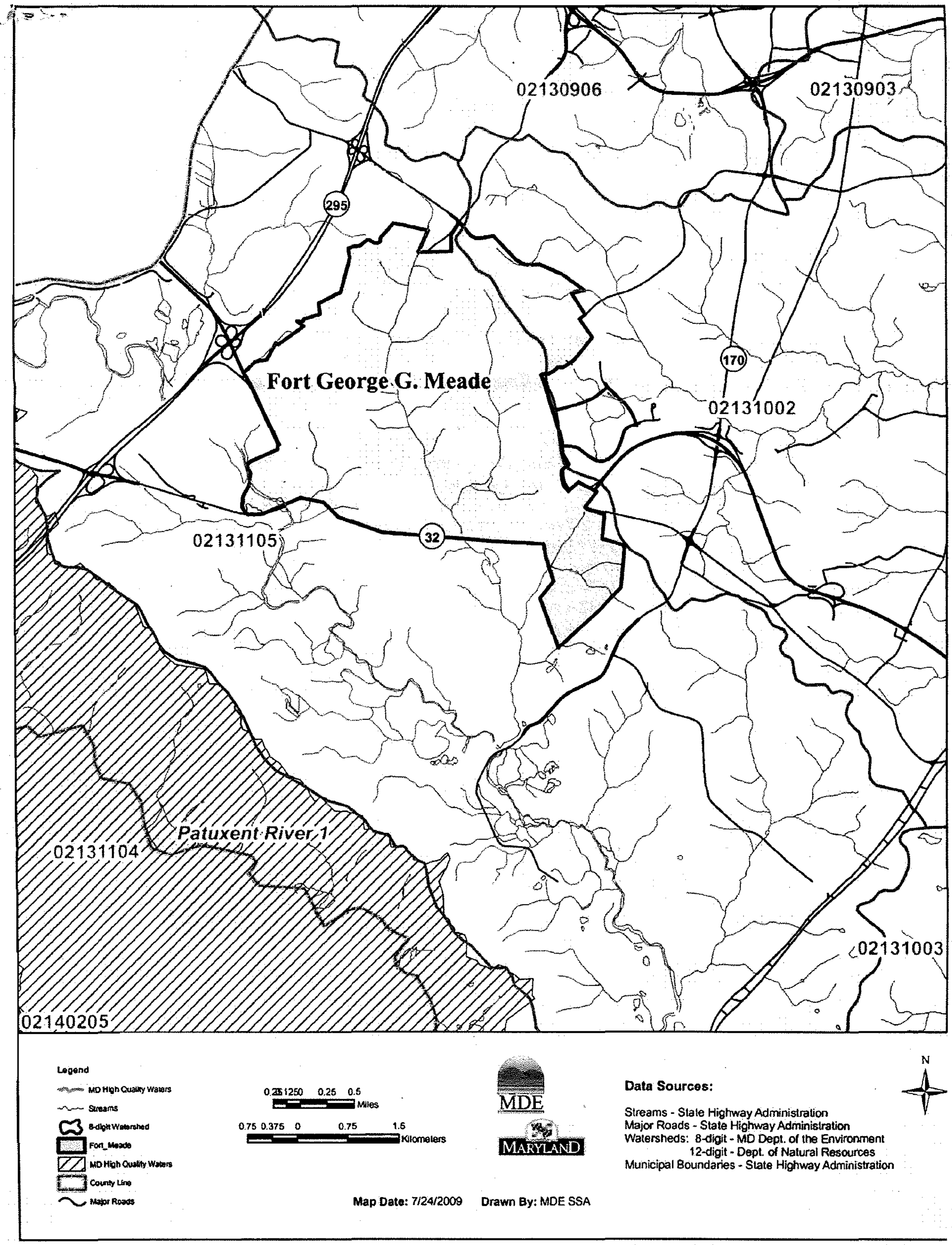
Tier II waters are present in the area surrounding the project area. (See attached map)

Planners should be aware of legal obligations related to Tier II waters described in the Code of Maryland Regulations (COMAR) 26.08.02.04 with respect to current and future land use plans. Information on Tier II waters can be obtained online at:
http://www.dsd.state.md.us/comar/26/26.08.02.04%2D1.htm

Planners should also note that since the Code of Maryland Regulations is subject to periodic updates. A list of Tier II waters pending Departmental listing in COMAR can be found, with a discussion and maps for each county, at the following website:
http://www.mde.state.md.us/ResearchCenter/Data/waterQualityStandards/Antidegradation/index.asp

ADDITIONAL COMMENTS

The project should consider all Maryland Stormwater Management Controls. Site Designs should consider all Environmental Site Design to the Maximum Extent Practicable and "Green Building" Alternatives. Designs that reduce impervious surface and BMPs that increase runoff infiltration are highly encouraged.


02130906
02130903
295
Fort George G. Meade
170
02131002
02131105
32
Patuxent River 1
02131104
02131003
02140205
Legend
MD High Quality Waters
Streams
8-digit Watershed
Fort_Meade
MD High Quality Waters
County Line
Major Roads
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0.75 0.375 0 0.75 1.5
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MDE
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Data Sources:
Streams - State Highway Administration
Major Roads - State Highway Administration
Watersheds: 8-digit - MD Dept. of the Environment
12-digit - Dept. of Natural Resources
Municipal Boundaries - State Highway Administration
Map Date: 7/24/2009
Drawn By: MDE SSA

NATIONAL SECURITY AGENCY
CENTRIAL SECURITY SERVICE
FORT GEORGE G.MEADE, MARYLAND 20755-6000

November 4, 2009

Ms. Dixie Henry, SHPO
Maryland Historical Trust
100 Community Place, 3rd Floor
Crownsville, MD 21032-2023

RE: MHT Review of Proposed Campus Development Program
Site "M", Fort George G. Meade
MD20090717-1052, Anne Arundel County

Dear Ms. Henry,

This letter is in regards to the National Security Agency's (NSA) preparation of an Environmental Impact Statement (EIS) as part of the environmental planning process for a Campus Development Project at Fort George G. Meade, Maryland, and the Maryland Historic Trust's (MHT) letter of August 31, 2009. The proposed undertaking is for NSA to develop a portion of Fort Meade, (referred to "Site M") as an operational complex and to construct and operate consolidated facilities to meet NSA's continually evolving requirements and for Intelligence Community use. Site M is divided into a northern (Site M1, 137 acres) and southern (Site M2, 99 acres) portion. The NSA proposes that development of Site M would occur in three option phases over a horizon of approximately 20 years. The Proposed Action (PA) under this EIS involves development of the eastern half of Site M1, supporting 1.8 million square feet (ft^2) of administrative space. Phases II and III are alternative optional developments that would encompass 1.2 million ft^2 (for a total of 3.0 million ft^2) and 2.8 million ft^2 (for a total of 5.8 million ft^2) of building construction, respectively.

To ensure that NSA considers the potential effects of this undertaking on properties listed in or eligible for listing in the National Register of Historic Places (NRHP), we are requesting to initiate formal consultation pursuant to Section 106 of the National Historic Preservation Act (NHPA) (Title 36 Code of Federal Regulations [CFR] § 800.2(c)(4)).

Existing reports that document previous cultural resource investigations at Fort Meade as noted at the end of this letter were reviewed to take into account the effect of the undertaking on known and potential historic properties. Additional information regarding potential cultural resources within the Area of Potential Effects (APE) was provided in a letter submitted by MHT and dated August 31, 2009, during the scoping period for this EIS. Collectively, four archaeological and four architectural resources were identified (see Figures 1 and 2). The archaeological resources were two known archaeological sites (18AN234 and 18AN973) and two undocumented historic cemeteries (see Table 1). The architectural resources were two possibly eligible historic structures and two possibly eligible historic landscapes (see Table 2).

Site 18AN234 consists of a prehistoric site containing Late Archaic/Early Woodland cultural deposits. The site was evaluated during the summer of 2003 and was determined not eligible for the NRHP through subsequent consultation with MHT, as stated in the 2006 *Fort Meade Integrated Cultural Resources Management Plan (ICRMP).* Site 18AN973 (Downs Cemetery and Farmstead) is potentially eligible for the NRHP, although in a separate evaluation, the cemetery component of the site was recommended not eligible for the NRHP. Based on information from the 2006 ICRMP, it is unclear if MHT concurred with this recommendation of non-eligibility.

Table 1. Archaeological Resources within the APE

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18AN234	Prehistoric	Late Archaic/Early Woodland	Phase II evaluation	Not eligible	Not Eligible
18AN973 Downs Cemetery/ Farmstead	Historic	Late 19th/20th century farmstead and cemetery	Phase I and partial evaluation of cemetery	Potentially Eligible	Unevaluated
[to be determined]	Undocumented Cemetery	Unknown historic	None	None	Unevaluated
[to be determined]	Undocumented Cemetery	Unknown historic	None	None	Unevaluated

Table 2. Architectural Resources within the APE

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6926 (MIHP AA-08)	ca. 1910	Tenant Farm/Post Sergeant Major's House	Demolished	Evaluation/DOE form submittal	Unevaluated
6865 (MIHP AA-09)	1940	Golf Course Clubhouse	Demolished	Evaluation/DOE form submittal	Unevaluated
[to be determined]	1950	Applewood Golf Course	Applewood Golf Course	Evaluation/DOE form submittal	Unevaluated
[to be determined]	1956	Parks Golf Course	Parks Golf Course	Evaluation/DOE form submittal	Unevaluated

No previous work has been undertaken at the two undocumented historic cemeteries at Site M. At present, information pertaining to the two cemeteries is limited and previous attempts to identify their locations on the site have been unsuccessful. A portion of a 1977 topographic map was identified that shows the location of these potential cemetery resources. The map shows that the two cemeteries were situated on the present-day fairways on the 3rd hole of the Parks Course and the 5th hole of the Applewood Course. The 1977 topographic map (Figure 2) designates 3rd and 5th holes as 4B and 13A, respectively.

Currently, no buildings or structures at Fort Meade are listed on the NRHP, although the Fort Meade Historic District and a Water Treatment Plant (Bldg. 8688) have been determined eligible by MHT. Initially, no architectural resources were identified within the construction footprint or within the visual APE of the proposed Fort Meade Campus Development at Site M. However, per the August 31, 2009, letter, four potentially historic properties were identified by MHT (see Table 2). These included the Post Sergeant Major's House (Bldg 6926/MIHP AA-08) and the Golf Course Clubhouse (Bldg 6865/MIHP AA-09). The Post Sergeant Major's House was built ca. 1910 and the Golf Course Clubhouse was built in 1940. Additionally, a large portion of the project area lies within Fort Meade's Applewood and Parks golf courses. The Applewood course was built in 1950, and the Parks course was built in 1956. Neither golf course has been previously identified as cultural resources; however, both may be eligible for the NRHP as historic landscape(s).

The Post Sergeant Major's House and the Golf Course Clubhouse were inventoried to the MIHP in December 1991. In the August 31, 2009 letter, MHT requested that the buildings and the golf courses be formally evaluated for NRHP eligibility and that appropriate Determination of Eligibility (DOE) forms be submitted to assist in reaching a consensus on eligibility determinations for these resources. However, the Post Sergeant Major's House and the Golf Course Clubhouse were demolished in the mid-1990s. A parking lot has been constructed in the location of the former Golf Course Clubhouse, while the general area of the former Post Sergeant Major's House remains wooded and undeveloped.

Based on the findings of our review, the proposed undertaking would potentially have a significant impact on five of the eight historic resources identified in Tables 1 and 2. These include one previously recorded archaeological site (18AN973/Downs Cemetery and Farmstead), the two undocumented cemeteries, and the two potential historic landscapes (Applewood and Parks golf courses). We propose to conduct additional studies to identify the presence or absence of archaeological deposits associated with the two undocumented cemeteries. If significant archaeological deposits associated with these potential resources are discovered, then these resources should be evaluated for NRHP eligibility. We also recommend that 18AN973/Downs Cemetery and Farmstead be treated as a design constraint and avoided should Site M be developed for an administrative facility. Finally, we propose to evaluate the Applewood and Parks golf courses to determine NRHP eligibility as historic landscapes.

The NSA invites the Maryland Historical Trust to concur or comment on these findings and recommendations. Please provide a response to this letter by December 18, 2009. Thank you in advance for your attention to this matter.

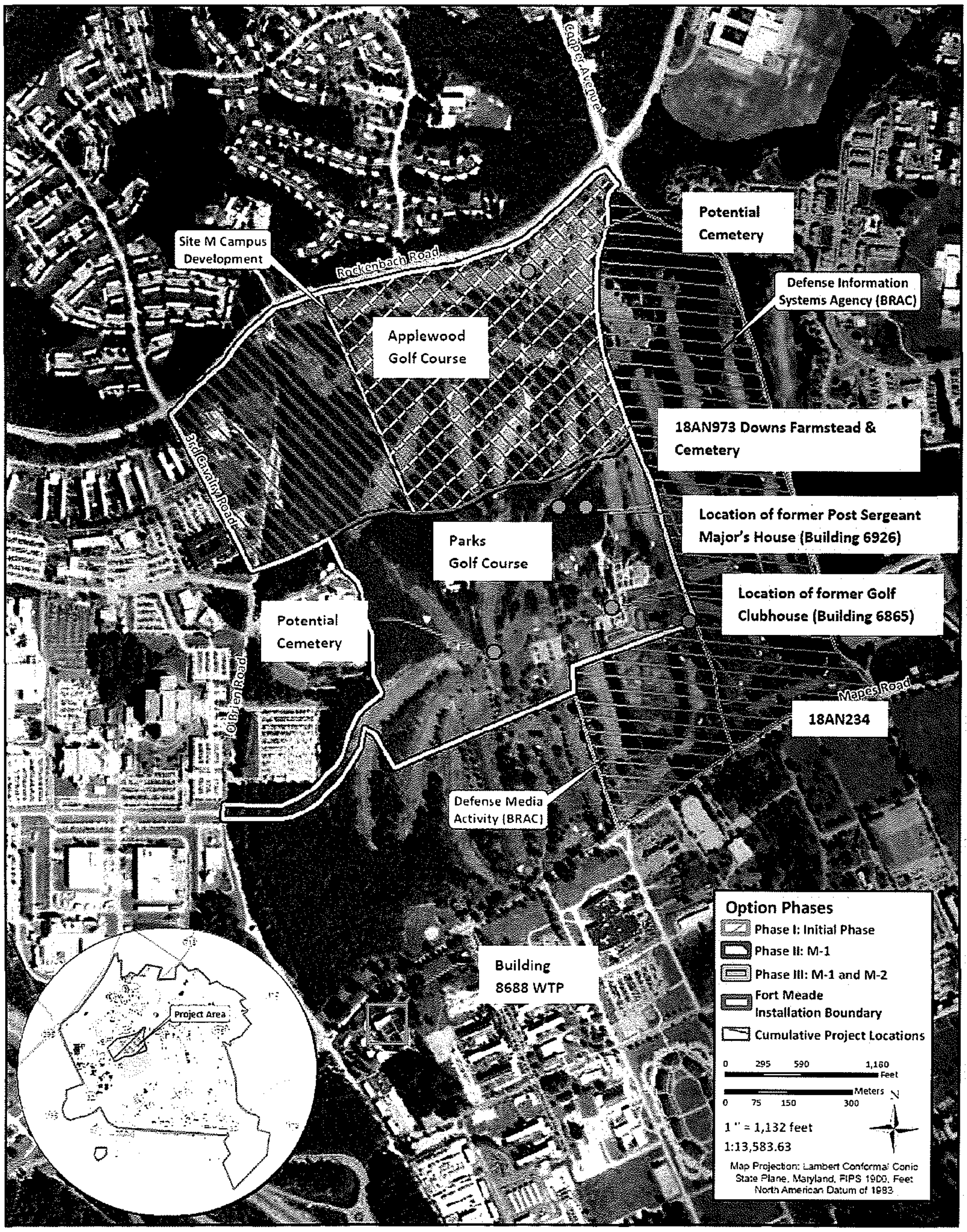
Jeffrey D Williams

Jeffrey D. Williams
Senior Environmental Engineer
Occupational Health, Environmental and Safety Services

References cited:

USACE Baltimore District, 2006. *Integrated Cultural Resources Management Plan*. Updated December 2006, Fort George G. Meade.
USACE Mobile District, 2007. *Final Environmental Impact Statement for Implementation of Base Realignment and Closure 2005 and Enhanced Use Lease Actions at Fort George G. Meade, Maryland.* August 2007.

Enclosures



Source of Potential Project Actions: eRM, Inc 2009; Source of Aerial Photography: ESRI Premium Online Microsoft Virtual Earth Service, 2009

Figure 1. Project Location Map Showing Cultural Resources

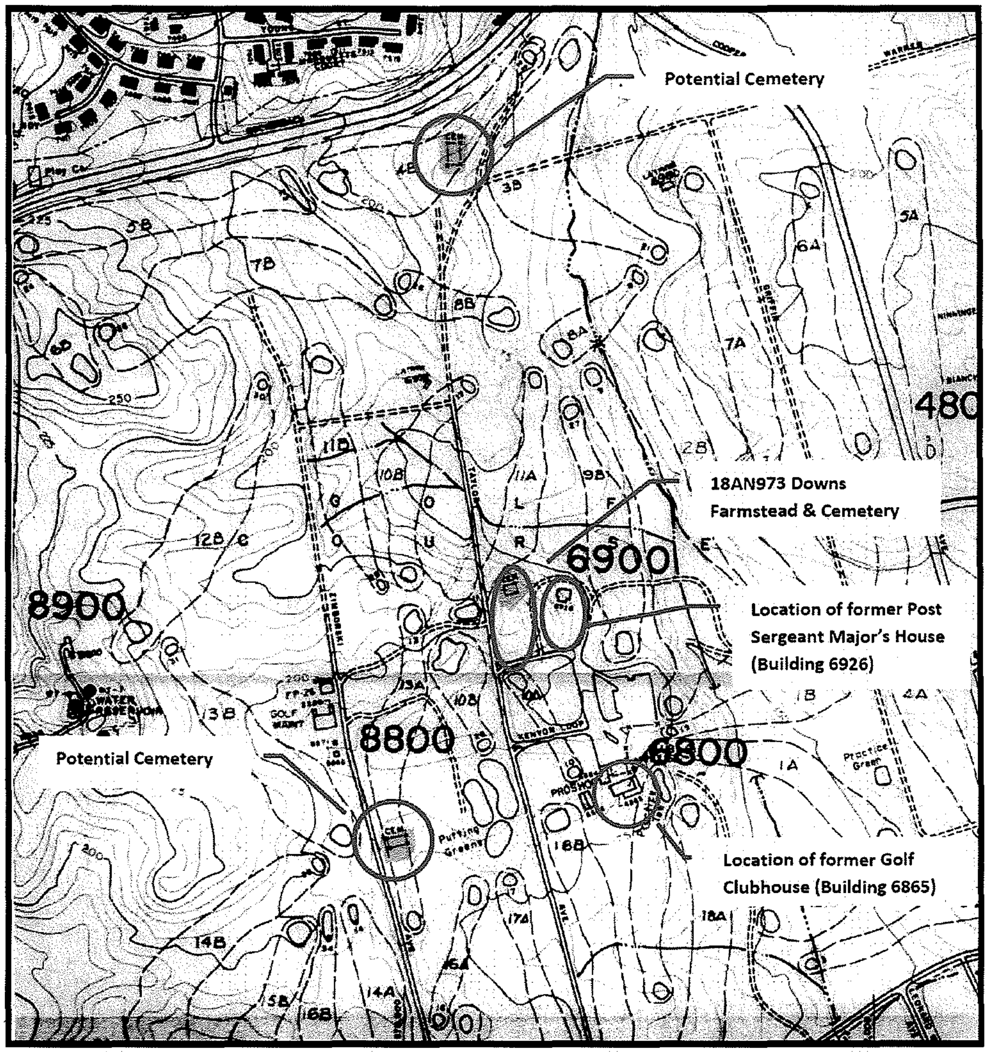


Figure 2. 1977 Topographic Map, Fort Meade
(No Reference and Not to Scale)

Martin O'Malley
Governor

Anthony G. Brown
Lt. Governor

Maryland Department of Planning
Maryland Historical Trust

Richard Eberhart Hall
Secretary

Matthew J. Power
Deputy Secretary

December 14, 2009

Jeffery Williams
Environmental and Safety Services
Department of Defense
9800 Savage Road, Suite 6404
Fort Meade, MD 20755-6404

Re: MHT Review of Proposed Campus Development Program – "Site M," Fort George G. Meade, Anne Arundel County, Maryland

Dear Mr. Williams:

Thank you for providing the Maryland Historical Trust, The State Historic Preservation Office (MD SHPO), with your November 4, 2009 letter responding to the MD SHPO letter from August 31, 2009. It is our understanding that NSA is moving forward with the development of "Site M1", which will include 1.8 million square feet of administrative space, and that a draft Environmental Impact Statement is being compiled for the proposed undertaking. Based on the NSA findings described in your recent letter, the MD SHPO concurs that the proposed undertaking has the potential to significantly impact the historic resources located around Site M.

Archeology: As noted in our August 31, 2009 letter, MHT files indicate that two archeological sites, 18AN973 and 18AN234, are located within the proposed Site M project area. Site 18AN234 has already been determined to be ineligible for listing in the National Register of Historic Places and requires no further investigation. Site 18AN973, on the other hand, contains the nineteenth-century Downs Cemetery as well as the remains of a late nineteenth-century farmstead (see pages 92-97 of the Technical Appendix to the Fort Meade Cultural Resource Management Plan -- *Phase I Archeological Survey of Approximately 2,210 Acres at Fort George G. Meade, Anne Arundel County, Maryland* [Hornum et al. 1995].

Due to the presence of site 18AN973, we are still requesting that we be provided with current site development plans and documentation regarding the proposed treatment of the Downs Cemetery (avoidance, relocation, etc…). It is our understanding that NSA is also proposing additional investigations in an effort to identify two other historic cemeteries that may be located within the project area. Once we have received this information, we will be able to continue our review of the proposed undertaking and determine what archeological investigations, if any, will be necessary. If the site plans indicate that site 18AN973 or other potentially significant resources may be impacted by the proposed development, then a Phase II investigation will be recommended. All Phase II studies must be carried out by a qualified professional archeologist and performed in accordance with the *Standards and Guidelines for Archeological Investigations in Maryland* (Shaffer and Cole 1994), and all Phase II efforts must be sufficient to: a) identify the site's vertical

100 Community Place Crownsville, Maryland 21032-2023
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and horizontal boundaries; b) interpret the site's cultural affiliations, functions, and significance; c) evaluate the site's integrity; d) conclusively determine the site's eligibility for the National Register of Historic Places; and e) define the need for further archeological work, if necessary. In addition, if the development of Site M requires the removal and relocation of the Downs Cemetery or any other cemetery, then further coordination with MHT will be necessary to determine an appropriate course of action.

Historic Built Environment: It is the MD SHPO's understanding that Building 6926/Post Sergeant Major's House, MIHP AA-0008, and Building 6865/Golf Course Clubhouse, MIHP AA-0009 were previously demolished by the Army. Since these resources are longer standing the MD SHPO will not need a Determination of Eligibility (DOE) for these structures. This being said, there is still a potential that the Applewood and Parks Golf Courses are an eligible resource and still need to be evaluated for the National Register.

The MD SHPO looks forward to working with the NSA to continue the consultation process and to conclude the Section 106 historic preservation review process. If you have any questions or require further information, please do not hesitate to contact either Dixie Henry (for inquiries regarding archeological resources) at 410-514-7638 \ dhenry@mdp.state.md.us or Amanda Apple (for inquiries regarding the historic built environment) at 410-514-7630 \ aapple@mdp.state.md.us.

Sincerely,

Dixie Henry

Dr. Dixie Henry
Preservation Officer
Maryland Historical Trust

DLH/ARA/200904304

APPENDIX C

REVIEW OF THE DRAFT EIS

The following agencies and individuals will be sent copies of the Draft EIS. Other copies of the Draft EIS will be distributed upon request.

Federal Agency Contacts

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The following agencies and individuals will be sent notice that the Draft EIS is available for review.

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Rockville, MD 20853

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APPENDIX D

NOISE ANALYSIS CALCULATIONS

Construction and Pile Driving Noise Distance Calculations
dB2=dB1-10*(a)LOG(R2/R1)
a=conventional drop-off rate coefficient, 2.0 for point source, no ground or atmospheric absorption
R1= distance of 50 feet
R2= distance to source

Cumulative noise level from grading, paving, and building construction (dB1) = 88.7 dB

Phase I

Residents of the Military Family Housing (MFH), approximately 350 feet north of construction
dB2=dB1-10*(2)LOG(350/50)

71.8 dBA

Persons accessing the Argonne Hills Chapel Center, approximately 750 feet northwest of construction
dB2=dB1-10*(2)LOG(750/50)

65.2 dBA

Persons accessing the MFH, approximately 800 feet east of construction
dB2=dB1-10*(2)LOG(800/50)

64.6 dBA

Persons accessing the Pershing Hills Elementary School, approximately 1,110 feet north of construction
dB2=dB1-10*(2)LOG(1110/50)

61.8 dBA

Persons accessing MacArthur Middle School, approximately 1,850 feet northeast of construction
dB2=dB1-10*(2)LOG(1850/50)

57.3 dBA

Persons accessing Manor View Elementary School, approximately 2,640 feet east of construction
dB2=dB1-10*(2)LOG(2640/50)

54.2 dBA

Persons accessing the NSA Campus off Canine Rd, approximatet 3,100 feet west of construction
dB2=dB1-10*(2)LOG(3100/50)

52.9 dBA

Persons at the installation boundary, approximately 4,760 feet west of construction
dB2=dB1-10*(2)LOG(4760/50)

49.1 dBA

Persons accessing the Patuxent Research Refuge, approximately 7,175 feet south of construction
dB2=dB1-10*(2)LOG(7175/50)

45.6 dBA

Phase II

Persons accessing the NSA Campus off Canine Rd, approximately1,730 feet west of construction
dB2=dB1-10*(2)LOG(1730/50)

57.9 dBA

Persons at the installation boundary, approximately 3,420 feet west of construction
dB2=dB1-10*(2)LOG(3420/50)

52.0 dBA

Persons accessing the Patuxent Research Refuge, approximately 6,770 feet south of construction
dB2=dB1-10*(2)LOG(6770/50)

46.1 dBA

Phase III

Persons accessing the [black building] south of Mapes Road, approximately 1,780 feet south of construction
dB2=dB1-10*(2)LOG(1780/50)

57.7 dBA

Persons at the installation boundary, approximately 3,850 feet west of construction
dB2=dB1-10*(2)LOG(3850/50)

51.0 dBA

Persons accessing the Patuxent Research Refuge, approximately 5,630 feet south of construction
dB2=dB1-10*(2)LOG(5630/50)

47.7 dBA

Noise level from pile driving (dB1) = 98.0 dB

Phase I

Residents of the MFH, approximately 350 feet north of pile driving activities
dB2=dB1-10*(2)LOG(350/50)

81.1 dBA

Persons accessing the Argonne Hills Chapel Center, approximately 750 feet northwest of pile driving activities
dB2=dB1-10*(2)LOG(750/50)

74.5 dBA

Persons accessing the MFH, approximately 800 feet east of pile driving activities
dB2=dB1-10*(2)LOG(800/50)

73.9 dBA

Persons accessing the Pershing Hills Elementary School, approximately 1,110 feet north of pile driving activities
dB2=dB1-10*(2)LOG(1110/50)

71.1 dBA

Persons accessing MacArthur Middle School, approximately 1,850 feet northeast of pile driving activities
dB2=dB1-10*(2)LOG(1850/50)

66.6 dBA

Persons accessing Manor View Elementary School, approximately 2,640 feet east of pile driving activities
dB2=dB1-10*(2)LOG(2640/50)

63.5 dBA

Persons accessing the NSA Campus off Canine Rd, approximately 3,100 feet west of pile driving activities
dB2=dB1-10*(2)LOG(3100/50)

62.2 dBA

Persons at the installation boundary, approximately 4,760 feet west of pile driving activities
dB2=dB1-10*(2)LOG(4760/50)

58.4 dBA

Persons accessing the Patuxent Research Refuge, approximately 7,175 feet south of pile driving activities
dB2=dB1-10*(2)LOG(7175/50)

54.9 dBA

Phase II

Persons accessing the NSA Campus off Canine Rd, approximately 1,730 feet west of pile driving activities
dB2=dB1-10*(2)LOG(1730/50)

67.2 dBA

Persons at the installation boundary, approximately 3,420 feet west of pile driving activities
dB2=dB1-10*(2)LOG(3420/50)

61.3 dBA

Persons accessing the Patuxent Research Refuge, approximately 6,770 feet south of construction
dB2=dB1-10*(2)LOG(6770/50)

55.4 dBA

Phase III

Persons accessing the Defense Information School (Building 6500) approximately 1,780 feet south of pile driving activities
dB2=dB1-10*(2)LOG(1780/50)

67.0 dBA

Persons at the installation boundary, approximately 3,850 feet west of pile driving activities
dB2=dB1-10*(2)LOG(3850/50)

60.3 dBA

Persons accessing the Patuxent Research Refuge, approximately 5,630 feet south of pile driving activities
dB2=dB1-10*(2)LOG(5630/50)

57.0 dBA

Computation

Project	Ft. Meade Campus Development EIS	Computed	ED	Date	9/2/2009
Subject	Noise Analysis - Diesel Generators	Checked	TGC	Date	9/2/2009
Task	Summary Table	Sheet	1	Of	3

Outdoor Noise Levels

Receptor	Predicted Noise Level SPL (dBA)
1 - Residential (MFH)	74
2 - School (Pershing Hill Elementary)	68
3 - Residential (MFH)	67
4 - Church (Argonne Hills Chapel Center)	65
5 - School (MacArthur Middle)	63
6 - Installation Boundary	55

Computation

Project	Ft. Meade Campus Development EIS	Computed	ED	Date	9/2/2009
Subject	Noise Analysis - Diesel Generators	Checked	TGC	Date	9/2/2009
Task	Source Information	Sheet	2	Of	3

Generator data from Caterpillar, Inc.

1. Outdoor Sources

		SOUND Pressure Frequency (Hz)									
	Bldg.	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**		
Generators (at 23.0 feet)											
Mechanical		107	116	107	98	91	90	88	92	117	
TOTAL FOR ALL 24		121	130	121	112	105	104	102	106	dBs	
A-weighting correction		-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1		
TOTAL FOR ALL 24		**95**	**114**	**112**	**109**	**105**	**105**	**103**	**105**	118	dBA
Exhaust w/o Silencer		97	113	108	99	97	98	98	95		
Silencer		-7	-15	-25	-25	-17	-15	-15	-20		
Exhaust - with silencer		90	98	83	74	80	83	83	75	dBs	
TOTAL FOR ALL 24		104	112	97	88	94	97	97	89	dBs	
A-weighting correction		-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1		
TOTAL FOR ALL 24		**78**	**96**	**88**	**85**	**94**	**98**	**98**	**88**	103	dBA

2. Distance to Property-line Receptors

Measure straight-line distance from equipment location to property-line receptors

	Distance to Receptor (in feet)						
Property-line Receptor	N/A	N/A	N/A	N/A	N/A	Generators	N/A
1 - Residential (MFH)						665	
2 - School (Pershing Hill Elementary)						1415	
3 - Residential (MFH)						1600	
4 - Church (Argonne Hills Chapel Center)						1980	
5 - School (MacArthur Middle)						2450	
6 - Installation Boundary						5860	

Measure height of roof-tops where equipment located

Equipment Height (in feet)						
N/A	N/A	N/A	N/A	N/A	Generators	N/A
					8	

Calculate distance to property-line receptors using pythagorean theorem

	Distance to Receptor (in feet)						
Property-line Receptor	N/A	N/A	N/A	N/A	N/A	Generators	N/A
1 - Residential (MFH)						665	
2 - School (Pershing Hill Elementary)						1415	
3 - Residential (MFH)						1600	
4 - Church (Argonne Hills Chapel Center)						1980	
5 - School (MacArthur Middle)						2450	
6 - Installation Boundary						5860	

Computation

Project	Ft. Meade Campus Development EIS	Computed	ED	Date	9/2/2009
Subject	Noise Analysis - Diesel Generators	Checked	TGC	Date	9/2/2009
Task	Noise Level @ Outdoor Receptors	Sheet	3	Of	3

1. Propagate Outdoor Noise Sources to Property Line Receptors

Propagate Outdoor Source's SPL to SPL at Property Line using the following equation:

SPL2 = SPL1 - 20log(D2/D1)

Receptor 1 — Residential (MFH)

Source	SOUND Pressure Frequency (Hz) 63	125	250	500	1000	2000	4000	8000	Sum	$A_{Barrier}$	TOTAL	
Generators mechanical	65	84	83	79	76	76	74	75	88	25	63	dBA
Exhaust - with silencer	48	66	59	55	65	69	69	58	74	0	74	dBA
TOTAL ALL SOURCES	65	85	83	79	76	77	75	76			**74**	**OVERALL TOTAL SPL (dBA)**

Receptor 2 — School (Pershing Hill Elementary)

Source	SOUND Pressure Frequency (Hz) 63	125	250	500	1000	2000	4000	8000	Sum	$A_{Barrier}$	TOTAL	
Generators mechanical	59	78	76	73	69	69	67	69	82	25	57	dBA
Exhaust - with silencer	42	60	52	49	58	62	62	52	67	0	67	dBA
TOTAL ALL SOURCES	59	78	76	73	69	70	68	69			**68**	**OVERALL TOTAL SPL (dBA)**

Receptor 3 — Residential (MFH)

Source	SOUND Pressure Frequency (Hz) 63	125	250	500	1000	2000	4000	8000	Sum	$A_{Barrier}$	TOTAL	
Generators mechanical	58	77	75	72	68	68	66	68	81	25	56	dBA
Exhaust - with silencer	41	59	51	48	57	61	61	51	66	0	66	dBA
TOTAL ALL SOURCES	58	77	75	72	68	69	67	68			**67**	**OVERALL TOTAL SPL (dBA)**

Receptor 4 — Church (Argonne Hills Chapel Center)

Source		SOUND Pressure Frequency (Hz)											
		63	125	250	500	1000	2000	4000	8000	Sum	$A_{Barrier}$	TOTAL	
Generators mechanical		56	75	74	70	66	66	64	66	79	25	54	dBA
Exhaust - with silencer		39	57	50	46	55	59	59	49	64	0	64	dBA
TOTAL ALL SOURCES		56	75	74	70	66	67	65	66			**65**	**OVERALL TOTAL SPL (dBA)**

Receptor 5 — School (MacArthur Middle)

Source		SOUND Pressure Frequency (Hz)											
		63	125	250	500	1000	2000	4000	8000	Sum	$A_{Barrier}$	TOTAL	
Generators mechanical		54	73	72	68	64	64	62	64	77	25	52	dBA
Exhaust - with silencer		37	55	48	44	53	57	57	47	62	0	62	dBA
TOTAL ALL SOURCES		54	73	72	68	65	65	63	64			**63**	**OVERALL TOTAL SPL (dBA)**

Receptor 6 — Installation Boundary

Source		SOUND Pressure Frequency (Hz)											
		63	125	250	500	1000	2000	4000	8000	Sum	$A_{Barrier}$	TOTAL	
Generators mechanical		46	66	64	60	57	57	55	57	70	25	45	dBA
Exhaust - with silencer		29	48	40	36	46	50	50	40	55	0	55	dBA
TOTAL ALL SOURCES		47	66	64	60	57	58	56	57			**55**	**OVERALL TOTAL SPL (dBA)**

Computation

Project Ft. Meade Campus Development EIS
Subject Noise Analysis - Combustion Turbine
Task Summary Table

Computed TGC Date 8/28/2009

Outdoor Noise Levels

Receptor	Predicted Noise Level SPL (dBA)
1 - Residential (MFH)	42
2 - School (Pershing Hill Elementary)	36
3 - Residential (MFH)	35
4 - Church (Argonne Hills Chapel Center)	33
5 - School (MacArthur Middle)	31
6 - Installation Boundary	23

Computation

Project	Ft. Meade Campus Development EIS	Computed	TGC	Date	8/28/2009
Subject	Noise Analysis - Combustion Turbine				
Task	Source Information				

1. Outdoor Sources

Based on volume 1 of the Electric Power Plant Environmental Noise Guide, Edison Electric Institute (prepared by BBN), 1978

Sound power level of turbine, generator, exiciter assembly can be estimated as: Lw = 113 + 4 log (MWe) in unweighted decibels

MWe = 85
Lw 121 dB (unweighted)

Octave band center frequencies can be estimated by subtracting the following values (in dB) from the overall sound power level for the nine standard octave bands.

SOUND POWER Frequency (Hz)

Hz	31	63	125	250	500	1000	2000	4000	8000	
value in dB to be subtracted	9	3	5	10	14	18	21	29	35	
SWL in dB	112	118	116	111	107	103	100	92	86	
A-weighting correction	-39	-26	-16	-9	-3	0	1	1	-1	Sum
SWL in dBA	73	92	100	102	104	103	101	93	85	109

2. Distance to Property-line Receptors

Measure straight-line distance from equipment location to property-line receptors

	Distance to Receptor (in feet)						
Property-line Receptor	N/A	N/A	N/A	N/A	N/A	Turbines	N/A
1 - Residential (MFH)						665	
2 - School (Pershing Hill Elementary)						1415	
3 - Residential (MFH)						1600	
4 - Church (Argonne Hills Chapel Center)						1980	
5 - School (MacArthur Middle)						2450	
6 - Installation Boundary						5860	

Measure height of roof-tops where equipment located

Equipment Height (in feet)						
N/A	N/A	N/A	N/A	N/A	Turbines	N/A
					8	

Calculate distance to property-line receptors using pythagorean theorem

	Distance to Receptor (in feet)						
Property-line Receptor	N/A	N/A	N/A	N/A	N/A	Turbines	N/A
1 - Residential (MFH)						665	
2 - School (Pershing Hill Elementary)						1415	
3 - Residential (MFH)						1600	
4 - Church (Argonne Hills Chapel Center)						1980	
5 - School (MacArthur Middle)						2450	
6 - Installation Boundary						5860	

Computation

HDR | e²M

Project	Ft. Meade Campus Development EIS	Computed	TGC	Date	8/28/2009
Subject	Noise Analysis - Combustion Turbine				
Task	Noise Level @ Outdoor Receptors				

1. Propagate Outdoor Noise Sources to Property Line Receptors

Propagate Outdoor Source's SWL to SPL at Property Line using the following equation:

SPL = SWL - 20log(r) - 0.6   Equation 2.7b Handboook of Noise Control, Harris (1979)

Receptor 1   Residential (MFH)

Source		SOUND POWER Frequency (Hz) 31	63	125	250	500	1000	2000	4000	8000	Sum	$A_{Barrier}$	TOTAL	
85 MW combustion turbine		16	34	43	45	46	46	44	36	28	52	10	42	dBA
TOTAL ALL SOURCES		17	34	43	45	46	46	44	36	28			**42**	**OVERALL TOTAL SPL (d**

Receptor 2   School (Pershing Hill Elementary)

Source		SOUND POWER Frequency (Hz) 31	63	125	250	500	1000	2000	4000	8000	Sum	$A_{Barrier}$	TOTAL	
85 MW combustion turbine		9	28	36	39	40	39	37	29	21	46	10	36	dBA
TOTAL ALL SOURCES		13	28	36	39	40	39	37	29	21			**36**	**OVERALL TOTAL SPL (d**

Receptor 3   Residential (MFH)

Source		SOUND POWER Frequency (Hz) 31	63	125	250	500	1000	2000	4000	8000	Sum	$A_{Barrier}$	TOTAL	
85 MW combustion turbine		8	27	35	37	39	38	36	28	20	44	10	34	dBA
TOTAL ALL SOURCES		12	27	35	37	39	38	36	28	20			**35**	**OVERALL TOTAL SPL (d**

Receptor 4   Church (Argonne Hills Chapel Center)

Source		SOUND POWER Frequency (Hz) 31	63	125	250	500	1000	2000	4000	8000	Sum	$A_{Barrier}$	TOTAL	
85 MW combustion turbine		6	25	33	36	37	36	34	26	18	43	10	33	dBA
TOTAL ALL SOURCES		12	25	33	36	37	36	34	26	19			**33**	**OVERALL TOTAL SPL (d**

Receptor 5 School (MacArthur Middle)

Source		SOUND POWER Frequency (Hz)												
		31	63	125	250	500	1000	2000	4000	8000	Sum	$A_{Barrier}$	TOTAL	
85 MW combustion turbine		4	23	31	34	35	34	33	24	16	41	10	31	dBA
TOTAL ALL SOURCES		11	23	31	34	35	34	33	24	17			31	OVERALL TOTAL SPL (d

Receptor 6 Installation Boundary

Source		SOUND POWER Frequency (Hz)												
		31	63	125	250	500	1000	2000	4000	8000	Sum	$A_{Barrier}$	TOTAL	
85 MW combustion turbine		-3	16	24	26	28	27	25	17	9	33	10	23	dBA
TOTAL ALL SOURCES		10	17	24	26	28	27	25	18	12			23	OVERALL TOTAL SPL (d

APPENDIX E

AIR QUALITY CALCULATIONS

E.1 Emissions Estimations and Methodology

The Department of Defense (DOD) has considered net emissions generated from all direct and indirect sources of air emission that are reasonably foreseeable. *Direct emissions* are emissions that are caused or initiated by a Federal action and occur at the same time and place as the action. *Indirect emissions* are defined as reasonably foreseeable emissions that are caused by the action but might occur later in time and/or be farther removed in distance from the action itself, and that the federal agency can practicably control. More specifically, project-related direct emissions would result from the following:

- *Demolition and construction activities*: the use of non-road equipment (e.g., bulldozers, backhoes), worker vehicles, the use of volatile organic compound (VOC) paints, paving off-gasses, and fugitive particles from surface disturbances
- *Operational activities*: Emergency generators and heating boilers not subject to major new source review, and the use of private motor vehicles

E.1.1 Demolition and Construction Emissions

Regardless of the sites ultimately chosen, estimated actual construction emissions would be similar. All direct and indirect emissions associated with the three phases of construction were estimated. The construction emissions were generated by estimating equipment use for utilities, site preparation, construction, and landscaping for the proposed facilities and storage tanks, including the following:

- Office Modules and Operations Center;
- Module Interconnections;
- Server Centers;
- Electrical substation;
- Generator plant (providing 60 MW of service);
- Chiller plant;
- Boiler plant;
- Ancillary parking;
- Water storage tank;
- Utility upgrades (water, gas, and communications services); and
- Infrastructure upgrades (paving, walks, curbs, and gutters, storm water management).

Demolition and construction emissions associated with the use of construction equipment (e.g., bulldozers, backhoes), worker vehicles, the use of VOC paints, paving off-gasses, and fugitive particles from surface disturbances are presented in **Tables E-1 through E-3** for all the years of construction. This section also outlines all the calculations and assumptions made to derive these construction emission estimations. Construction activities during Phase I would be slightly more intense than the other two phases. Therefore, the highest annual level of construction emissions would take place in Phase I.

E.1.1.1 Heavy Construction Equipment

Pollutant emissions resulting from activities associated with constructing the proposed buildings, parking facilities, and roadways were estimated. The typical demolition and construction would involve such activities as demolition of existing buildings or structures, utility installation, road construction, site clearing and grading, building construction, and asphalt paving.

Table E-1. Estimated Construction Emissions - Phase I

	Construction Emissions (tpy)	
Year	**NO_x**	**VOC**
1	26.8	1.9
2	14.5	1.1
3	51.2	7.6
4	34.2	5.4
5	44.9	7.5
6	13.1	2.3
7	8.3	1.3
Construction Emissions – Year 1		
Heavy Equipment Emissions	26.7	1.8
Worker Trip Emissions	0.1	0.1
Total	26.8	1.9
Construction Emissions – Year 2		
Heavy Equipment Emissions	14.4	1.0
Worker Trip Emissions	0.1	0.1
Total	14.5	1.1
Construction Emissions – Year 3		
Heavy Equipment Emissions	49.7	4.5
Worker Trip Emissions	1.5	1.4
Architectural Coating Emissions	0.0	1.8
Total	51.2	7.6
Construction Emissions – Year 4		
Heavy Equipment Emissions	33.2	3.1
Worker Trip Emissions	1.1	1.0
Architectural Coating Emissions	0.0	1.3
Total	34.2	5.4
Construction Emissions – Year 5		
Heavy Equipment Emissions	43.4	4.3
Worker Trip Emissions	1.5	1.4
Architectural Coating Emissions	0.0	1.8
Total	44.9	7.6
Construction Emissions – Year 6		
Heavy Equipment Emissions	12.6	1.3
Worker Trip Emissions	0.5	0.4
Architectural Coating Emissions	0.0	0.6
Total	13.1	2.3
Construction Emissions – Year 7		
Heavy Equipment Emissions	8.0	0.8
Worker Trip Emissions	0.3	0.2
Architectural Coating Emissions	0.0	0.3
Total	8.3	1.3

Table E-2. Estimated Construction Emissions - Phase II

	Construction Emissions (tpy)	
Year	**NO_x**	**VOC**
1	19.8	1.4
2	5.3	0.4
3	36.9	5.5
4	24.5	3.8
5	29.0	4.7
Construction Emissions – Year 1		
Heavy Equipment Emissions	19.7	1.3
Worker Trip Emissions	0.1	0.1
Total	19.8	1.4
Construction Emissions – Year 2		
Heavy Equipment Emissions	5.3	0.4
Worker Trip Emissions	0.0	0.0
Total	5.3	0.4
Construction Emissions – Year 3		
Heavy Equipment Emissions	35.8	3.2
Worker Trip Emissions	1.1	1.0
Architectural Coating Emissions	0.0	1.3
Total	36.9	5.5
Construction Emissions – Year 4		
Heavy Equipment Emissions	23.7	2.2
Worker Trip Emissions	0.8	0.7
Architectural Coating Emissions	0.0	0.9
Total	24.5	3.8
Construction Emissions – Year 5		
Heavy Equipment Emissions	28.1	2.8
Worker Trip Emissions	0.9	0.9
Architectural Coating Emissions	0.0	1.1
Total	29.0	4.7

Demolition and construction would involve the use of various non-road equipment, power generators, and trucks. Pieces of equipment to be used for building construction include, but are not limited to, backhoes, loaders, excavators, air compressors, chain saws, chipping machines, dozers, cranes, pavers, graders, rollers, and heavy trucks. Information regarding the number of pieces and types of construction equipment to be used on the project, the schedule for deployment of equipment (monthly and annually), and the approximate daily operating time (including power level or usage factor) were estimated for each individual construction project based on a schedule of construction activity.

Emissions from construction activities were estimated based on the projected construction activity schedule, the number of vehicles/pieces of equipment, and vehicle/equipment utilization rates. Emission factors for heavy-duty diesel equipment were obtained from EPA's *NONROAD2005 Emissions Model* (LPES-10). The equipment and vehicle operation hours were estimated based on R.S.Means' *Building Cost Construction Data*, 64th annual edition (LPES-14), and field experience from similar projects.

Table E-3. Estimated Construction Emissions - Phase III

	Construction Emissions (tpy)	
Year	**NO_x**	**VOC**
1	22.4	1.6
2	22.4	1.7
3	34.9	5.2
4	28.2	4.4
5	29.8	5.0
6	29.3	5.2
7	27.4	4.9
8	29.8	5.1
Construction Emissions – Year 1		
Heavy Equipment Emissions	22.3	1.5
Worker Trip Emissions	0.1	0.1
Fugitive Dust Emissions	0.0	0.0
Total	22.4	1.6
Construction Emissions – Year 2		
Heavy Equipment Emissions	22.3	1.6
Worker Trip Emissions	0.1	0.1
Fugitive Dust Emissions	0.0	0.0
Total	22.4	1.7
Construction Emissions – Year 3		
Heavy Equipment Emissions	33.9	3.0
Worker Trip Emissions	1.0	0.9
Architectural Coating Emissions	0.0	1.2
Total	34.9	5.2
Construction Emissions – Year 4		
Heavy Equipment Emissions	27.3	2.6
Worker Trip Emissions	0.9	0.8
Architectural Coating Emissions	0.0	1.1
Total	28.2	4.4
Construction Emissions – Year 5		
Heavy Equipment Emissions	28.8	2.9
Worker Trip Emissions	1.0	0.9
Architectural Coating Emissions	0.0	1.2
Total	29.8	5.0
Construction Emissions – Year 6		
Heavy Equipment Emissions	28.3	2.9
Worker Trip Emissions	1.1	1.0
Architectural Coating Emissions	0.0	1.3
Total	29.3	5.2
Construction Emissions – Year 7		
Heavy Equipment Emissions	26.4	2.7
Worker Trip Emissions	1.0	0.9
Architectural Coating Emissions	0.0	1.2
Total	27.4	4.9
Construction Emissions – Year 8		
Heavy Equipment Emissions	28.8	2.9
Worker Trip Emissions	1.0	1.0
Architectural Coating Emissions	0.0	1.2
Total	29.8	5.1

Emission factors in grams of pollutant per hour were multiplied by the estimated running time to calculate total grams of pollutant from each piece of equipment. Finally, total grams of pollutant were converted to tons of pollutant. The following formula was used to calculate hourly emissions from non-road engine sources, including cranes, backhoes, and the like:

$$M_i = (N \times EF_i)$$

where: M_i = mass of emissions of i^{th} pollutant during inventory period

N = source population (units)

EF_i = average emissions of i^{th} pollutant per unit of use (e.g., grams per hour)

The total annual emissions levels are summarized in **Table E-4.**

Table E-4. Annual Emissions from Construction and Demolition Equipment

Year [a]	Annual emissions (tpy)					
	Phase I		Phase II		Phase III	
	NO_x	**VOC**	**NO_x**	**VOC**	**NO_x**	**VOC**
1	26.7	1.8	19.7	1.3	22.3	1.5
2	14.4	1.0	5.3	0.4	22.3	1.6
3	49.7	4.5	35.8	3.2	33.9	3.1
4	33.2	3.1	23.7	2.2	27.3	2.6
5	43.4	4.3	28.1	2.8	28.8	2.9
6	12.6	1.3	-	-	28.3	2.9
7	8.0	0.8	-	-	26.4	2.7
8	-	-	-	-	28.8	2.9

Sources: LPES-8 and LPES-11

a Represents years from the beginning of each phase.

E.1.1.2 Construction Worker Vehicle Operations

Emissions due to construction worker vehicle use were included in the analysis. Emission factors for motor vehicles were conservatively calculated using the EPA *MOBILE6.2*. These emission factors were then multiplied by the vehicle operational hours to determine motor vehicle emissions. The analysis assumed conservatively that the worker's vehicle would drive 30 miles per day at an average speed of 35 miles per hour. The total annual emissions levels are summarized in **Table E-5**.

Table E-5. Estimated Annual Emissions from Construction Worker Vehicles

Year[a]	Annual Emissions (tpy)					
	Phase I		Phase II		Phase III	
	NO_x	VOC	NO_x	VOC	NO_x	VOC
1	0.1	0.1	0.1	0.1	0.1	0.1
2	0.1	0.1	0.0	0.0	0.1	0.1
3	1.5	1.4	1.1	1.0	1.0	0.9
4	1.1	1.0	0.8	0.7	0.9	0.8
5	1.5	1.4	0.9	0.9	1.0	0.9
6	0.5	0.4	-	-	1.1	1.0
7	0.3	0.2	-	-	1.0	0.9
8	-	-	-	-	1.0	1.0

Sources: LPES-8 and LPES-9

a Represents years from the beginning of each phase.

E.1.1.3 Emissions from Architectural Coatings

Emission factors relating emissions to total square footage to be built were used to estimate VOC emissions from architectural coating activities— primarily painting activities. For office space, the area to be painted was assumed to be approximately twice the heated area of the facility, and the dry film thickness was assumed to be 3 millimeters (mm). The following formula was used to calculate emissions from the painting of the facilities:

$E = [(F \times G) / 1000] \times H$

where: E = emissions of VOCs from architectural coatings

F = pounds of VOC emissions per gallon

G = total area to be coated (floor area x 2)

H = paint coverage.

A sample calculation for architectural coating VOC emissions during construction of an example facility is provided below:

Floor area = 100,000 ft^2

E = [(0.83 [lb/gallon] / 400 [ft^2/gallon] x [(100,000 [ft^2] x 2)]]/2,000 [lb/ton]

= 0.208 tons

The total annual emissions levels are summarized in **Table E-6**. In addition, estimated emissions from the potential demolition and construction are presented in **Appendix E.2**.

Table E-6. Annual VOC Emissions from Architectural Coatings

Year[a]	Annual VOC Emissions (tpy)		
	Phase I	Phase III	Phase III
3	1.8	1.3	1.2
4	1.3	0.9	1.1
5	1.8	1.1	1.2
6	0.6	-	1.3
7	0.3	-	1.2
8	-	-	1.2

Sources: LPES-8 and COMAR 26.11.35

a Represents years from the beginning of each phase.

E.1.1.4 Asphalt Curing Emissions

Asphalt paving would generate emissions from (1) asphalt curing, (2) operation of onsite paving equipment, and (3) operation of motor vehicles, including paving material delivery trucks and worker commuting vehicles. Because the emissions resulting from the operation of onsite paving equipment, trucks, and vehicles were included in the previous section, only asphalt curing-related emissions are discussed in this section. Asphalt curing-related VOC emissions were calculated based on the amount of paving for the onsite parking lot and proposed roadways. The following assumption was used in VOC emission calculations for asphalt curing (LPES-8):

E = area paved x 2.62 lb VOC/acre

A sample calculation is provided below:

Paved area = 100 acres

E = 100 acres x 2.62 lb VOC/acre/2,000 lb/ton

= 0.131 ton

Due to the minimal paving anticipated for all alternatives, negligible off gas emissions are anticipated.

E.1.2 Operational Emissions

Operational emissions occur as a result of the operation (heating boilers and emergency generators) of the proposed facilities. The total annual operational emissions levels are summarized in **Table E-8**. It is expected that these emissions would occur immediately after the completion of each Phase. Notably, the fuel usage for the proposed boilers was based on the existing campus, and emissions due to heating of facilities were broken down by phase based on the heated floor area. It is expected that the new buildings will make more efficient use of the heat than existing buildings, and emissions would be somewhat less than those described herein. In addition, emissions due to new commuters were calculated using the same procedure for construction workers. The vast majority of personnel that would occupy the new facilities currently work at Fort Meade or NSA, or live within the Baltimore region. It is expected that 250 new employees for Phase I, 200 new employees for Phase II, and 200 new employees for Phase III, would come from outside the Baltimore AQCR. Conservatively, emission factors for the current year were used for all phases. It is expected that the total commuter emissions would be somewhat less than those described herein.

Table E-7. Roll-up of Operational Emissions

Boiler Emissions	**NO_x**	**VOC**
Phase I (33%)	3.3	0.4
Phase I+II (54%)	5.3	0.6
All Phases (100%)	9.9	1.2
Generator Emissions	**NO_x**	**VOC**
Phase I	5.4	0.7
Worker Commuting Emissions	**NO_x**	**VOC**
Phase I	0.6	0.7
Phase I+II	1.1	1.2
All Phases	1.6	1.8
Total Operational Emissions	**NO_x**	**VOC**
Phase I	9.3	1.8
Phase I+II	11.8	2.6
All Phases	16.9	3.7

E.2 Emission Calculations

Table E-8. Project Areas and Durations – Phase I

Project Name	Year	Clearing Area (Acres)	Building Area (ft^2)	Paving (Acres)	Days of Clearing	Days of Building	Days of Paving
Demolition	1	0.74	0	0	230	0	0
Road Improvements, Grading	1	4.82	0	0	230	0	0
Office Modules, Grading	1	39.74	0	0	230	0	0
Module Interconnections, Grading	1	0.92	0	0	230	0	0
Demolition	2	0.74	0	0	230	0	0
Road Improvements, Paving	2	0	0	4.82	0	0	230
Server Center, Clearing and Grading	2	7.48	0	0	230	0	0
Substations, Clearing and Grading	2	3.2	0	0	230	0	0
Chiller Plant, Clearing and Grading	2	3.2	0	0	230	0	0
Boiler Plant, Clearing and Grading	2	3.2	0	0	230	0	0
Water Tank, Clearing and Grading	2	0.23	0	0	230	0	0
Parking Garage, Clearing and Grading	2	5.34	0	0	230	0	0
Utility Upgrades, Clearing and Grading	2	1.22	0	0	230	0	0
Office Modules, Construction	3	0	576,000	0	0	230	0
Chiller Plant, Construction	3	0	139,000	0	0	230	0
Boiler Plant, Construction	3	0	139,000	0	0	230	0
Office Modules, Construction	4	0	576,000	0	0	230	0
Module Interconnections, Construction	4	0	40,000	0	0	230	0
Office Modules, Construction	5	0	576,000	0	0	230	0
Substations, Construction	5	0.46	0	0	113.42	0	0
Server Center, Construction	5	0	0	1.15	0	0	18.9
Parking Garage, Construction	6	0.83	0	0	230	0	0
Server Center, Construction	6	0	12,000	0	0	230	0
Parking Garage, Construction	7	0	6,000	0	0	113.42	0
Water Tank, Construction	7	0.46	0	0	113.42	0	0
Surface Parking, Paving	7	0	0	1.15	0	0	18.9

Table E-9. Heavy Equipment Emissions – Phase I

Project	NO_x (tons)	VOC (tons)
Demolition (Year 1)	0.43	0.03
Road Improvements, C&G (Year 1)	2.78	0.19
Office Modules, C&G (Year 1)	22.93	1.55
Module Interconnections, C&G (Year 1)	0.53	0.04
Demolition (Year 2)	0.39	0.03
Road Improvements, Paving (Year 2)	1.44	0.10
Server Center, C&G (Year 2)	3.94	0.28
Substations, C&G (Year 2)	1.68	0.12
Chiller Plant, C&G (Year 2)	1.68	0.12
Boiler Plant, C&G (Year 2)	1.68	0.12
Water Tank, C&G (Year 2)	0.12	0.01
Parking Garage, C&G (Year 2)	2.81	0.20
Utility Upgrades, C&G (Year 2)	0.64	0.04
Office Modules, Construction (Year 3)	33.51	3.01
Chiller Plant, Construction (Year 3)	8.09	0.73
Boiler Plant, Construction (Year 3)	8.09	0.73
Office Modules, Construction (Year 4)	31.01	2.92
Module Interconnections, Construction (Year 4)	2.15	0.20
Office Modules, Construction (Year 5)	28.45	2.84
Substations, Construction (Year 5)	6.87	0.69
Server Center, Construction (Year 5)	8.03	0.80
Parking Garage, Construction (Year 6)	5.26	0.55
Server Center, Construction (Year 6)	7.38	0.77
Parking Garage, Construction (Year 7)	5.26	0.55
Water Tank, Construction (Year 7)	0.45	0.05
Surface Parking, Paving (Year 7)	2.32	0.20

Sources: LPES-8 and LPES-11

Table E-10. Construction Worker Trip Emissions (tons) – Phase I

Project	VMT	$EFNO_x$ (g/mile)	NO_x (tons)	EFVOC (g/mile)	VOC (tons)
Year 1					
Demolition	6,412	0.32	0	0.29	0
Road Improvements	41,575	0.32	0.01	0.29	0.01
Office Modules, C&G	342,792	0.32	0.12	0.29	0.11
Module Interconnections	7,935	0.32	0	0.29	0
Year 2					
Demolition	6,412	0.32	0	0.29	0
Road Improvements, Paving	41,575	0.32	0.01	0.29	0.01
Server Center, C&G	64,512	0.32	0.02	0.29	0.02
Substations, C&G	27,574	0.32	0.01	0.29	0.01
Chiller Plant, C&G	27,574	0.32	0.01	0.29	0.01
Boiler Plant, C&G	27,574	0.32	0.01	0.29	0.01
Water Tank, C&G	1,984	0.32	0	0.29	0
Parking Garage, C&G	46,023	0.32	0.02	0.29	0.01
Utility Upgrades, C&G	10,524	0.32	0	0.29	0
Year 3					
Office Modules, Construction	2,861,568	0.32	0.99	0.29	0.91
Chiller Plant, Construction	690,552	0.32	0.24	0.29	0.22
Boiler Plant, Construction	690,552	0.32	0.24	0.29	0.22
Year 4					
Office Modules, Construction	2,861,568	0.32	0.99	0.29	0.91
Module Interconnections, Construction	198,720	0.32	0.07	0.29	0.06
Year 5					
Office Modules, Construction	2,861,568	0.32	0.99	0.29	0.91
Substations, Construction	690,552	0.32	0.24	0.29	0.22
Server Center, Construction	807,797	0.32	0.28	0.29	0.26
Year 6					
Parking Garage, Construction	576,288	0.32	0.2	0.29	0.18
Server Center, Construction	807,797	0.32	0.28	0.29	0.26

Project	VMT	EFNO$_x$ (g/mile)	NO$_x$ (tons)	EFVOC (g/mile)	VOC (tons)
Year 7					
Parking Garage, Construction	576,288	0.32	0.2	0.29	0.18
Water Tank, Construction	49,680	0.32	0.02	0.29	0.02
Surface Parking, Paving	99,188	0.32	0.03	0.29	0.03

Table E-11. Architectural Coating Emissions (Paint) – Phase I

Project	Floor Area	Wall Surface	EFVOC (lbs/1,000 ft^2)	VOC (tons)
Office Modules, Construction (Year 3)	576,000	1,152,000	55.5	1.2
Chiller Plant, Construction (Year 3)	139,000	278,000	55.5	0.29
Boiler Plant, Construction (Year 3)	139,000	278,000	55.5	0.29
Office Modules, Construction (Year 4)	576,000	1,152,000	55.5	1.2
Module Interconnections, Construction (Year 4)	40,000	80,000	55.5	0.08
Office Modules, Construction (Year 5)	576,000	1,152,000	55.5	1.2
Substations, Construction (Year 5)	139,000	278,000	55.5	0.29
Server Center, Construction (Year 5)	162,600	325,200	55.5	0.34
Parking Garage, Construction (Year 6)	116,000	232,000	55.5	0.24
Server Center, Construction (Year 6)	162,600	325,200	55.5	0.34
Parking Garage, Construction (Year 7)	116,000	232,000	55.5	0.24
Water Tank, Construction (Year 7)	10,000	20,000	55.5	0.02

Sources: LPES-8 and COMAR 26.11.35

Table E-12. Project Areas and Durations – Phase II

Project Name	Year	Clearing Area (Acres)	Building Area (ft^2)	Paving (Acres)	Days of Clearing	Days of Building	Days of Paving
Demolition	1	0.74	0	0	230	0	0
Road Improvements, Clearing and Grading	1	4.82	0	0	230	0	0
Office Modules, Clearing and Grading	1	27.6	0	0	230	0	0
Module Interconnections, Clearing and Grading	1	0.92	0	0	230	0	0
Demolition	2	0.74	0	0	230	0	0
Road Improvements, Paving	2	0	0	4.82	0	0	230
Parking Garage, Clearing and Grading	2	5.34	0	0	230	0	0
Utility Upgrades, Clearing and Grading	2	1.22	0	0	230	0	0
Office Modules, Construction	3	0	400,000	0	0	230	0
CDC, Construction	3	0	100,000	0	0	230	0
Parking Garage, Construction	3	0	116,000	0	0	230	0
Office Modules, Construction	4	0	400,000	0	0	230	0
Module Interconnections, Construction	4	0	40,000	0	0	230	0
Office Modules, Construction	5	0	400,000	0	0	230	0
Parking Garage, Construction	5	0	116,000	0	0	230	0
Surface Parking, Paving	5	0	0	11.5	0	0	230
CDC, Construction	3	0	100,000	0	0	230	0

Table E-13. Heavy Equipment Emissions – Phase II

Project	NO_x (tons)	VOC (tons)
Demolition (Year 1)	0.43	0.03
Road Improvements, Clearing and Grading (Year 1)	2.78	0.19
Office Modules, Clearing and Grading (Year 1)	15.92	1.08
Module Interconnections, Clearing and Grading (Year 1)	0.53	0.04
Demolition (Year 2)	0.39	0.03
Road Improvements, Paving (Year 2)	1.44	0.10
Parking Garage, Clearing and Grading (Year 2)	2.81	0.20
Utility Upgrades, Clearing and Grading (Year 2)	0.64	0.04
Office Modules, Construction (Year 3)	23.27	2.09
CDC, Construction (Year 3)	5.82	0.52
Parking Garage, Construction (Year 3)	6.75	0.61
Office Modules, Construction (Year 4)	21.54	2.02
Module Interconnections, Construction (Year 4)	2.15	0.20
Office Modules, Construction (Year 5)	19.76	1.97
Parking Garage, Construction (Year 5)	5.73	0.57
Surface Parking, Paving (Year 5)	2.58	0.21

Sources: LPES-8 and LPES-11

Table E-14. Architectural Coating Emissions (Paint) – Phase II

Project	Floor Area	Wall Surface	EFVOC (lbs/1,000 ft^2)	VOC (tons)
Office Modules, Construction(Year 3)	400,000	800,000	55.5	0.83
CDC, Construction(Year 3)	100,000	200,000	55.5	0.21
Parking Garage, Construction(Year 3)	116,000	232,000	55.5	0.24
Office Modules, Construction(Year 4)	400,000	800,000	55.5	0.83
Module Interconnections, Construction(Year 4)	40,000	80,000	55.5	0.08
Office Modules, Construction(Year 5)	400,000	800000	55.5	0.83
Parking Garage, Construction(Year 5)	116,000	232,000	55.5	0.24

Sources: LPES-8 and COMAR 26.11.35

Table E-15. Construction Worker Trip Emissions (tons) – Phase II

Project	VMT	$EFNO_x$ (g/mile)	NO_x (tons)	EFVOC (g/mile)	VOC (tons)
Year 1					
Demolition	6,412	0.32	0	0.29	0
Road Improvements	41,575	0.32	0.01	0.29	0.01
Office Modules, C&G	238,050	0.32	0.08	0.29	0.08
Module Interconnections	7,935	0.32	0	0.29	0
Year 2					
Demolition	6,412	0.32	0	0.29	0
Road Improvements, Paving	41,575	0.32	0.01	0.29	0.01
Parking Garage, Clearing and Grading	46,023	0.32	0.02	0.29	0.01
Utility Upgrades, Clearing and Grading	10,524	0.32	0	0.29	0
Year 3					
Office Modules, Construction	1,987,200	0.32	0.69	0.29	0.64
CDC, Construction	496,800	0.32	0.17	0.29	0.16
Parking Garage, Construction	576,288	0.32	0.2	0.29	0.18
Year 4					
Office Modules, Construction	1,987,200	0.32	0.69	0.29	0.64
Module Interconnections, Construction	198,720	0.32	0.07	0.29	0.06
Year 5					
Office Modules, Construction	1,987,200	0.32	0.69	0.29	0.64
Parking Garage, Construction	576,288	0.32	0.2	0.29	0.18
Surface Parking, Paving	99,188	0.32	0.03	0.29	0.03

Table E-16. Project Areas and Durations – Phase III

Project Name	Year	Clearing Area (Acres)	Building Area (ft^2)	Paving (Acres)	Days of Clearing	Days of Building	Days of Paving
Demolition	1	0.74	0	0	230	0	0
Road Improvements, Clearing and Grading	1	4.82	0	0	230	0	0
Office Modules, Clearing and Grading	1	32.2	0	0	230	0	0
Module Interconnections, Clearing and Grading)	1	0.92	0	0	230	0	0
Demolition	2	0.74	0	0	230	0	0
Office Modules, Clearing and Grading	2	32.2	0	0	230	0	0
Road Improvements, Paving	2	0	0	4.82	0	0	230
Parking Garage, Clearing and Grading	2	5.34	0	0	230	0	0
Utility Upgrades, Clearing and Grading	2	1.22	0	0	230	0	0
Office Modules, Construction	3	0	466,666	0	0	230	0
Parking Garage, Construction	3	0	116,000	0	0	230	0
Office Modules, Construction	4	0	466,666	0	0	230	0
Module Interconnections, Construction	4	0	40,000	0	0	230	0
Office Modules, Construction	5	0	466,666	0	0	230	0
Parking Garage, Construction	5	0	116,000	0	0	230	0
Office Modules, Construction	6	0	466,666	0	0	230	0
Parking Garage, Construction	6	0	116,000	0	0	230	0
Module Interconnections, Construction	6	0	40,000	0	0	230	0
Office Modules, Construction	7	0	466,666	0	0	230	0
Parking Garage, Construction	7	0	116,000	0	0	230	0
Office Modules, Construction	8	0	466,666	0	0	230	0
Parking Garage, Construction	8	0	116,000	0	0	230	0
Surface Parking, Paving	8	0	0	11.5	0	0	230

Table E-17. Heavy Equipment Emissions – Phase III

Project	NO_x (tons)	VOC (tons)
Demolition (Year 1)	0.43	0.03
Road Improvements, Clearing and Grading (Year 1)	2.78	0.19
Office Modules, Clearing and Grading (Year 1)	18.58	1.26
Module Interconnections, Clearing and Grading (Year 1)	0.53	0.04
Demolition (Year 2)	0.39	0.03
Office Modules, Clearing and Grading (Year 2)	16.96	1.19
Road Improvements, Paving (Year 2)	1.44	0.10
Parking Garage, Clearing and Grading (Year 2)	2.81	0.20
Utility Upgrades, Clearing and Grading (Year 2)	0.64	0.04
Office Modules, Construction (Year 3)	27.15	2.44
Parking Garage, Construction (Year 3)	6.75	0.61
Office Modules, Construction (Year 4)	25.13	2.36
Module Interconnections, Construction (Year 4)	2.15	0.20
Office Modules, Construction (Year 5)	23.05	2.30
Parking Garage, Construction (Year 5)	5.73	0.57
Office Modules, Construction (Year 6)	21.17	2.20
Parking Garage, Construction (Year 6)	5.26	0.55
Module Interconnections, Construction (Year 6)	1.81	0.19
Office Modules, Construction (Year 7)	21.17	2.20
Parking Garage, Construction (Year 7)	5.26	0.55
Office Modules, Construction (Year 8)	21.17	2.20
Parking Garage, Construction (Year 8)	5.26	0.55
Surface Parking, Paving (Year 8)	2.32	0.20

Sources: LPES-8 and LPES-11

Table E-18. Construction Worker Trip Emissions (tons) – Phase III

Project	VMT	$EFNO_x$ (g/mile)	NO_x (tons)	EFVOC (g/mile)	VOC (tons)
Year 1					
Demolition	6,412	0.32	0	0.29	0
Road Improvements	41,575	0.32	0.01	0.29	0.01
Office Modules, C&G	277,725	0.32	0.1	0.29	0.09
Module Interconnections	7,935	0.32	0	0.29	0
Year 2					
Demolition	6,412	0.32	0	0.29	0
Office Modules, C&G	277,725	0.32	0.1	0.29	0.09
Road Improvements	41,575	0.32	0.01	0.29	0.01
Parking Garage, C&G	46,023	0.32	0.02	0.29	0.01
Utility Upgrades, C&G	10,524	0.32	0	0.29	0
Year 3					
Office Modules, Construction	2,318,397	0.32	0.81	0.29	0.74
Parking Garage, Construction	576,288	0.32	0.2	0.29	0.18
Year 4					
Office Modules, Construction	2,318,397	0.32	0.81	0.29	0.74
Module Interconnections, Construction	198,720	0.32	0.07	0.29	0.06
Year 5					
Office Modules, Construction	2,318,397	0.32	0.81	0.29	0.74
Parking Garage, Construction	576,288	0.32	0.2	0.29	0.18
Year 6					
Office Modules, Construction	2,318,397	0.32	0.81	0.29	0.74
Parking Garage, Construction	576,288	0.32	0.2	0.29	0.18
Module Interconnections, Construction	198,720	0.32	0.07	0.29	0.06
Year 7					
Office Modules, Construction	2,318,397	0.32	0.81	0.29	0.74
Parking Garage, Construction	576,288	0.32	0.2	0.29	0.18
Year 8					
Office Modules, Construction	2,318,397	0.32	0.81	0.29	0.74
Parking Garage, Construction	576,288	0.32	0.2	0.29	0.18
Surface Parking, Paving	99,188	0.32	0.03	0.29	0.03

Table E-19. Architectural Coating Emissions (Paint) – Phase III

Project	Floor Area	Wall Surface	EFVOC (lbs/1,000 ft^2)	VOC (tons)
Office Modules, Construction(Year 3)	466,666	933,332	55.5	0.97
Parking Garage, Construction(Year 3)	116,000	232,000	55.5	0.24
Office Modules, Construction(Year 4)	466,666	933,332	55.5	0.97
Module Interconnections, Construction(Year 4)	40,000	80,000	55.5	0.08
Office Modules, Construction(Year 5)	466,666	933,332	55.5	0.97
Parking Garage, Construction(Year 5)	116,000	232,000	55.5	0.24
Office Modules, Construction(Year 6)	466,666	933,332	55.5	0.97
Parking Garage, Construction(Year 6)	116,000	232,000	55.5	0.24
Module Interconnections, Construction(Year 6)	40,000	80,000	55.5	0.08
Office Modules, Construction(Year 7)	466,666	933,332	55.5	0.97
Parking Garage, Construction(Year 7)	116,000	232,000	55.5	0.24
Office Modules, Construction(Year 8)	466,666	933,332	55.5	0.97
Parking Garage, Construction(Year 8)	116,000	232,000	55.5	0.24

Sources: LPES-8 and COMAR 26.11.35

Table E-20. Generator Information – Phase I

Generator Size	2,500	kW
Generator Size	3,353	hp
Maximum Hours of Operation (PTE)	100	Hours
Actual Hours of Operation (PTE)	80	Hours

Table E-21. Manufacturer Nominal Emission Rates

CAT2500 Tier 2	(g/hpxhr)
NO_x	5.05
CO	0.41
VOC	0.1
PM	0.036
SO_x[1]	0.2
HAP[2]	0.0121

Note: [1] Source: LPES-13, Assumes sulfur content (S) = 0.05 wt%
[2] Source: LPES-11

Table E-22. Generator Potential to Emit and Estimated Actual Emissions – Phase I

Source	Total Capacity	Number of Generators	Potential to Emit (tpy)[1]				
	(kW)	(units)	NO_x	CO	VOC	PM	SO_x
Potential to Emit - No Controls							
Proposed Generator Plant	60,000	24	44.8	3.6	0.9	0.3	1.8
Potential to Emit – Selective Catalytic Reduction (SCR Efficiency: 85%)							
Proposed Generator Plant			6.7	3.6	0.9	0.3	1.8
Estimated Actual Emissions – Selective Catalytic Reduction (SCR Efficiency: 85%)							
Proposed Generator Plant			5.4	2.9	0.7	0.3	1.4

Note: [1] Estimated actual HAP emissions = 0.09 tpy

Table E-23. General Boiler Information

Number of Boilers	4	Units
Boiler Capacity	98,000,000	BTU/hr
Total Heat Input	392,000,000	BTU/hr
Heat Content for Natural Gas	1,020	Btu/cf
Heat Content for No. 2 Fuel Oil	140,000	Btu/gal
Day Using Oil	30	Days
Natural Gas Consumption		
Total Hours	8,040	Hours
Total Heat	3.15E+12	Btu
Total Volume	3,089,882,353	cf
Fuel Oil Consumption		
Total Hours	720	Hours
Total Heat	2.82E+11	Btu
Total Volume	2,016,000	gallons

Table E-24. Boiler Emission Factors

Low NO_x Emission Factors		
	Low NO_x Boilers	
	(30 ppm)	(20 ppm)
Natural Gas NO_x (ppm)	30	20
Emission Factor (lb/10^6 cf)	36	24

AP-42 Emission Factors						
	NO_x	CO	VOC	PM_{10}	$PM_{2.5}$	SO_x
Natural Gas ($lb/10^6$ cf)[1]	190	84	5.5	7.6	7.6	0.6
Number 2 Fuel Oil ($lb/10^3$ gal)[2]	20	5	0.556	1	0.25	7.05

Source: LPES-11

Notes:

1. Natural gas emission factors for all pollutants except NO_x were obtained from U.S. EPA's AP-42, Section 1.4. For low NO_x burners assumed lb/MMBtu = ppm / 850.
2. No. 2 fuel oil emission factors for all pollutants were obtained from U.S. EPA's AP-42, Section 1.3. Sulfur content = 0.05 wt%.

Table E-25. Boiler Potential to Emit

	Potential to Emit (tpy)					
	NO_x	CO	VOC	PM_{10}	$PM_{2.5}$	SO_x
Natural Gas						
Potential Consumption: 3,089,882,353 (cf/yr)						
Boilers - Uncontrolled	293.54	129.78	8.50	11.74	11.74	0.93
Boilers - Low NO_x (30ppm)	55.62	129.78	8.50	11.74	11.74	0.93
Boilers - Low NO_x (20ppm)	37.08	129.78	8.50	11.74	11.74	0.93
No. 2 Fuel Oil						
Potential Consumption: 2,016,000 (gal/yr)						
Boilers - Uncontrolled	20.16	5.04	0.56	1.01	0.25	7.11
Potential to Emit - No Controls						
Boilers - Uncontrolled	313.70	134.82	9.06	12.75	11.99	8.03
Boilers - Low NO_x (30ppm)	75.78	134.82	9.06	12.75	11.99	8.03
Boilers - Low NO_x (20ppm)	57.24	134.82	9.06	12.75	11.99	8.03
Potential to Emit - Selective Catalytic Reduction (SCR)						
SCR Efficiency: 85%						
Boilers - Uncontrolled	47.05	134.82	9.06	12.75	11.99	8.03
Boilers - Low NO_x (30ppm)	11.37	134.82	9.06	12.75	11.99	8.03
Boilers - Low NO_x (20ppm)	8.59	134.82	9.06	12.75	11.99	8.03

Source: LPES-11 and LPES-13

Table E-26. Boiler Estimated Actual Emissions

	Estimated Actual Emissions (tpy)					
	NO_x	CO	VOC	PM_{10}	$PM_{2.5}$	SO_x
Natural Gas						
Estimated Consumption: 393,366,353 (cf/yr)						
Boilers - Uncontrolled	37.37	16.52	1.08	1.49	1.49	0.12
Boilers - Low NO_x (30ppm)	7.08	16.52	1.08	1.49	1.49	0.12
Boilers - Low NO_x (20ppm)	4.72	16.52	1.08	1.49	1.49	0.12
No. 2 Fuel Oil						
Estimated Consumption: 284,353 (gal/yr)						
Boilers - Uncontrolled	2.84	0.71	0.08	0.14	0.04	1.00
Estimated Actual Emissions - No Additional Controls						
Boilers - Uncontrolled	40.21	17.23	1.16	1.64	1.53	1.12
Boilers - Low NO_x (30ppm)	9.92	17.23	1.16	1.64	1.53	1.12
Boilers - Low NO_x (20ppm)	7.56	17.23	1.16	1.64	1.53	1.12
Estimated Actual Emissions - Selective Catalytic Reduction (SCR)						
SCR Efficiency: 85%						
Boilers - Uncontrolled	6.03	2.58	0.17	0.25	0.23	0.17
Boilers - Low NO_x (30ppm)	1.49	2.58	0.17	0.25	0.23	0.17
Boilers - Low NO_x (20ppm)	1.13	2.58	0.17	0.25	0.23	0.17

Source: LPES-11 and LPES-13

Table E-27. Worker Commuting Emissions – New From Outside Baltimore Region

	Phase I	Phase II	Phase III
Number of Workers	250	200	200
Total Miles [a]	960,000	768,000	768,000
Pollutant	NO_x	VOC	
Emission Factor (g/mile)	0.59	0.65	
Cumulative Emissions (tons) – Phase I	0.6	0.7	
Cumulative Emissions (tons) – Phase II	1.1	1.2	
Cumulative Emissions (tons) – Phase III	1.6	1.8	

Source: LPES-9 and CD-9.1

[a] Assumes 16 miles per trip, two trips per day, 240 days of work, 50% relocated from outside AQCR

Table E-28. Roll-up of Operational Emissions

Current Space		6,200,000 ft^2
Additional Space - Phase I		2,046,000 ft^2
Additional Space - Phase I+II		3,286,000 ft^2
Additional Space - All Phases		6,126,000 ft^2
Estimated Actual Emissions (tpy)		
Boilers	**NO_x**	**VOC**
Phase I (33%)	3.3	0.4
Phase I+II (54%)	5.3	0.6
All Phases (100%)	9.9	1.2
Generators	**NO_x**	**VOC**
Phase I	5.4	0.7
Worker Commutes – Full time Staff	**NO_x**	**VOC**
Phase I	0.6	0.7
Phase I+II	1.1	1.2
All Phases	1.6	1.8
Total Operational Emissions	**NO_x**	**VOC**
Phase I	9.3	1.8
Phase I+II	11.8	2.6
All Phases	16.9	3.7

E.3 Draft Record of Non-Applicability

Draft Record of Non-Applicability (RONA) to the General Conformity Rule for the Proposed Campus Development Project at Fort Meade, Maryland

[DATE]

Air emissions were estimated for the construction and operation of the proposed 5.8 million square feet of facilities and associated support infrastructure associated with all phases of the Campus Development projects for the National Security Agency (NSA) campus on Fort Meade, Maryland. Notably, the development would be implemented over the next 20 years; therefore, emissions in any given year would be limited. Emissions from land clearing and grading, construction of buildings, associated parking areas and structures, and support utility upgrades were assessed. Operational emissions from emergency generators, boilers, and personnel commutes were assessed. General Conformity under the Clean Air Act, Section 176 has been evaluated according to the requirements of 40 CFR 93.153, Subpart B. Regardless of the alternative ultimately implemented, the requirements of this rule are not applicable because:

> The highest total annual direct and indirect emissions from this action have been estimated at 51.2 tons NO_x and 7.8 tons VOCs per year, which would be below the conformity threshold values of 50 tons VOCs and 100 tons for NO_x, and would not be *regionally significant* (i.e. greater than 10% of the region's total emissions).

Supporting documentation and emission estimates:

( ) Are Attached

(X) Appear in the NEPA Documentation

( ) Other (Not Necessary)

____

SIGNATURE

____

TITLE
National Security Agency