Draft

Environmental Assessment

Addressing the Cyber National Mission Force (CNMF) Facility

Fort Meade, Maryland

US Army Corps of Engineers
Baltimore District

September
2024

ACRONYMS AND ABBREVIATIONS

°F	degree(s) Fahrenheit
µg	microgram(s)
ACM	asbestos-containing material
ACS	American Community Survey
ADP	Area Development Plan
American Water	American Water Operations and Maintenance, Inc.
AOI	Area of Interest
APE	Area of Potential Effects
AST	aboveground storage tank
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
CAA	Clean Air Act
CEJST	Climate and Economic Justice Screening Tool
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	methane
CNMF	Cyber National Mission Force
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	equivalent emissions of carbon dioxide
COMAR	Code of Maryland Regulations
CWA	Clean Water Act
CZMP	Coastal Zone Management Program
dB	decibel(s)
dBA	A-weighted decibel(s)
DERP	DoD Environmental Restoration Program
DNL	day-night average sound level
DoD	U.S. Department of Defense
EA	Environmental Assessment
ECB	East Campus Building
ECPS	East Campus Parking Structure
EISA	Energy Independence and Security Act
EJScreen	Environmental Justice Screening Tool
EO	Executive Order
ESA	Endangered Species Act
ESCP	erosion and sediment control plan
ESD	Environmental Site Design
FCA	Forest Conservation Act
Fort Meade	Fort George G. Meade
FPPA	Farmland Protection Policy Act
FRP	Facility Response Plan
FSD	forest stand delineation
ft^2	square foot/feet
FY	fiscal year
GEOID	geographic identifier
GHG	greenhouse gas
HWMP	Hazardous Waste Management Plan
I-	Interstate
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
ISWMP	Integrated Solid Waste Management Plan

L	liter(s)
lb	pound(s)
LBP	lead-based paint
LEED	Leadership in Energy and Environmental Design
LOS	level of service
m^3	cubic meter(s)
MBTA	Migratory Bird Treaty Act
MD	Maryland
MDE	Maryland Department of the Environment
MDNR	Maryland Department of Natural Resources
MEC	munitions and explosives of concern
mgd	million gallons per day
MHT	Maryland Historical Trust
MOF	Mission Operations Facility
MOSF	Mission Operations Support Facility
MOU	Memorandum of Understanding
N/A	not applicable
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFA	No Further Action
NHPA	National Historic Preservation Act
N_2O	nitrous oxide
NO_x	nitrogen oxide
NO_2	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSA	National Security Agency
O_3	ozone
ORAM	O'Brien Road Access Modernization
OSHA	Occupational Safety and Health Administration
OU	Operational Unit
OWS	oil/water separator
P2	Pollution Prevention
PAF	Publishing and Archives Facility
Pb	lead
PCB	polychlorinated biphenyl
pCi	picoCurie(s)
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns in diameter
PM_{10}	particulate matter equal to or less than 10 microns in diameter
ppb	Part(s) per billion
PPE	personal protective equipment
ppm	part(s) per million
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
ROI	region of influence
RPMP	Real Property Master Plan
SIP	State Implementation Plan
SMP	Site Management Plan
SO_2	sulfur dioxide
SO_x	sulfur oxide
SPCC	Spill Prevention, Control, and Countermeasures
SWMU	Solid Waste Management Unit
tpy	ton(s) per year
UFC	Unified Facilities Criteria
USACE	United States Army Corps of Engineers

USC	United States Code
USCB	United States Census Bureau
USCYBERCOM	United States Cyber Command
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UST	underground storage tank
UXO	unexploded ordnance
VCP	vehicle control point
VOC	volatile organic compound
WCPS	West Campus Parking Structure

COVER SHEET

Draft Environmental Assessment
Addressing the Cyber National Mission Force (CNMF) Facility

Responsible Agency: CNMF, United States Cyber Command (USCYBERCOM), National Security Agency (NSA), Fort George G. Meade (Fort Meade), Maryland

Affected Location: Fort Meade, Maryland

Report Designation: Draft Environmental Assessment (EA)

Proposed Action: DoD proposes to construct a new 750,000-square foot Cyber National Mission Force (CNMF) mission operations facility and associated infrastructure.

Abstract: DoD has proposed to construct a new CNMF mission operations facility with a purpose of consolidating CNMF personnel and operations on the NSA campus and optimize CNMF, United States Cyber Command (USCYBERCOM), and NSA mission and collaboration. The project is needed because the current dispersal of operations across the NSA campus leads to inefficiencies in critical national security operations. Four alternatives were identified that include varying combinations of four sites.

The analyses in this EA consider alternatives for the Proposed Action, including the No Action Alternative. Resource areas analyzed in this EA include land use and visual resources, transportation, noise, air quality, geological resources, water resources, biological resources, cultural resources, infrastructure, sustainability, hazardous materials and wastes, and socioeconomics and environmental justice.

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1. Purpose of and Need for the Proposed Action

1.1 Introduction and Background

An Environmental Assessment (EA) is being prepared to address the U.S. Department of Defense's (DoD's) proposal for construction and operation of the Cyber National Mission Force (CNMF) facility at Fort George G. Meade (Fort Meade), Maryland. **Figure 1-1** shows the location of Fort Meade. The EA complies with the requirements and guidance of the National Environmental Policy Act of 1969 (NEPA), as amended (42 United States Code [USC] Sections 4321−4347); the Council on Environmental Quality's (CEQ's) 2020 *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 Code of Federal Regulations [CFR] 1500–1508), as amended; *Environmental Analysis of Army Actions* (32 CFR 651); DoD Instruction 4715.9 (*Environmental Planning and Analysis*); and the National Security Agency's (NSA's) *National Environmental Policy Act Procedures*.

NSA and CNMF are intelligence agencies administered as part of DoD and the Office of the Director of National Intelligence. NSA and CNMF are tenant DoD agencies on Fort Meade, occupying approximately 840 acres of the 5,100-acre installation. Consolidation of CNMF personnel and operations on the NSA campus is required for mission efficiency.

Staff and operations for CNMF are collocated with United States Cyber Command (USCYBERCOM) and NSA operations within various buildings on the NSA campus. The dispersal of operations across the campus leads to inefficiencies in operations. Combined with expanding mission roles, CNMF requires a dedicated operational facility to properly execute its mission. A consolidated facility on the NSA campus would improve command and control, provide facilities to execute advanced cyber operations in support of sensitive national missions, and allow for efficient and close collaboration with key partners on the NSA campus.

This EA is organized into five chapters and two appendices. **Chapter 1** states the purpose, need, scope, and public involvement efforts for the Proposed Action. **Chapter 2** contains a detailed description of the Proposed Action and alternatives considered. **Chapter 3** presents the affected environment and environmental consequences anticipated from implementing the Proposed Action. **Chapter 4** lists the references used to support the analysis. **Chapter 5** provides the names of those persons who prepared this document. **Appendix A** includes documentation of interagency coordination and public involvement activities and all public comments received. **Appendix B** includes documentation supporting the air quality analysis.

1.2 Purpose and Need

The purpose of the Proposed Action is to consolidate CNMF personnel and operations on the NSA campus and optimize CNMF, USCYBERCOM, and NSA mission and collaboration. The Proposed Action is needed because the current dispersal of operations across the NSA campus leads to inefficiencies in operations, which does not meet the mission requirements for CNMF, USCYBERCOM, and NSA.

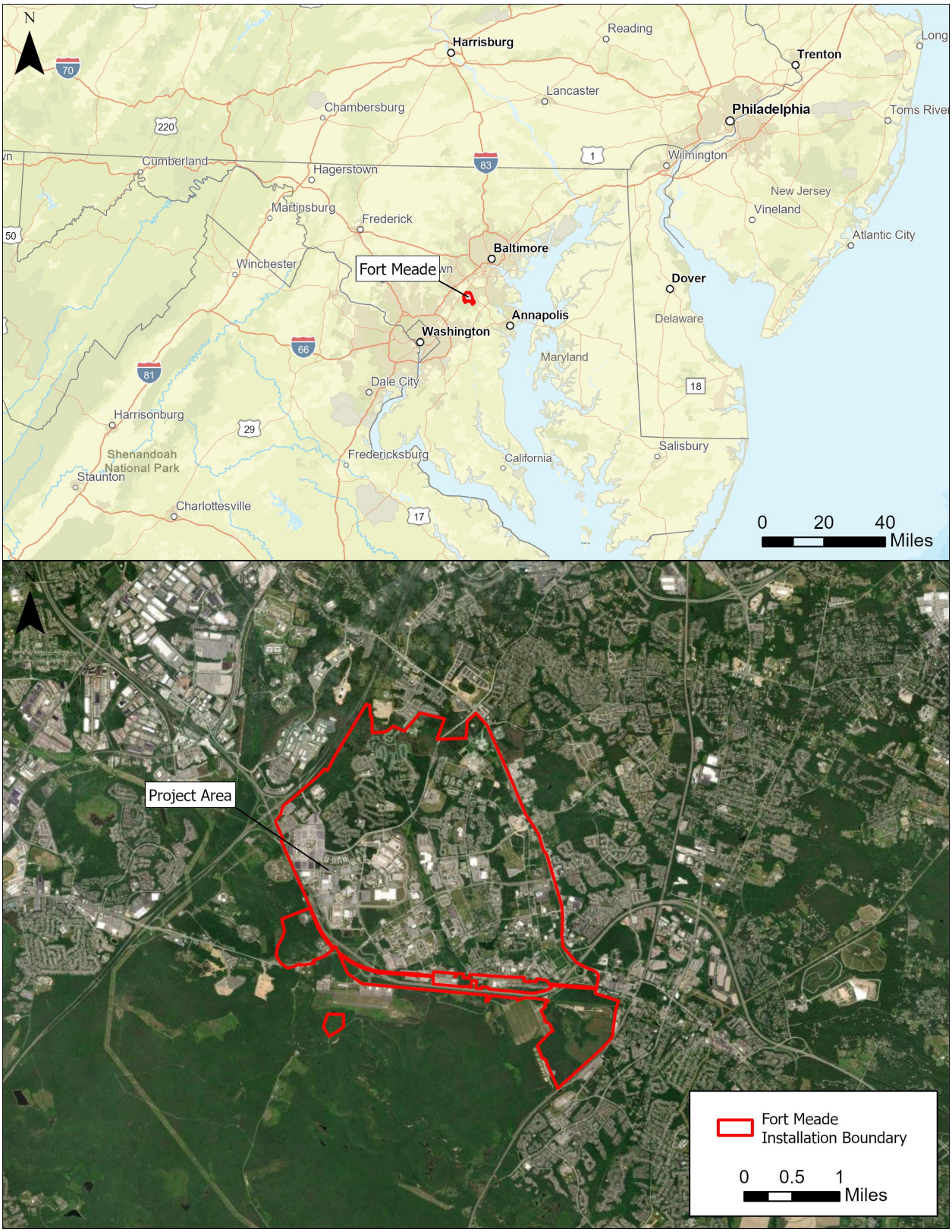


Figure 1-1. Location of Fort Meade

1.3 Scope of the EA

The scope of this EA consists of the Proposed Action, range of alternatives, and impacts to be considered. The purpose of this EA is to inform decisionmakers and the public of the likely environmental consequences of implementing the Proposed Action and alternatives.

Section 2 provides details on the Proposed Action and alternatives for implementing this action. The No Action Alternative is analyzed to provide a baseline against which the environmental impacts of implementing the range of alternatives addressed can be compared. This EA identifies appropriate measures not already included in the Proposed Action or alternatives to avoid, minimize, reduce, or compensate for any adverse environmental impacts.

1.3.1 Environmental Laws, Regulations, and Executive Orders

To comply with NEPA, the planning and decisionmaking process refers 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.

This EA examines the environmental impacts of the Proposed Action and reasonable alternatives on the following resource areas: land use, transportation, noise, air quality, geological resources, water resources, biological resources, cultural resources, infrastructure, sustainability, hazardous materials and wastes, socioeconomics and environmental justice, and irreversible and irretrievable commitments of resources. Where relevant, environmental laws, regulations, and EOs that might apply to the proposed project are described in the appropriate resource areas presented in **Chapter 3**. The scope of the analyses of potential environmental consequences provided in **Chapter 3** considers environmental impacts and cumulative impacts, respectively, under each alternative.

1.3.2 Other Relevant Laws, Regulations, and Executive Orders

The policies and goals of NEPA supplement an agency's existing authorizations (42 USC Section 4335). DoD adheres to mission requirements as identified in the National Security Act of 1947 (50 USC Section 3002) and EO 12333, *United States Intelligence Activities*, as amended by EO 13470, *Further Amendments to Executive Order 12333, United States Intelligence Activities*. The EA, however, 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 and alternatives while 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 Action or alternatives are encouraged to participate in the public involvement process. Public participation opportunities with respect to the Proposed Action and this EA are guided by CEQ NEPA regulations and DoD Directive 4715.1E. EO 12372, *Intergovernmental Review of Federal Programs*, as amended by EO 12416 of the same name, requires federal agencies to

provide opportunities for consultation and review by state and local governments that would be directly affected by a federal proposal.

Appendix A contains the list of potentially interested parties and scoping letters provided along with responses received.

2. Description of the Proposed Action and Alternatives

2.1 Proposed Action

CNMF and NSA propose to construct and operate a new 750,000-square foot (ft^2) CNMF Mission Operations Facility (MOF) and associated infrastructure to consolidate CNMF personnel and operations on the NSA campus and optimize NSA, USCYBERCOM, and CNMF mission and collaboration. The footprint of the proposed MOF would be approximately 115,000 ft^2 with the total square footage distributed between six levels and a basement. The height of the MOF would be approximately 122 feet above grade, excluding mechanical rooms and utilities located on the roof level. Features within the MOF would include administrative, conference, and meeting spaces; operations and operations support areas; support services (e.g., cafeteria fitness center); and loading dock/platform.

The MOF would accommodate 2,500 personnel, including 1,700 currently on site and 800 coming from off-site facilities and future growth. The majority of privately owned and government-owned vehicle traffic is expected to enter the NSA campus via Vehicle Control Points (VCPs) 1, 2, and 6, depending on the alternative, which have sufficient capacity to accommodate the future growth (USACE 2022, 2023b).

A parking structure would be constructed to accommodate 90 percent of the personnel located in the proposed MOF, or 2,250 parking spaces, in addition to the number of parking spaces displaced by construction of the parking structure, which would vary by alternative. The number of levels needed in the parking structure fluctuates depending on the alternative. A small percentage of the parking spaces would include Level 2 electric-vehicle chargers and space capacity for future additions. Roadway modifications would be included to provide access to the structure (USACE 2023a).

Construction of the proposed CNMF facility would include Architectural Barriers Act/Americans with Disabilities Act accessible walkways and courtyard areas; landscaping; inspection canopies; vehicle parking; diesel life safety generator; access roads; electric-vehicle support equipment infrastructure; utilities and related infrastructure; and installation of Environmental Site Design (ESD) stormwater management techniques as required for all roadways, facilities, and utilities (USACE 2022, 2023b).

Site preparation for the proposed facility would include demolition of any relevant existing structures and infrastructure in the area, such as buildings and parking, clearing and grubbing, cut/fill and grading, and erosion and sediment control measures (USACE 2022). Construction would be expected to start in fiscal year (FY) 27 and occur for approximately 2 years. Facility operations would be expected to start within 2 years of construction completion.

2.2 Screening Criteria

In addition to meeting the purpose and need of the proposed project, the alternatives must meet the following screening criteria:

- **Site availability:** The alternatives must use space that is currently open for development or can feasibly be made open to accommodate the required development.
- **Site accessibility:** The alternatives must use sites that would be accessible to USCYBERCOM and CNMF personnel.
- **Mission requirements:** The alternatives must meet mission requirements.

Based on these screening criteria, DoD considered three alternatives to meet the purpose of and need for the Proposed Action, including three site combination options.

2.3 Alternatives Considered and Eliminated from Further Analysis

All the alternatives considered for the Proposed Action are being carried forward for analysis in this EA.

2.4 Alternatives Carried Forward for Analysis

Four alternatives involving use of four sites have been identified and carried forward for the potential location of the MOF and associated parking, as shown in **Figure 2-1**. Site 1, containing existing Building 9899, which is currently the construction office for the East Campus development on the NSA campus, is located southwest of the intersection of Rockenbach and O'Brien Roads, and is on a parcel of approximately 8 acres. Site 2, which is approximately 13 acres, is west of Site 1 in the northeastern corner of the parking area near the main entrance to the NSA campus. Site 3, the Mapes Tract, is located on Fort Meade outside of and adjacent to the NSA campus northwest of the intersection of Mapes Road and Taylor Avenue and is approximately 24 acres. Sites 4 and 5, the northern and southern portions of the 9800 Troop Support Area, are approximately 14 and 15 acres, respectively.

2.4.1 Alternative 1

Alternative 1 includes locating the MOF at the site of Building 9899 (Site 1), with associated parking at the proposed West Campus Parking Structure (WCPS; Site 2). Building 9899 and the East Campus development laydown area would be demolished and removed, and United States Army Corps of Engineers (USACE) personnel currently located in Building 9899 would be relocated to trailer office space elsewhere on the Fort Meade campus.

The proposed MOF would be located largely in the center of the Site 1 parcel, which is adjacent to the East Campus development. The MOF would front a future eastern extension of Sigaba Way being constructed under a separate project and a future greenspace. Service access, potable water tank, and reclaimed water tanks would be installed on the north side of the building off Venona Road. Bioretention infrastructure would be constructed on the south and west edges. New alignments for Venona Road and Sigaba Way are planned as part of construction of East Campus Buildings (ECBs) 3 and 5, and would provide access to the proposed MOF within the NSA fence line upon completion (USACE 2022, 2023b).

Figure 2-1. CNMF Facility Site Options

The proposed WCPS would be constructed in the northeastern corner of Site 2. WCPS would have a capacity of 3,125 vehicles, which would accommodate 90 percent of the MOF's occupancy and the additional 875 displaced parking spaces from construction of the parking structure. The height of the WCPS would be up to 10 stories and not be greater than that of the existing structures in the area. Demolition on site would consist of existing pavement, curbs and gutters, and existing utilities. The proposed structure footprint, and construction parking, offices, and laydown would temporarily displace the existing 1,800 parking spaces on Site 2 (USACE 2023a).

2.4.2 Alternative 2

Alternative 2 includes locating the MOF at Building 9899 (Site 1), as discussed under Alternative 1, with associated parking at East Campus Parking Structures (ECPSs) 3 and 4, which are currently under or separately proposed for construction and were addressed in previous NEPA documentation (NSA 2010, 2017).

ECPS3 is currently under construction, and ECPS4 is planned for construction in the future as part of the East Campus development. ECPS3 is planned to accommodate approximately 3,200 spaces with a potential expansion capacity of approximately 750 parking spaces. The expansion would be constructed on the east side of the planned structure. ECPS4 is planned to accommodate approximately 2,100 parking spaces in support of ECB5 with a potential expansion capacity of approximately 1,700 parking spaces. The expansion would be constructed on the south side of the planned structure. With the potential expansion capacities, ECPS3 and ECPS4 would be able to accommodate 90 percent of the MOF's occupancy (USACE 2023b).

2.4.3 Alternative 3

Alternative 3 would include locating the MOF and associated parking on the Mapes Tract (Site 3) on Fort Meade outside of and adjacent to the NSA campus. The Mapes Tract is currently partially forested with some remnant utilities infrastructure and asphalt walkways from previous development that would be relocated or removed during construction as required. A new parking structure would be built adjacent to the MOF, similar in size to the WCPS, that would accommodate 90 percent of the MOF's occupancy and the existing parking displaced by the structure.

2.4.4 Alternative 4

Alternative 4 includes locating the MOF at 9800 Area North or South (Site 4 or 5, respectively) and associated parking near ECPS3. This alternative could include the demolition of Building 9801, 9802, 9803, or 9804, or the Eagle Fitness Center and the Four Hats Dining Facility, along with associated ancillary support buildings and other buildings to create space for CNMF facility infrastructure and landscaping, depending on the selected location within the sites for the MOF itself. A parking structure would be constructed in an undeveloped area of land, currently planned to be used as a construction laydown area for ECB4, adjacent to ECPS3 to accommodate 90 percent of the MOF personnel.

2.4.5 No Action Alternative

CEQ NEPA regulations specify the inclusion of the No Action Alternative in the alternatives analysis (40 CFR 1502.14[c]). Because DoD has identified a need for the Proposed Action (i.e., to meet mission requirements of NSA and the Intelligence Community), 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, CNMF would not construct the MOF building and associated parking and infrastructure at Fort Meade. USCYBERCOM and CNMF personnel would remain dispersed across the NSA campus using available existing office space, creating inefficiencies in mission objectives.

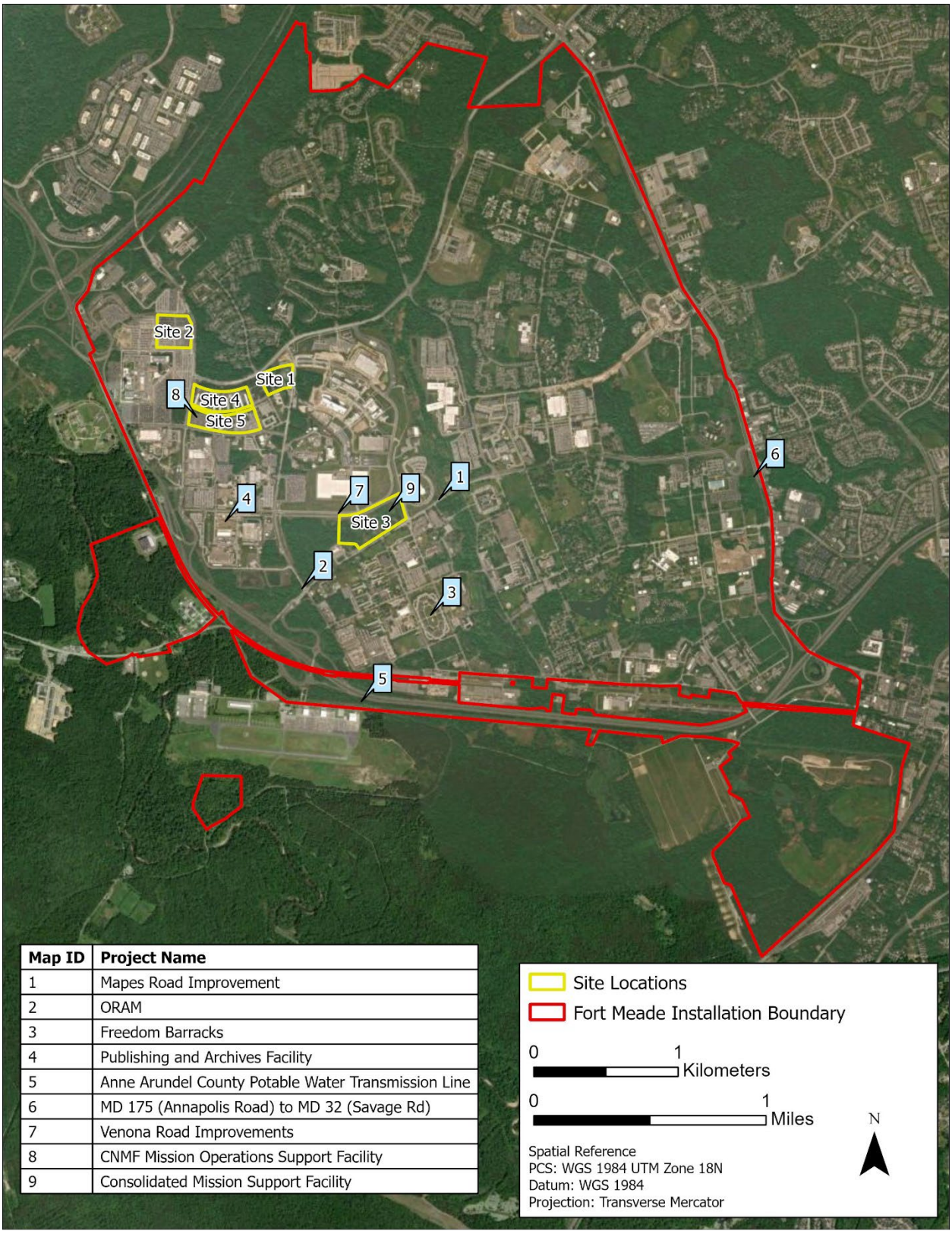
2.5 Identification of Cumulative Actions

CEQ defines a cumulative effect as “effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.1(g)(3)). Informed decision making 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.

Past actions are those actions, and their associated impacts, that occurred within the geographical extent of cumulative effects that have shaped the current environmental conditions of the project area and, therefore, are now part of the existing environment, in addition to present actions included in the affected environments for each resource area. An example of past and present actions are the completed and ongoing development and construction activities on NSA's East Campus (NSA 2010, 2017). Reasonably foreseeable actions that could have a causal relationship to the Proposed Action and alternatives as well as contribute to additional impacts on the human environment are discussed in this section. 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 analyses are presented by resource area in **Chapter 3**.

2.5.1 Future Actions on Fort Meade

The known, reasonably foreseeable future projects that would occur on Fort Meade are described herein and depicted in **Figure 2-2**.



Map ID	Project Name
1	Mapes Road Improvement
2	ORAM
3	Freedom Barracks
4	Publishing and Archives Facility
5	Anne Arundel County Potable Water Transmission Line
6	MD 175 (Annapolis Road) to MD 32 (Savage Rd)
7	Venona Road Improvements
8	CNMF Mission Operations Support Facility
9	Consolidated Mission Support Facility

Figure 2-2. Locations of Other Actions under Consideration for Cumulative Impacts

Roadway Improvements and Access Control Points. The following projects are planned on Fort Meade to improve access control facilities, intersections, and general transportation on the installation. The descriptions for these projects were obtained from the *Fort Meade Area Development Plan* (ADP) and other sources (Army 2020).

- **Mapes Road:** Fort Meade proposes to widen Mapes Road from two to four lanes between O'Brien Road and Cooper Avenue. This project is in the initial planning stages and does not currently have an identified construction timeline.

- **Venona Road:** NSA proposes to widen Venona Road from two to four lanes from O'Brien Road east to where Venona Road turns north and currently already expands to four lanes. Reconfiguration and improvement of the Samford, O'Brien, and Venona Roads intersection is also planned. Construction for the Venona Road widening is anticipated to occur between FY26 and FY28.

Freedom Barracks. Fort Meade proposes to continue to design and construct a total of up to nine new barracks facilities to house 1,600 to 1,800 unaccompanied enlisted personnel, to be constructed in three phases at three sites in close proximity on Fort Meade. The three proposed sites are located within the central portion of Fort Meade. Phase I, to be constructed first, would be located south of Dutt Road, situated between Zimborski and Taylor Avenues and north of Hodges Street. Phase II would be located west of Zimborski Avenue and may span Dutt Road. Phase III would be located south of Simonds Street between Taylor and York Avenues (Fort Meade 2022a). This project is intended to eliminate the remaining deficit in required barracks space (Army 2020). Construction for the first phase of this project would begin in FY25 and continue for 2 years, while the other phases are in the initial planning stages and do not yet have known construction timelines.

Publishing and Archives Facility. NSA is currently constructing a Publishing and Archives Facility (PAF), warehouse, associated parking facilities, and supporting facilities on Fort Meade within the main NSA campus. The PAF would accommodate approximately 725 employees associated with the publishing and archives mission. Up to approximately 605 personnel would be relocated to the PAF from within the NSA campus, while approximately 120 personnel relocating to the facility would come from off-installation facilities. The net increase in personnel would be approximately 100 people because 20 personnel on campus potentially displaced by the Proposed Action would move off-installation (NSA 2018).

O'Brien Road Access Modernization (ORAM). NSA proposes to implement the ORAM project, which would entail renovation and upgrade of inspection facilities, upgrade of access facilities, and corresponding roadway improvements for Mapes, O'Brien, Perimeter, and Venona Roads in the southwestern portion of Fort Meade. Construction for the ORAM project is expected to begin in FY27 and occur for 2 years (NSA 2024).

CNMF Mission Operations Support Facility. NSA proposes to construct an approximately 700,000 ft^2 CNMF Mission Operations Support Facility (MOSF) for a planned occupancy of 2,500 NSA, USCYBERCOM, and CNMF personnel, including 1,500 currently on site and 1,500 coming from off-site facilities and future growth. A parking structure would be collocated with the

MOSF, as feasible, which would accommodate 90 percent of the MOSF personnel. The MOSF would potentially be constructed on any of the sites analyzed in this EA.

Consolidated Mission Support Facility. NSA proposes to construct a Consolidated Mission Support Facility, which would be contained within a portion of the approximately 24-acre Mapes Tract (Site 3 in this EA). The facility would support mission functions across the military service branches. Construction of the facility on the Mapes Tract would require removal of some forest stands and remnant infrastructure.

2.5.2 Other Actions outside the NSA Campus and Fort Meade

The following actions are the known, reasonably foreseeable future projects located outside Fort Meade that are considered in the cumulative impacts analysis (see **Figure 2-2**).

Anne Arundel County Maryland State Route (MD) 32 Potable Water Transmission Line. Anne Arundel County proposes to install approximately 20,000 linear feet of new potable water transmission main along MD 32 across the southern portion of Fort Meade and northern portion of the Patuxent National Wildlife Refuge, and an associated booster pump station. The transmission main and pump station would provide a redundant water source to the Maryland City Pressure Zone. The water transmission main would extend from the intersection of Annapolis Road (MD 175) and Town Center Boulevard in Odenton to the intersection of Fort Meade Road (MD 198) and Center Avenue in Laurel, primarily along the MD 32 corridor, including a portion of Fort Meade on the southern side of MD 32 (AAC 2021). This project is in the initial planning stage with no identified construction timeline.

MD 175 (Annapolis Road) Mapes Road to MD 32 (Savage Road). The purpose of this Maryland Department of Transportation State Highway Administration project is to widen and resurface the existing four-lane roadway to convert it to a six-lane roadway. The new roadway would include a raised median, sidewalk, and shared-use path. Currently, the project is at the 30 percent design phase and awaiting further funding (MDOT SHA 2022).

3. Affected Environment and Environmental Consequences

Chapter 3 describes the environmental resources and conditions most likely to be affected by the Proposed Action, and provides information to serve as a baseline from which to identify and evaluate potential environmental impacts. Baseline conditions represent current conditions. This chapter also describes the potential environmental impacts of the Proposed Action on the baseline conditions of each environmental resource.

3.1 Land Use and Visual Resources

3.1.1 Definition of the Resource

Land Use. Land use refers to real property classifications indicating natural conditions or human activity occurring on a parcel. Land use descriptions are codified in master planning and local zoning laws. Land use planning ensures orderly growth and compatible uses among adjacent property parcels or areas. However, no nationally recognized convention or uniform terminology for describing land use categories exists. Consequently, land use descriptions, labels, and definitions vary among jurisdictions. Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. A variety of land use categories result from human activity. Descriptive terms for human-activity land uses include residential, commercial, industrial, military, agricultural, institutional transportation, communications, utilities, and recreational.

In appropriate cases, the location and extent of a proposed action needs to be evaluated for its potential effects on a 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, the types of land uses on adjacent properties and their proximity to a proposed action, the duration of a proposed activity, and its permanence.

Visual Resources. Visual resources are defined as the natural and human-made features that give a setting its aesthetic qualities. These features form the overall impression that observers receive of a given area and shapes their enjoyment of their stay. Evaluating the aesthetic qualities of an area is a subjective process because the value that observers place on a specific feature varies depending on their perspective.

3.1.2 Existing Conditions

The region of influence (ROI) for analysis of impacts on land use and visual resources includes the proposed sites and the surrounding on- and off-installation areas.

Fort Meade encompasses approximately 5,067 acres. It is located in Anne Arundel County, Maryland, 18 miles southwest of Baltimore, Maryland. The installation is bordered to the south and west by the Patuxent Freeway (MD 32) and to the northwest by the Baltimore–Washington Parkway. Land use, planning, and future development plans for Fort Meade are detailed in the ADP (Army 2020).

The NSA campus is determined via an Exclusive Use Agreement with Fort Meade, separated into an 830-acre site on the west side and a 21-acre site to the northern border. It serves as its own installation that follows a Real Property Master Plan (RPMP), detailing land use, installation planning standards, and future development plans (USACE 2023b).

The NSA campus on Fort Meade is generally divided into operations, support, and parking. The West Campus consists primarily of facility support, police, a substation, and a generator facility. Parking lots associated with these facilities occupy a majority of this campus. The Central Campus consists primarily of support facilities, warehouse and storage facilities, and industrial facilities such as the Vehicle Cargo Inspection Facility (NSA 2019). The East Campus consists of ECBs 1 through 3, ECPS1 and ECPS2, data center, generator and utility plant, and other administrative facilities and infrastructure. Additional administrative facilities and parking structures are under construction or planned for this campus in the near future (USACE 2024b). Site 1 is designated community space due to Building 9899's former use as a childcare facility, Site 2 is designated parking, Site 3 is open space, and Sites 4 and 5 are a combination of administrative use and parking (NSA 2019, Army 2020).

Visual Resources. Fort Meade and the NSA campus are divided into six visual themes (administrative, industrial, troop, residential, community, and campus) by architectural design and land use. The Proposed Action would take place largely on the NSA campus. Site 1 is located along the eastern boundary of the Central Campus and designated as community space. Site 2 is located on the West Campus in an existing parking area. Site 3 and the associated parking is located on the eastern side of the Mapes Tract outside of the NSA campus on Fort Meade Garrison's campus. Site 3 consists of forested land with interspersed roads, which is currently designated as open space. Sites 4 and 5 are located on the Central Campus, which is aligned with an administrative and commercial setting (NSA 2019, Army 2020).

3.1.3 Environmental Consequences

3.1.3.1 EVALUATION CRITERIA

Impacts on land use and visual resources would be considered significant if the proposed action would result in new buildings or structures that conflict with real property classifications or adjacent land uses, or if new additions substantially conflict with the visual character of the area, such as having a noticeably different architectural design, blocking a scenic vista, or introducing excessive light at night or glare during the day.

3.1.3.2 ALTERNATIVE 1

Land Use. Short-term, negligible to minor, adverse impacts and long-term, beneficial impacts would occur on land uses on the NSA campus from construction activities and improved operational efficiency under Alternative 1. The demolition of Building 9899 and construction of the MOF on the Central Campus and construction of the WCPS would result in temporary, minor, adverse impacts in those areas, restricting access and full operation of nearby facilities for the duration of the construction activities because of an increase in noise and traffic. Site 1, which encompasses a mixture of developed area, forest stands, and open space, would largely be cleared and considered administrative use. Because Site 2 is already a developed parking

lot, reconfiguration of this lot to accommodate more parking spaces would not affect land use in the area. The proposed MOF and parking facilities would be constructed in accordance with designated land uses, including the administrative support element per the Fort Meade ADP and NSA campus RPMP.

Long-term, minor, beneficial impacts would occur from the operation of the MOF and WCPS. Operation of the new MOF would be consistent with ongoing mission activities and adjacent land uses on the campus. The modern facility would provide amenities along with administrative spaces, improving operational efficiency on the campus. Operation of the reconfigured parking lot at Site 2 would not appreciably change from the existing condition, but would accommodate more personnel vehicles.

Visual Resources. Short- and long-term, negligible to minor, adverse impacts and long-term, minor, beneficial impacts on visual aesthetics would occur because of the presence of construction equipment and activities, tree clearing, and demolition of outdated buildings under Alternative 1. Clearing of Site 1 for development of the MOF would remove approximately 1.6 acres of forested land and other native vegetation. While some forested land would remain in the vicinity, Alternative 1 would clear one of periphery campus tree stands. The proposed MOF would be larger in size than the existing facility that would be replaced and contribute more to the structural aesthetic of built landscape. Construction at Site 2 would introduce the up to 10-story WCPS where a surface parking lot currently exists. While the new parking structure would continue the visual aesthetics of a parking area, the addition of height with the new structure would impact the visual landscape at that site. Due to the existing built landscape and the height of the WCPS being consistent with other structures nearby, impacts would be negligible. Presence of construction equipment and operations at the sites would temporarily reduce the visual aesthetics of those areas.

Demolition of outdated buildings would improve the visual landscape, creating a more uniform aesthetic across campus. Additionally, the constructed facility and parking areas would be aligned with the surrounding visual theme and built landscape. The proposed MOF would be designed to evoke a “techno-modern” aesthetic, consisting of metal wall panels, stone cladding, precast wall panels with integral colors, and glazed curtain wall systems (USACE 2023b). Because the MOF would be located in community space designation on the eastern boundary of the Central Campus adjacent to East Campus facilities, its modern design aesthetic would be considerate of and consistent with the administrative support theme of the East Campus.

3.1.3.3 ALTERNATIVE 2

Land Use. Short-term, negligible, adverse and long-term, beneficial impacts would occur on land use from construction activities and improved operational efficiency under Alternative 2. Impacts from the demolition of Building 9899 and construction of the MOF would be the same as those described for Alternative 1. The parking facilities at ECPS3 and ECPS4 that would support personnel parking for this project have already been analyzed in accordance with NEPA and are being constructed under separate projects. These parking facilities have already been designed in consideration of the built landscape, architectural themes, and adjacent land uses. Future expansions of these facilities are planned and would also be compliant.

Visual Resources. Short- and long-term, minor, adverse and beneficial impacts would occur on visual resources under Alternative 2, similar to those under Alternative 1. Parking under Alternative 2 would result in no additional impacts on visual resources because personnel would be using facilities that have already been analyzed, designed, and are being constructed under a separate installation development project. The MOF would support and modernize the administrative support theme as described under Alternative 1.

3.1.3.4 ALTERNATIVE 3

Land Use. Short- and long-term, negligible to minor adverse and long-term, minor, beneficial impacts would occur on land use from construction activities, tree clearing, and improved operational efficiency under Alternative 3. The proposed construction of the MOF and adjacent parking structure would be compatible with surrounding land uses but would result in a loss of a currently natural/open space in the Mapes Tract, although it has been previously developed.

Long-term, minor, beneficial impacts would occur under operations of the MOF and associated parking structure. Increased congestion on local roadways would put strain on traffic in the vicinity of the NSA campus, but the associated parking structure would also provide parking for buildings in the southern portion of the NSA campus, offsetting some of the negative impacts. The new facility would contribute to Fort Meade's administrative standard south of the Mapes Tract, with a modern aesthetic and consolidated operational efficiency.

Visual Resources. Short- and long-term, minor to moderate, adverse impacts would occur on visual resources because of the presence of construction equipment and tree clearing under Alternative 3. Site preparation would involve the permanent removal of trees in a heavily forested area of Fort Meade. While more of the forested patch along the Mapes Tract would be present to the west, the proposed project area takes up almost half of the forested area, appreciably altering the landscape and aesthetic at that location. The forested land to the west of Site 3 would be developed under the ORAM project, and the new CNMF facility would be designed and constructed to align with the visual aesthetic of Fort Meade to the south and proposed ORAM project area to the west. As this area is designated as developable land in the Fort Meade ADP, the MOF and associated parking structure would conform to current and future land use designations, as well as administrative themes present across from Mapes Road and Venona Road.

3.1.3.5 ALTERNATIVE 4

Land Use. Short-term, minor, adverse and long-term, minor, beneficial impacts would occur on land use from construction activities and improved operational efficiency under Alternative 4. The project area is developed and already used for administrative purposes. Construction, however, would occur on a larger scale than described for Alternatives 1, 2, and 3. A fitness center and cafeteria would be available in the MOF upon completion or are currently available in ECB2 and Operations Building 2 elsewhere on the NSA campus.

Long-term, minor, beneficial impacts on land use would be expected from the development of 9800 Area North and South (Sites 4 and 5, respectively). Operation of the proposed facility would conform to land uses that already exist for the developed land, in accordance with the RPMP. The MOF would add to and modernize the administrative support theme present on the

Central Campus, and consolidate operations of multiple smaller, less operationally efficient facilities into a single building for optimized land use and mission efficiency.

Visual Resources. Short- and long-term, minor, adverse and long-term, minor, beneficial impacts would occur on visual resources because of the presence of construction equipment demolition of outdated buildings under Alternative 4. Demolition of buildings present on Site 4 or 5 would result in the removal of a portion of buildings present on the Central Campus. Presence of construction equipment and activities during development of the MOF would result in short-term, adverse impacts on the aesthetic quality of the two sites. Although the visual impacts during Alternative 4 construction activities would be greater than those described for Alternatives 1, 2, or 3 because of the size of the area that would be developed across Sites 4 and 5, they would be temporary.

Long-term, minor, beneficial impacts would occur during operation of the MOF. The MOF would be similar in size to other structures along Sigaba Way. The MOF would contribute to redevelopment and modernization of the NSA campus while conforming to the administrative theme of the campus. Functions of the demolished buildings would be consolidated into the MOF, increasing operational efficiency.

3.1.3.6 NO ACTION ALTERNATIVE

Under the No Action Alternative, CNMF would not construct the MOF building and associated parking and infrastructure at Fort Meade, and the existing conditions discussed in **Section 3.1.2** would remain unchanged. Therefore, no impacts on land use or visual resources would be expected.

3.1.3.7 CUMULATIVE IMPACTS

Land Use. Short-term, negligible to minor, adverse, and long-term, moderate, beneficial cumulative impacts on land use would be expected from the Proposed Action in combination with the reasonably foreseeable future projects occurring on Fort Meade discussed in **Section 2.5**. Projects, such as the East Campus development and construction of the PAF, Consolidated Mission Support Facility, and CNMF MOSF would have similar impacts to construction of the MOF. Construction would temporarily restrict access to the affected land, but would result in buildings that support the administrative themes of the Central and East Campuses. Additional support facilities would continue to consolidate operational efficiency for the NSA campus into the planned campuses.

Visual Resources. Short-term, negligible to moderate, adverse, and long-term beneficial cumulative impacts on visual quality would be expected from the Proposed Action in combination with the reasonably foreseeable future projects occurring on Fort Meade discussed in **Section 2.5**. Projects, such as the East Campus development, PAF, Consolidated Mission Support Facility, and CNMF MOSF, would have similar impacts to the construction of the MOF. Construction would temporarily alter the aesthetics of the affected campuses, but upon completion would add a modernized look that is consistent with the administrative theme of the Central and East Campuses. The East Campus development project would enhance the visual aesthetics of the campus in line with the MOF. Additional facilities constructed would continue to

use similar design elements to the MOF and other buildings, enhancing the overall aesthetics of the NSA campus.

3.2 Transportation

3.2.1 Definition of the Resource

Transportation includes roadways, VCPs, vehicle cargo inspection facilities, pedestrian access, non-motorized vehicle facilities, transit, and other features with the purposes of providing access and mobility.

This section documents the existing transportation systems, conditions, and travel patterns within and in the vicinity of Fort Meade and the NSA campus. Transportation infrastructure includes primary and secondary roadways that feed onto the installation and VCPs or gates, roadways, and parking areas on the installation. Available capacity and performance of the transportation system inform the conditions that commuters and other travelers would encounter. The traffic network, vehicular traffic, travel patterns, and parking are described for the proposed project area. The analysis evaluates traffic operations during the morning and afternoon peak hours, with emphasis on level of service (LOS) at key locations, or ability for an intersection to manage the flow of traffic efficiently. LOS is based on the *Highway Capacity Manual* 6th Edition control delay standards (TRB 2016). **Figure 3-1** shows the LOS signalized and unsignalized control delay categories.

Level of Service (LOS)	Signalized/Unsignalized Control Delay (sec/veh)	Description
A	0 – 10	Free flow (minimal delay)
B	> 10 – 20 > 10 – 15	Stable flow (slight delay)
C	> 20 – 35 > 15 – 25	Stable flow (acceptable delay)
D	> 35 – 55 > 25 – 35	Approaching unstable (tolerable delay)
E	> 55 – 80 > 35 – 50	Unstable flow (intolerable delay)
F	> 80 > 50	Forced flow (jammed)

Source: DoD 2023

Figure 3-1. Signalized and Unsignalized Intersection LOS

3.2.2 Existing Conditions

The ROI for analysis of impacts on transportation includes the NSA campus, surrounding Fort Meade Garrison campus (particularly around the Mapes Tract), and the adjacent off-installation transportation corridors.

Fort Meade is located north of the Patuxent Freeway (MD 32) and east of the Baltimore–Washington Parkway (MD 295), on the western edge of Anne Arundel County, Maryland. It is favorably situated in proximity to regional arterial and freeway facilities. Primary highways serving Fort Meade include MD 295, Interstate (I-) 95, MD 32, MD 175, and Laurel–Fort Meade Road (MD 198). The following list describes each of these roadways.

- **The Baltimore–Washington Parkway (MD 295)** is located along the west side of Fort Meade. It traverses in a north–south direction connecting Baltimore to the north and Washington, D.C., to the south. It carries two lanes of traffic in each direction.
- **I-95** is located west of Fort Meade. It traverses in a north–south direction connecting Baltimore and Washington, D.C., and carries four lanes of traffic in each direction.
- **The Patuxent Freeway (MD 32)** forms the southern boundary of Fort Meade. It connects I-95 to the northwest and beyond to I-97 to the southeast. It carries two lanes of traffic in each direction.
- **Annapolis Road (MD 175)** forms the northeastern boundary of Fort Meade connecting I-95 to the north and MD 32 to the south. It is a two- to four-lane road in the vicinity of Fort Meade with auxiliary lanes at intersections.
- **Laurel–Fort Meade Road (MD 198)** is a two-lane undivided roadway from east of the Baltimore–Washington Parkway to MD 32. It widens to a four-lane divided roadway west of the Baltimore–Washington Parkway. Traffic from MD 198 can continue onto Fort Meade via the Mapes Road Gate to the east.

MD 295 and MD 32 also provide direct access to the NSA campus on the installation. Smaller, internal access roads connect throughout the installation. The following describes the primary and secondary roadways on Fort Meade, with emphasis on the NSA campus.

- **Rockenbach Road (MD 713)** is a four-lane undivided roadway connecting MD 175 (Annapolis Road) to the east and Canine Road and the NSA campus to the west, and borders the East Campus to the north.
- **Reece Road** is a two-lane undivided roadway connecting MD 175 to the east and Cooper Avenue to the west. Cooper Avenue is a two-lane undivided roadway east of the East Campus connecting Llewellyn Avenue to the south and Rockenbach Road to the north.
- **Mapes Road** is a two-lane undivided roadway connecting MD 175 to the east and the Mapes Road Gate to the west, and a four-lane divided roadway with roundabouts outside the installation from the gate to the MD 32 interchange and transitions into MD 198.
- **Canine Road** varies between a three- and four-lane road within the NSA campus between VCPs 1 and 6. It has one connection with MD 32 west of the Operations buildings on the NSA campus and borders the west side of the 9800 Troop Support Area and Central Campus.

- **Connector Road** varies between a two- and four-lane road from northwest of the campus off the Baltimore–Washington Parkway through VCP 2 onto the NSA campus.
- **Other primary roadways** on Fort Meade and the NSA campus include Clark Road, O'Brien Road, MacArthur Road, Taylor Avenue, Ernie Pyle Road, Connector Road, and Samford Road.

Vehicle access to NSA is through the following six VCP access gates:

- **VCP 1:** Canine Road (accessible from MD 32)
- **VCP 2:** Connector Road (accessible from southbound Baltimore–Washington Parkway)
- **VCP 5:** O'Brien Road near Perimeter Road
- **VCP 6:** Samford Road (accessible from MD 32/Samford Road)
- **VCP 7:** Vehicle Control Inspection Facility (commercial vehicles)
- **VCP 8:** Ultra Road (Fort Meade access) (NSA 2017)

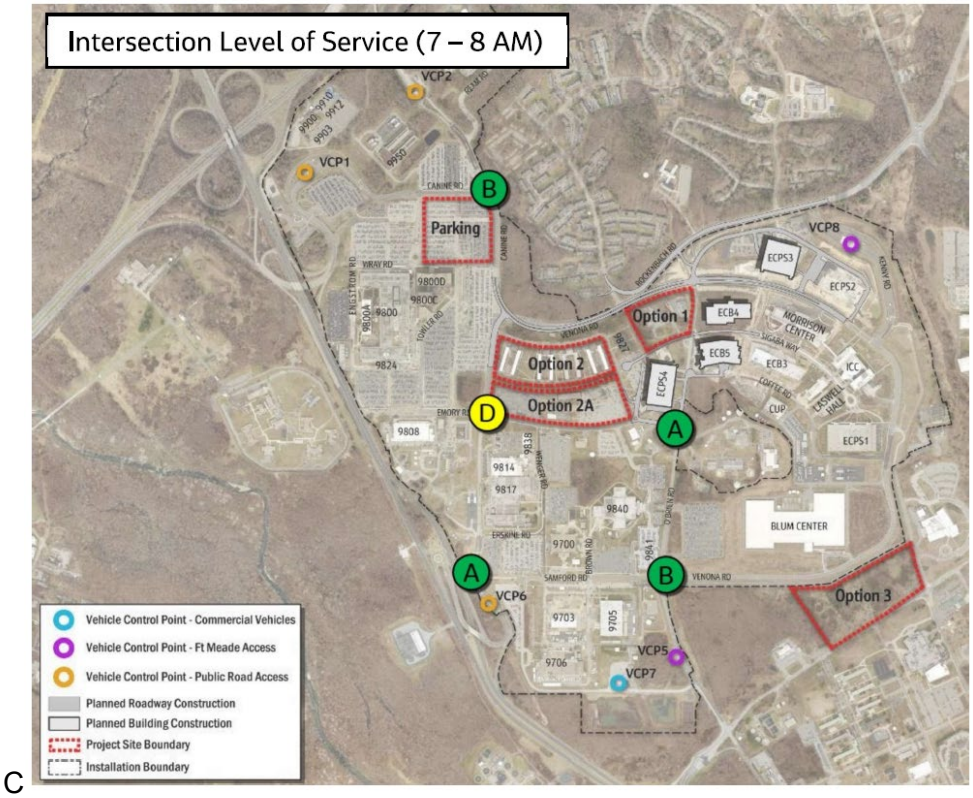
Traffic for the Proposed Action would be expected to enter the NSA campus through VCPs 1, 2 and 6 and use Canine Road, Emory Road, Samford Road, and Venona Road depending on the alternative selected. According to a 2023 Traffic Study for the NSA campus, the identified peak hours on NSA are 7:00 to 8:00 a.m. and 3:00 to 4:00 p.m. During the morning peak period on an average typical weekday, 6:00 to 7:00 a.m. has the highest volume entering VCPs 1 and 2 as well as the second highest volume entering VCP 6. During the afternoon peak period, slight delays are experienced at the Venona Road and O'Brien Road intersection and at the Emory Road and Canine Road intersection (DoD 2023). Traffic is concentrated on the west side of the campus during peak hours. A 2022 Feasibility Study was conducted for the CNMF facility that identified existing 2019 LOS at the NSA campus (see **Figure 3-2**).

Existing parking on the NSA campus consists of surface lots, ECPS1, and ECPS2. Overflow parking is in satellite locations accessible by shuttle and includes other government facilities and adjacent business parks. As part of a separate action, two parking garages that are near proposed CNMF sites are currently under construction or in design. ECPS3, currently under construction, will accommodate approximately 3,200 spaces with a potential expansion capacity of approximately 750 parking spaces. ECPS4, in design and planned for future construction, would accommodate approximately 2,100 parking spaces with a potential expansion capacity of approximately 1,700 parking spaces.

3.2.3 Environmental Consequences

3.2.3.1 EVALUATION CRITERIA

Impacts on transportation are assessed with respect to the potential for disruption or improvement of current transportation patterns and systems; deterioration or improvement of existing LOSs; and changes in existing levels of transportation safety. Impacts may arise from physical changes (e.g., closing, rerouting, or creating roads), construction activity and introduction of construction-related traffic on local roads, or changes in daily traffic or peak-hour traffic volumes created by either direct or indirect workforce and population changes related to installation activities. Impacts on roadway capacities would be significant if a road with no history of capacity exceedances were forced to operate at or above their design capacity.



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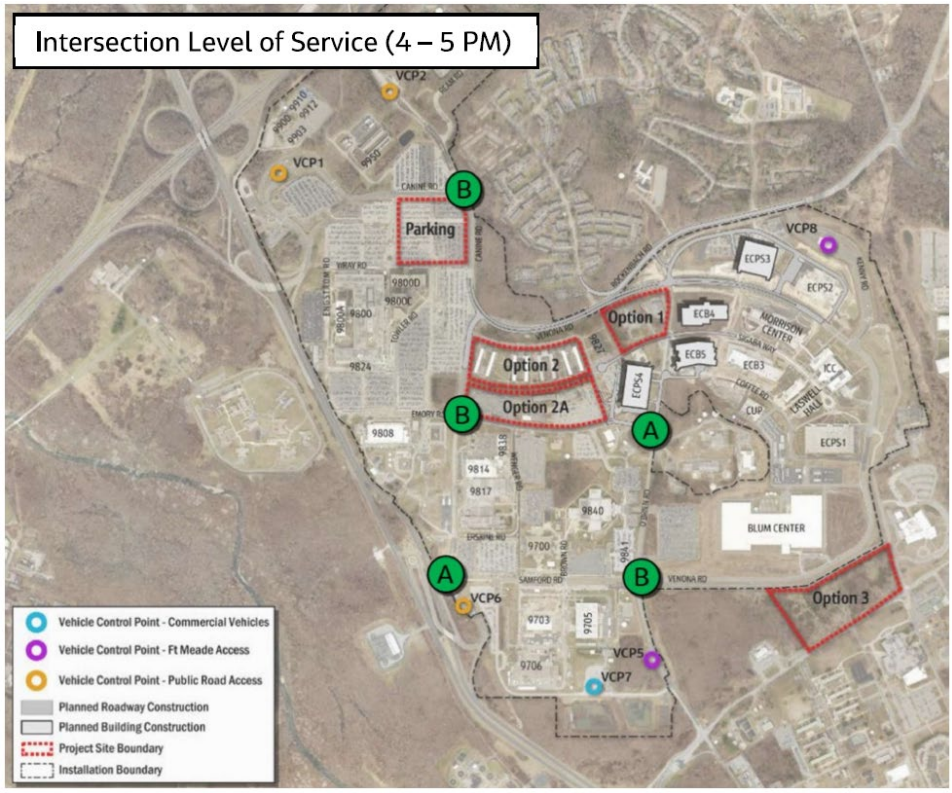


Source: USACE 2022
Note: LOS values are shown in colored circles for intersections. See **Figure 3-1** for LOS categories.

Figure 3-2. Existing 2019 Levels of Service

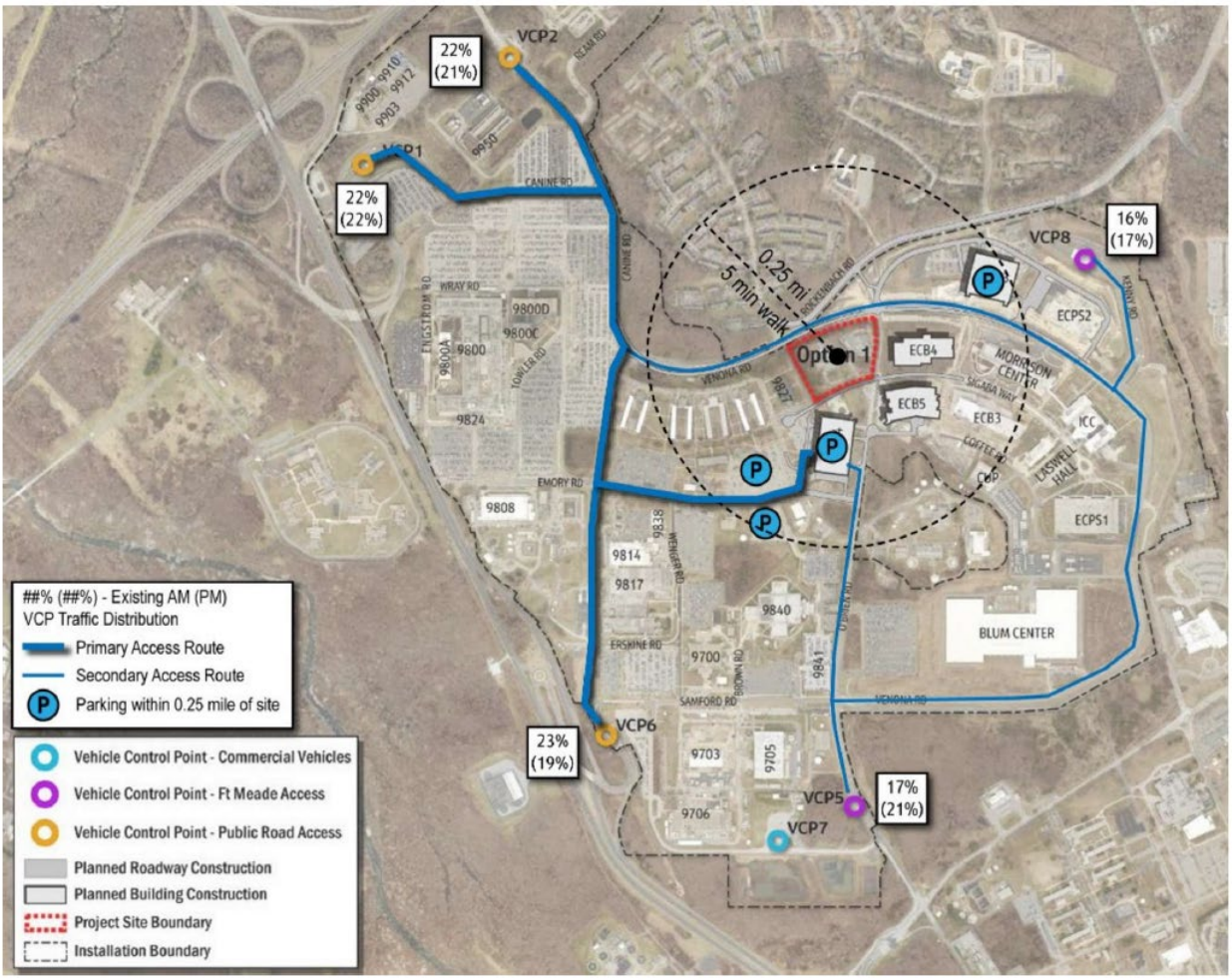
Impacts would also be significant if additional traffic was added to roads already having significant traffic issues.

3.2.3.2 ALTERNATIVE 1

Short- and long-term, moderate, adverse, and beneficial impacts on transportation would be expected from construction traffic and the increase in personnel under Alternative 1. Construction traffic would enter the NSA campus through the Vehicle Control Inspection Facility (VCP 7) from MD 32 for inspection prior to entering the NSA campus. Personnel traffic would enter the NSA campus through VCPs 1, 2, and 6 and access the WCPS via Canine Road and Emory Road (see **Figure 3-3**). Traffic entering through VCPs 5 and 8 would travel via Ultra, Venona, and O'Brien Roads. The construction phases of the Proposed Action would require delivery of materials to the construction site as well as removal of debris. Heavy load access to the sites would require hauling permits to be coordinated with the Maryland Department of Transportation State Highway Administration. Construction-related traffic would contribute to the total existing traffic on the installation. Many of the heavy construction vehicles would be driven to the site and kept on site for the duration of construction and demolition activities, resulting in relatively few additional trips. Additionally, any potential increases in traffic volume associated with construction and demolition would be temporary, contributing to short-term, moderate, adverse impacts.

Long-term, moderate, adverse impacts on transportation would be expected from the additional 800 personnel commuting from off-installation. While these additional commuters would adversely contribute to the existing traffic, the commuting time frame and peak traffic times would be expected to remain unchanged. During the peak traffic periods, LOS modeled for intersections near the Proposed Action would be expected to remain the same (see **Figure 3-2**). The highest traffic distribution would be from VCP 1 at 22 percent during both the morning and afternoon peak hours. VCP 2 traffic distribution would be 22 percent in the morning and 21 percent in the afternoon and VCP 6 would be 23 percent in the morning and 19 percent during the afternoon traffic peak hours (DoD 2023).

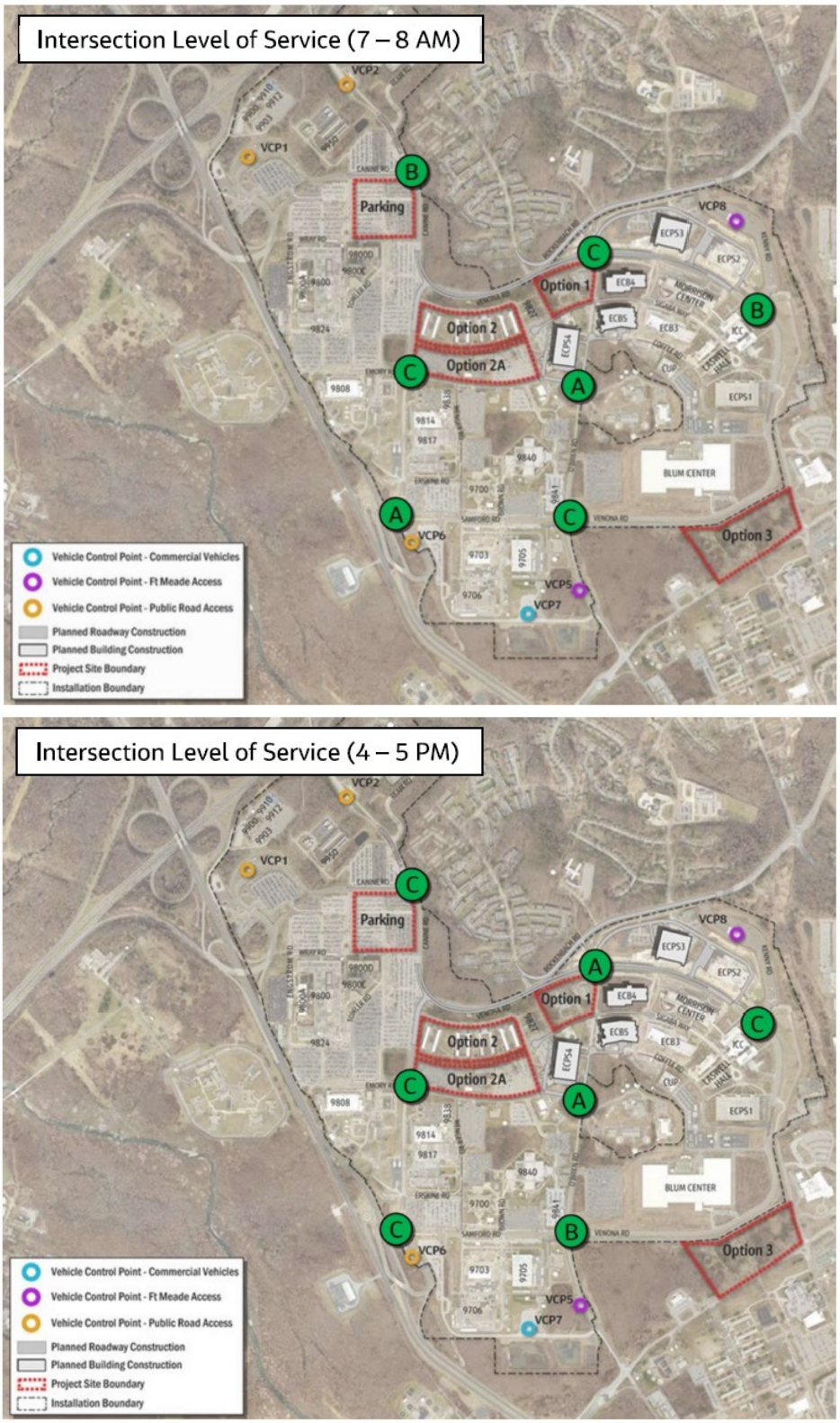
This alternative is the most walkable option, as it is located closest to the East Campus and parking areas for ECB4 and ECPS4, which is a 5-minute walk. The proposed parking garage, WCPS, would be a 15-minute walk to the site and would have a capacity of 3,125 vehicles, which would accommodate 90 percent of the MOF's occupancy and the additional 875 displaced existing parking spaces from construction of the parking structure. The site for the WCPS is currently a surface parking lot with 1,800 parking spaces. These spaces would be unavailable during construction of the WCPS, resulting in short-term, moderate, adverse impacts on traffic and parking. Personnel that normally use this portion of campus parking could park elsewhere on the campus and use shuttle services, as needed, during WCPS construction. The WCPS would also support the near- and long-term parking requirements for the Central, West, and East Campuses resulting in long-term, beneficial impacts. The proposed parking garage may require that the signal on Canine Road just south of the intersection of Canine Road and Connector Road be relocated farther south to service the garage entry and exit point. Other intersection improvements related to installation of the parking garage would be determined through an additional site-specific traffic study (USACE 2022).



Source: USACE 2022

Figure 3-3. Alternative 1 Access Routes

Based on the 2023 Traffic Study, 2031 conditions assume that the East Campus would be fully built out and includes roadway and intersection improvements. These future improvements would allow intersections on campus to operate at an LOS C or better during peak hours (see **Figure 3-4**) (DoD 2023). Roadway improvements associated with the development of this site include modification of medians along Venona Road to allow for turn movements into the site for service access. Access to the site should be coordinated with the realigned Venona and Rockenbach Roadway project. Additional intersection and roadway improvements associated with the MOF trip generation would be determined through an additional site-specific traffic study (USACE 2022).



Source: USACE 2022
Note: LOS values are shown in colored circles for intersections. See **Figure 3-1** for LOS categories.

Figure 3-4. Future 2031 Levels of Service

3.2.3.3 ALTERNATIVE 2

Impacts on transportation under Alternative 2 would be similar to those described for Alternative 1. Short- and long-term, moderate, adverse impacts on transportation would be expected from construction traffic and the increase in personnel. Parking for Alternative 2 with the MOF at Site 1 would be at ECPS3 (under construction) and ECPS4 (planned for construction). ECPS3 is planned to accommodate approximately 3,200 spaces with a potential expansion capacity of approximately 750 parking spaces. The expansion would be constructed on the east side of the planned structure. ECPS4 is planned to accommodate approximately 2,100 parking spaces with a potential expansion capacity of approximately 1,700 parking spaces. This alternative would not provide as much parking availability as Alternative 1 (a difference of up to 675 parking spaces) and would contribute further to the East Campus parking constraints. Traffic distribution at each VCP would be similar to Alternative 1. As discussed for Alternative 1, intersections across the campus would be expected to operate as LOS C or better with future roadway/intersection improvements.

3.2.3.4 ALTERNATIVE 3

Short- and long-term, moderate, adverse impacts on transportation would be expected from construction traffic and the increase in personnel under Alternative 3. Traffic is expected to enter the NSA campus through VCPs 1, 2, and 6 and access Site 3 (the Mapes Tract) via Canine, Samford, and Venona Roads. Parking areas for the MOF would be collocated with the MOF on Site 3. Traffic entering the site through VCPs 5 and 8 would access the site via Ultra, Venona, and O'Brien Roads (see **Figure 3-5**). Given the proximity of Site 3 to VCPs 5 and 8, CNMF traffic may be more likely to enter the campus through those VCPs versus VCPs 1, 2, and 6. Given that VCPs 5 and 8 require access through the Fort Meade gates, it is likely that a majority of traffic will continue using the VCPs as they do today.

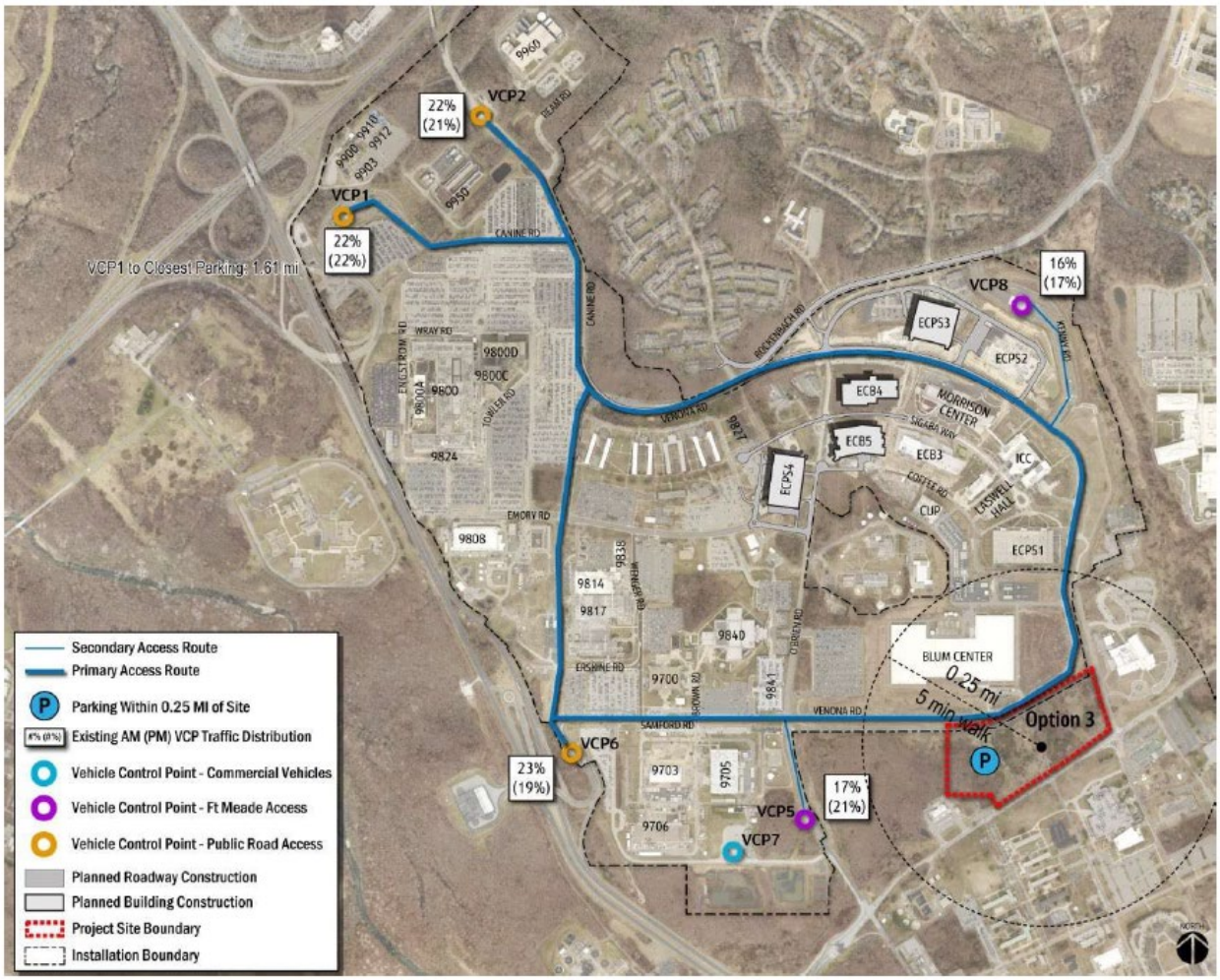
The construction and demolition phases of the Proposed Action would require delivery of materials and removal of debris. Construction-related traffic would contribute to the total existing traffic on the installation. Many of the heavy construction vehicles would be driven to the site and kept on site for the duration of construction and demolition activities, resulting in relatively few additional trips. Additionally, any potential increases in traffic volume associated with construction and demolition would be temporary, contributing to short-term, moderate, adverse impacts.

Long-term, moderate, adverse impacts on transportation would be expected from the additional 800 personnel commuting from off-installation. While these additional commuters would adversely contribute to the existing traffic, the commuting time frame and peak traffic times would remain unchanged. Traffic distribution at each VCP would be similar to Alternative 1, and the commuting time frame and peak traffic times would be expected to remain unchanged. As discussed for Alternative 1, intersections across the campus would be expected to operate as LOS C or better with future roadway/intersection improvements.

Alternative 3 would not be walkable to the rest of the NSA campus. A shuttle stop would be added at the MOF to allow for connections to the rest of the NSA campus. An associated parking garage, proposed for construction just west of the proposed CNMF facility, would

contain 2,250 parking spaces. The walking distance to the proposed Alternative 3 parking garage is 0.1 mile (about 500 feet).

Recommended roadway improvements include eastbound and westbound turn lanes along Venona Road to facilitate traffic turning into the site. Additional intersection and roadway improvements associated with MOF trip generation would be determined through an additional site-specific traffic study (USACE 2022).



Source: USACE 2022

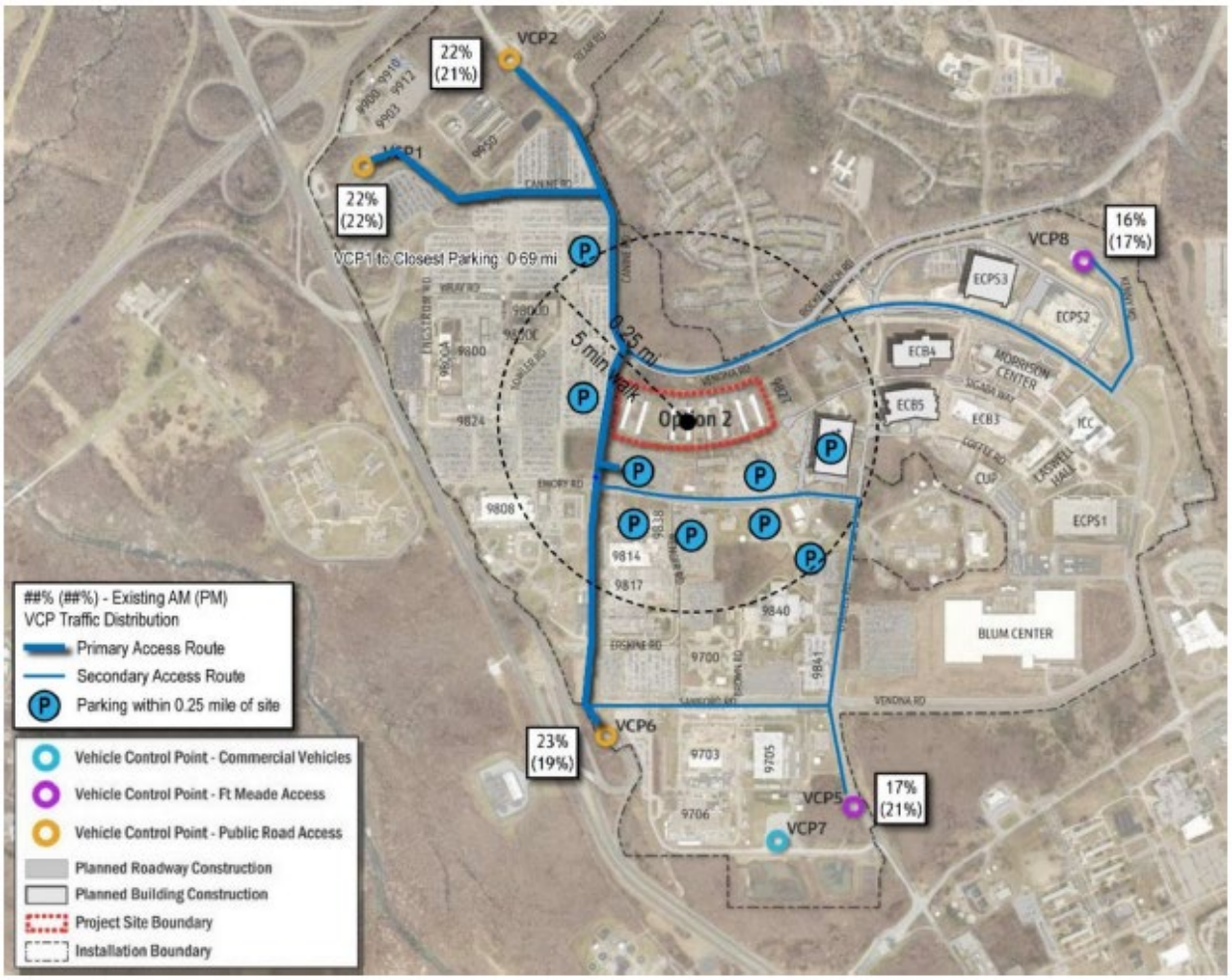
Figure 3-5. Alternative 3 Access Routes

3.2.3.5 ALTERNATIVE 4

Impacts on transportation under Alternative 4 would be similar to those described for Alternative 1. Short- and long-term, moderate, adverse, and beneficial impacts on transportation from construction traffic and the increase in personnel would be expected. Traffic is expected to enter the NSA campus through VCPs 1, 2, and 6 and access Alternative 4 through Canine and Emory Roads. Traffic entering through VCPs 5 and 8 would access the site through Ultra, Venona, and O'Brien Roads (see **Figure 3-6**). A parking structure would be constructed near ECPS3 to accommodate 90 percent of MOF personnel. It is assumed that the parking structure would be

similar in capacity to the WCPS. Additional required spaces would be covered by expansion of the surface parking lots associated with ECPS3 and ECPS4 and the existing surface parking lot on Site 5. Traffic distribution at each VCP would be similar to Alternative 1. As discussed for Alternative 1, intersections across the campus would be expected to operate as LOS C or better with future roadway/intersection improvements.

Under Alternative 4, the proposed pedestrian pathway is 0.4 mile to ECB4, and a 0.6 mile to ICC, approximately a 10-minute walk (see **Figure 3-6**). The walking distance to the proposed parking structure is 0.5 mile, also approximately a 10-minute walk.



Source: USACE 2022

Figure 3-6. Alternative 4 Access Routes

3.2.3.6 NO ACTION ALTERNATIVE

Under the No Action Alternative, CNMF would not construct the MOF building and associated parking and infrastructure at Fort Meade, and the existing conditions discussed in **Section 3.2.2** would remain unchanged. Therefore, no impacts on transportation would be expected.

3.2.3.7 CUMULATIVE IMPACTS

Concurrent construction of the Proposed Action with any of the reasonably foreseeable future projects discussed in **Section 2.5** would require coordination with NSA and Fort Meade to reduce potential impacts on traffic flow and congestion. The proposed roadway improvement projects would help offset impacts from increased traffic associated with ongoing development on Fort Meade, including the Proposed Action, PAF, CNMF MOSF, and East Campus development projects. Based on the 2023 Traffic Study, 2031 conditions assume that the East Campus would be fully built out and include roadway and intersection improvements allowing intersections on campus to operate at LOS C (DoD 2023). Therefore, long-term, minor to moderate, adverse, and beneficial impacts on transportation would be expected from the Proposed Action when combined with the reasonably foreseeable future projects.

3.3 Noise

3.3.1 Definition of the Resource

Noise is any sound that is unwanted, loud, or unpleasant; interferes with communication; is intense enough to damage hearing; or is otherwise intrusive. How a person responds to noise varies depending on the type and characteristics of the noise. These characteristics include distance between the noise source and the receptor, receptor sensitivity, and time of day. Noise is often generated by activities, such as construction or vehicular traffic, that are essential to a community's quality of life. Any area where occupants are more susceptible to the adverse effects of noise are considered noise-sensitive receptors. A noise-sensitive receptor includes a land use where people involved in indoor or outdoor activities may be subject to stress or considerable interference from noise. Such locations or facilities include residential dwellings, hospitals, nursing homes, places of worship, educational facilities, and libraries. Sensitive receptors may also include noise-sensitive cultural practices, some domestic animals, or certain wildlife species or broad areas such as nature preserves and designated districts in which occasional or persistent sensitivity to noise above ambient (background noise) levels exist in the environment. Ambient noise levels vary depending on housing density and proximity to open space, major traffic areas, or airports.

Sound is a form of energy and varies by both intensity and frequency. The sound pressure level is measured in decibels (dB) and is used to quantify sound intensity or loudness. Frequency, measured in hertz, is the number of times per second an acoustic wave repeats itself and drives the sound's pitch. The human ear responds differently to different frequencies and is less able to hear low frequencies versus high frequencies. Considering this varying sensitivity, the "A-weighted" scale, measured in A-weighted decibels (dBA), is used to approximate the relative loudness of sound based on human perception. Factors that influence human response to noise include intensity or loudness, duration that the sound is detected, frequency (or pitch) of the sound, repetition of the sound source, time of day the sound occurs, abruptness of onset or cessation of the sound, and successful application of noise control measures (DoD 2018). Distance from the noise source is also an important consideration because noise levels reduce by 6 dB with every doubling of distance from the source (OSHA 2018). Most people are exposed to daily sound levels of 50 to 55 dBA or higher. Common sounds encountered in daily

life and through construction activities and their dBA levels 50 feet from the source are provided in **Table 3-1**.

Table 3-1. Common Sound Sources and Sound Levels

Sound Source	Sound Level (dBA)
Household/Outdoor	
Soft whisper (at 5 feet)	30
Refrigerator (at 3 feet) or light traffic (at 100 feet)	50
Garbage disposal (at 3 feet) or motorcycle (25 feet)	80
Lawn mower (at 3 feet)	90
Car horn (at 3 feet)	100
Ambulance siren (100 feet)	120
Jet taking off (at 200 feet)	130
Clearing and Grading Machinery	
Concrete mixer (at 50 feet)	74–88
Paver (at 50 feet)	86–88
Dozer/tractor/front loader (at 50 feet)	75–80
Construction Equipment	
Grader (at 50 feet)	80–93
Truck (at 50 feet)	83–94
Backhoe (at 50 feet)	72–93
Pile driver (at 50 feet)	91–110

Sources: FAA 2022, CHC 2022, USEPA 1971, DoD 2018
Key: dBA = A-weighted decibels

Various sound level metrics have been developed for purposes of characterizing the sound environment. Day-night average sound level (DNL) is the average sound energy in a 24-hour period with a weighting added to the nighttime A-weighted sound levels. Because of the potential to be particularly intrusive, noise events occurring between 10 p.m. and 7 a.m. are assessed a 10 dB weighting when calculating DNL. DNL is a useful descriptor for aircraft noise because (1) it averages ongoing yet intermittent noise and (2) it measures total sound energy over a 24-hour period. DNL provides a measure of the overall acoustical environment, but it does not represent the sound level at any given time.

Federal Regulations. The Noise Control Act of 1972 directs federal agencies to comply with applicable federal, state, and local noise control regulations. The Occupational Safety and Health Administration (OSHA), under the Noise Control Act, 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 is 115 dBA, and exposure to this level must not exceed 15 minutes within an 8-hour period. Additionally, the standards limit instantaneous exposure, such as impact noise, to 140 dBA. If noise levels exceed these standards, employers are required to provide hearing protection equipment that reduces sound levels to acceptable limits (OSHA 2008). DoD Instruction 4715.13, *DoD Operational Noise Program*, establishes policy, assigns responsibilities, and prescribes procedures for administering the DoD Operational Noise Program and managing military noise.

State Regulations. The State of Maryland has transferred noise regulation authority to local jurisdictions. The State, however, continues to be responsible for setting standards and general exemptions (Code of Maryland Regulations [COMAR] Chapter 26.02.03, *Control of Noise Pollution*), as provided in the Maryland Environmental Noise Act of 1974. **Table 3-2** provides the maximum allowable noise levels for residential, industrial, and commercial areas for the state. Construction and demolition activities are exempt from the limits shown in the table during daytime hours (i.e., between 7 a.m. and 10 p.m.). For construction and demolition, a person may not cause or permit noise levels that exceed 90 dBA during daytime hours or exceed the levels specified in **Table 3-2** during nighttime hours (i.e., between 10 p.m. and 7 a.m.). Blasting operations for construction and demolition are exempt from the limits shown during daytime hours. Additionally, noise from pile-driving activities is exempt from the limits during the daytime hours of 8 a.m. to 5 p.m. Emergency operations are entirely exempt from the COMAR regulation. Such an exception could be requested if meeting the requirements is not practicable in a particular case. The request must be submitted in writing to the Maryland Department of the Environment (MDE) with justification explaining why compliance is impracticable.

Table 3-2. State of Maryland Maximum Allowable Noise Levels

Zoning District	Daytime (dBA)	Nighttime (dBA)
Industrial and Marine	75	75
Commercial and Mixed-Use	67	62
Residential	65	55

Source: COMAR 26.02.03
Key: dBA = A-weighted decibels

3.3.2 Existing Conditions

The ROI for the analysis of impacts on noise includes the proposed sites and surrounding on- and off-installation areas.

Fort Meade is relatively quiet, with no significant sources of noise. The main source of noise on Fort Meade is vehicular traffic—Fort Meade is bound by the Baltimore–Washington Parkway (MD 295) to the northwest, Annapolis Road (MD 175) to the northeast, and the Patuxent Freeway (MD 32) to the south and west. Other significant nearby transportation arteries include U.S. Route 1 and I-95, which run parallel to and just to the west of the Baltimore–Washington Parkway. I-97, which connects Baltimore and Annapolis, is several miles east of Fort Meade (Army 2020). MD 295 and MD 32 provide direct access to the NSA campus on the installation via ramps onto Canine Road. Smaller, internal access roads connect throughout the installation. Other sources of noise on Fort Meade include heating, ventilation, and air conditioning systems; utility/generator plants; military unit physical training; lawn maintenance; snow removal; and construction activities. None of these operations or activities produce excessive levels of noise.

A noise analysis conducted for Fort Meade and NSA in 2009 estimated ambient noise levels at several locations to be between 55 and 65 dBA DNL, depending on the noise-sensitive receptor's proximity to major roadways (NSA 2009). Since the 2009 study, no major sources of noise have been added to Fort Meade, but traffic levels and associated noise have increased. It is unlikely that the additional traffic noise would increase the ambient noise levels beyond 65

dBA DNL. Therefore, present ambient noise levels at Fort Meade likely still fall into the “normally acceptable” range, as defined by Army and U.S. Department of Housing and Urban Development criteria.

Another potential noise source is Tipton Airport, a public airport southwest of Fort Meade. As of August 2024, approximately 106 aircraft operations are conducted each day at the airfield, primarily by local general aviation aircraft (AirNav 2024). Aircraft noise in the Fort Meade area is low because approach paths to the Tipton Airport runway are oriented in an east–west direction, and commercial planes are not permitted to fly over Fort Meade.

The closest on-installation noise-sensitive receptor to the Proposed Action is the Midway Commons housing, approximately 380 feet from Site 1. The closest off-installation noise-sensitive receptor is the Patuxent Research Refuge, the boundary of which is more than 3,500 feet east of Site 1.

3.3.3 Environmental Consequences

3.3.3.1 EVALUATION CRITERIA

Analysis of potential noise impacts is based on changes to the ambient noise environment or potential changes to land compatibility from noise caused by implementation of the Proposed Action. Impacts on noise would be considered significant if the Proposed Action were to result in the violation of applicable federal or local noise regulations, create appreciable areas of incompatible land use outside the installation boundary, or result in noise that would negatively affect the health of the community.

Table 3-3 lists the on-installation noise-sensitive receptors that would be located near one or more of the proposed alternatives and their highest estimated noise level. The closest off-installation noise-sensitive receptor is the Patuxent Research Refuge, the boundary of which is more than 3,500 feet away, a distance that would result in less than negligible noise impacts, and therefore is not discussed further. Anticipated noise levels at receptor locations were estimated in accordance with the 2018 OSHA Technical Manual (OSHA 2018) and calculations conservatively assume a cumulative noise level of 88.7 dB for operation of equipment and construction activities at 50 feet per United States Environmental Protection Agency (USEPA)-reported dB levels (USEPA 1971) for types of equipment that would be operated at the site(s). At receptor distances of 770 feet or greater from a proposed development action, noise levels would be less than 65 dB.

All construction and demolition activities would occur within the installation’s boundary, where traffic and other types of military operational noise are typical and all related construction noise impacts would cease upon project completion. Operation of construction vehicles transporting equipment, materials, and debris to the installation, regardless of the alternative, would temporarily add to existing traffic noise and be anticipated on- and off-installation. Noise controls would be used to the extent practicable to manage noise reduction. Noise-reducing measures, such as exhaust mufflers, can reduce the noise level by as much as 10 dBA (USEPA 1971). It is expected that different types of construction equipment would be operated intermittently and for short durations.

Table 3-3. Highest Estimated Project-Related Noise Levels at the Closest Noise-Sensitive Receptor Locations at Each Alternative

Closest Noise-Sensitive Receptor(s)	Distance (feet)[a]	Highest Estimated Noise Level at the Receptor (dBA) [b]
Alternative 1		
Midway Commons Housing at 3rd Calvary Road	380	71
Alternative 2		
Midway Commons Housing at 3rd Calvary Road	380	71
Alternative 3		
Defense Information School on Mapes Road	330	72
Restaurant on Mapes Road	100	83
United Service Organizations on 6th Armored Calvary Road	435	70
Alternative 4		
Midway Commons Housing at 3rd Calvary Road	520	68

Key: dBA = A-weighted decibels

[a] Noise-sensitive receptor distances from project sites estimated using Google Earth measurement tools.

[b] Estimated noise levels calculated per the 2018 OSHA Technical Manual Section III: Chapter 5, Noise (OSHA 2018). Noise levels at the receptor locations assumed the cumulative noise level (88.7 dB) for construction activities at 50 feet per USEPA-reported (USEPA 1971) dB levels for types of equipment that would be operated at the site(s). Values rounded to the nearest whole number.

Noise from the Proposed Action, as shown in **Table 3-3**, could potentially adversely affect noise-sensitive receptors on Fort Meade. Noise levels would be limited to short durations of intermittent bursts and could exceed 65 dBA and range up to 83 dBA, depending on the alternative selected. None of the alternatives would be expected to experience short-term or extended noise levels from construction activities that exceed 83 dBA. The following alternatives are analyzed based on impacts to their closest noise-sensitive receptors.

3.3.3.2 ALTERNATIVE 1

Short-term, negligible to minor, adverse impacts on noise would be expected from the operation of heavy equipment and construction vehicles, increased construction-related traffic along the main routes transporting work crews and materials to the project sites, the proposed construction and demolition activities at each site, and from hauling debris to local landfills. At Midway Commons Housing, the closest noise-sensitive receptor to Sites 1 and 2 (see **Table 3-1**), the highest estimated noise level of 71 dBA is from the northwestern corner of Site 1 to the southeastern corner of the closest housing unit along Antolak Street. Individuals working, recreating, or outside accessing buildings at locations near the site may temporarily notice or be bothered by the noise. The perceived loudness of construction activities would reduce with the distance and if individuals are inside buildings, so construction-related noise may not be perceptible to some noise-sensitive receptors. Noise or vibration from construction activities such as pile-driving at the WCPS site could likely be heard or felt at the Operations buildings to the west. Construction would typically occur during daytime hours (7 a.m. to 5 p.m.) and, based

on distances to the closest residences and noise controls, sleep disturbance from construction-related activities would not occur. Adjacent to and just south of the Midway Commons Housing is a 130-foot forested vegetation buffer that runs along Rockenbach Road. To the east, along Canine Road, this vegetation buffer reaches 200 feet. The presence of the vegetation buffer provides an existing noise barrier that would reflect, refract, and/or absorb noise as it travels from the source. The highest estimated noise (71 dBA) does not account for these buffers; however, the buffer would be expected to contribute to noise reduction.

No long-term noise impacts are expected from operation of the developed facilities and infrastructure. After construction is complete, the duration of commuter vehicle traffic noise along existing commuter routes on and off the installation could extend from the proposed addition of 800 off-installation commuters. However, noise volumes would not appreciably change because the commuting time frame would be the same—peak morning traffic at the start of the workday and evening traffic at the end of the workday.

3.3.3.3 ALTERNATIVE 2

Impacts under Alternative 2 would be similar to those discussed for Alternative 1. At Midway Commons Housing, the closest noise-sensitive receptor to Site 1, the highest estimated noise level of 71 dBA is from the northwestern corner of Site 1 to the southeastern corner of the closest housing unit along Antolak Street. Individuals working, recreating, or outside accessing buildings at locations near the site may notice or be bothered by the noise. The perceived loudness of construction activities would reduce with the distance of each housing unit. The forested vegetation buffer that runs along Rockenbach and Canine Roads provides an existing noise barrier for the housing area. The highest estimated noise (71 dBA) does not account for these buffers; however, the buffer would contribute to noise reduction. Noise controls would be used to the extent practicable to manage noise levels. Construction would typically occur during daytime hours (7 a.m. to 5 p.m.) and, based on distances to the closest residences and noise controls, sleep disturbance from construction-related activities would not occur.

3.3.3.4 ALTERNATIVE 3

Short-term, minor to moderate, adverse impacts on noise would be expected from the operation of heavy equipment and construction vehicles, increased construction-related traffic along the main routes transporting work crews and materials to the project site, the proposed construction and demolition activities at the site, and from hauling debris to local landfills.

A restaurant on Mapes Road, and to a lesser extent the Defense Media Agency, are adjacent to and has an adjoining boundary to Site 3 and is on the highest end of the expected noise range, estimated at 83 dBA. Individuals working, dining, or outside accessing the facility may notice or be bothered by the noise. Noise controls would be used to the extent practicable to manage noise levels and short-term, moderate, adverse noise impacts would be expected. Additionally, traffic noise is already common in this area because of the frequent use of Mapes Road throughout the day, particularly during peak hours.

At Defense Information School, the highest estimated noise level is 72 dBA from the school's front entrance. The school is located on the installation where military operations, construction, and traffic noise are typical; however, increased noise could interfere with a learning

environment. It is assumed that students would be indoors and buffered by the school's exterior walls, internal insulation, and interior walls. Noise controls would be used to the extent practicable to manage noise levels and short-term, minor to moderate, adverse noise impacts would be expected.

At the United Service Organizations on 6th Armored Calvary Road, the highest estimated noise level of 70 dBA is measured from the northeastern corner. Individuals working, enjoying the United Service Organizations accommodations inside, or outside accessing the building may notice or be bothered by the noise; however, it is assumed that individuals inside the building would be buffered by the building's exterior walls and internal insulation. Noise controls would be used to the extent practicable to manage noise levels and short-term, minor, adverse noise impacts would be expected.

After construction is complete, the duration of commuter vehicle traffic noise along existing commuter routes on and off the installation could extend because of the proposed addition of 800 off-installation commuters. Noise volumes would not appreciably change because the commuting time frame would be the same—peak morning traffic at the start of the workday and evening traffic at the end of the workday.

3.3.3.5 ALTERNATIVE 4

Impacts under Alternative 4 would be similar to but less than, those discussed for Alternative 1. At Midway Commons Housing, the closest noise-sensitive receptor to Sites 4 and 5, the highest estimated noise level is 68 dBA from the northern boundary of Site 4 to the southern edge of the closest housing unit along Antolak Street. Individuals working, recreating, or outside accessing buildings at locations near the site(s) may notice or be bothered by the noise. The perceived loudness of construction activities would reduce with the distance of each housing unit. The forested vegetation buffer that runs along Rockenbach and Canine Roads provides an existing noise barrier for the housing area. The highest estimated noise (71 dBA) does not account for these buffers; however, the buffer would contribute to noise reduction. Noise controls would be used to the extent practicable to manage noise levels. Construction would typically be conducted during daytime hours (7 a.m. to 5 p.m.) and, based on distances to the closest residences and noise controls, sleep disturbance from construction-related activities would not occur.

3.3.3.6 NO ACTION ALTERNATIVE

Under the No Action Alternative, CNMF would not construct the MOF building and associated parking and infrastructure at Fort Meade, and the existing conditions discussed in **Section 3.3.2** would remain unchanged. Therefore, no impacts on the noise environment would occur.

3.3.3.7 CUMULATIVE IMPACTS

If construction for any of the reasonably foreseeable future projects discussed in **Section 2.5** were to be implemented concurrently with any of the construction phases of the Proposed Action, impacts on the noise environment from heavy equipment use and construction traffic would be minor to moderate, but temporary and intermittent. The existing ambient noise levels or the types of noise would not be expected to change under the Proposed Action. Therefore,

short-term, minor to moderate, cumulative impacts would be expected from the Proposed Action in combination with the reasonably foreseeable future projects.

3.4 Air Quality

3.4.1 Definition of the Resource

Air quality is defined by the concentration of various pollutants in the atmosphere at a given location. Under the Clean Air Act (CAA), the six pollutants that are the main indicators of air quality, called, "criteria pollutants," are carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), suspended particulate matter (measured less than or equal to 10 microns in diameter [PM_{10}] and less than or equal to 2.5 microns in diameter [$PM_{2.5}$]), and lead (Pb). Volatile organic compound (VOC) and nitrogen oxide (NO_x) emissions are precursors of O_3 and are used to represent O_3 generation.

Under the CAA (42 USC 85), USEPA has established the National Ambient Air Quality Standards (NAAQS) (40 CFR 50) for criteria pollutants. Each state has the authority to adopt standards stricter than those established by USEPA. The state of Maryland accepts the federal NAAQS (Maryland Environmental Code Section 2-302). Areas that are and have historically been in compliance with the NAAQS or have not been evaluated for NAAQS compliance are designated as attainment areas. Areas that exceed an NAAQS are designated as nonattainment areas. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas. Nonattainment and maintenance areas are required to adhere to a State Implementation Plan (SIP) to reach attainment or ensure continued attainment.

The USEPA General Conformity Rule applies to federal actions occurring in nonattainment and maintenance areas. When the total emissions of nonattainment and maintenance pollutants (or their precursors) exceed specified thresholds, a general conformity determination is required. The emissions thresholds that trigger requirements for a conformity determination are called *de minimis* levels and are specified at 40 CFR 93.153. *De minimis* levels (in tons per year [tpy]) vary by pollutant and depend on the severity of the nonattainment or maintenance status for the area in question. The General Conformity Rule does not apply to federal actions occurring in attainment areas.

Title V of the CAA requires states to establish an air operating program. The requirements of Title V are outlined in the federal regulations in 40 CFR 70, and in COMAR 26.11.02 and 26.11.03. The Prevention of Significant Deterioration (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.

Climate Change and Greenhouse Gases (GHGs). Global climate change refers to long-term fluctuations in temperature, precipitation, wind, sea level, and other elements of Earth's climate. Of particular interest, GHGs trap heat in the atmosphere. GHGs include water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tropospheric O_3, and several fluorinated and chlorinated gaseous compounds. Most GHGs occur naturally in the atmosphere but increases in concentration result from human activities such as burning fossil fuels. CO_2, CH_4, and N_2O

account for 99.5 percent of all GHG emissions in the United States, while the single most dominant GHG emitted is CO_2, accounting for 91.9 percent of all reported U.S. GHG emissions as of 2022 (USEPA 2023a). To estimate global warming potential, all GHGs are expressed relative to a reference gas, CO_2, which is assigned a global warming potential of 1. All GHGs are multiplied by their global warming potential, and the results are added to calculate total equivalent emissions of carbon dioxide (CO_2e).

EO 13990, *Protecting the Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*, signed on January 20, 2021, reinstated the *Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews*, issued on August 5, 2016, by CEQ, which required federal agencies to consider GHG emissions and the effects of climate change in NEPA (CEQ 2016). EO 13990 requires federal agencies to capture the full costs of GHG emissions as accurately as possible to facilitate sound decision-making, recognize the breadth of climate impacts, and support the international leadership of the United States on climate issues. The CEQ *National Environmental Policy Act Interim Guidance on Consideration of Greenhouse Gas Emissions and Climate Change*, issued on January 9, 2023, recommends determining the social cost of GHG emissions from a proposed action where feasible as a means of comparing the GHG impacts of the alternatives (CEQ 2023). Accordingly, estimated CO_2e emissions and the social cost of GHGs associated with the Proposed Action alternatives are provided in this EA for informative purposes. The “social cost of GHGs” is an estimate of the monetized damages associated with incremental increases in GHG emissions, such as reduced agricultural productivity, human-health effects, property damage from increased flood risk, and the value of ecosystem services.

EO 14008, *Tackling the Climate Crisis at Home and Abroad*, further strengthens EO 13990 by implementing objectives to reduce GHG emissions and bolster resilience to the impacts of climate change, and requiring federal agencies to develop and implement climate action plans. The *Army Climate Strategy* aims to address the threats posed by climate change (Army 2022). The Army also follows the *DoD Climate Adaptation Plan* and considers the *DoD Climate Risk Analysis* for climate change planning. The *Long-Term Strategy of the United States: Pathways to Net-Zero Greenhouse Gas Emissions by 2050* sets target benchmarks to achieve net-zero GHG emissions by no later than 2050 (DOS and EOP 2021).

3.4.2 Existing Conditions

The Proposed Action considers alternatives on Fort Meade within and outside of the NSA campus. Therefore, the ROI includes all of Fort Meade.

NAAQS and Attainment Status. USEPA Region 3 and MDE regulate air quality in Maryland. Fort Meade is in Anne Arundel County, which is within the Metropolitan Baltimore Intrastate Air Quality Control Region (40 CFR 81.28). Anne Arundel County also is within the O_3 transport region, which includes 11 states and Washington, D.C. (40 CFR 81.457). USEPA has designated Anne Arundel County as moderate nonattainment for both the 2008 and 2015 8-hour O_3 NAAQS. In addition, Fort Meade is in a portion of Anne Arundel County that is designated as nonattainment for the 2010 SO_2 NAAQS (USEPA 2024a, 2024b). Federal actions occurring in these nonattainment areas are required to comply with SIPs that include the

Baltimore, MD Ozone Moderate Nonattainment Area State Implementation Plan (SIP) For the 0.070 ppm National Ambient Air Quality Standard for Ozone (MDE 2023a) and the *State of Maryland 1-Hour Sulfur Dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) State Implementation Plan for the Anne Arundel County and Baltimore County, MD ("Wagner") Nonattainment Area* (MDE 2020a). On November 2, 2022, USEPA issued a Clean Data Determination indicating that the Anne Arundel County and Baltimore County SO_2 nonattainment area has attained the 2010 SO_2 NAAQS based on 2019 and 2021 ambient air quality monitoring data. The area remains designated as nonattainment until USEPA formally accepts a State-submitted 10-year maintenance plan (87 Federal Register 66086). Anne Arundel County is designated as attainment or unclassified for all other criteria pollutants (USEPA 2024a).

Based on the attainment status for the area containing Fort Meade, the General Conformity Rule is potentially applicable to emissions of VOCs and NO_x (because they are precursors of O_3) and sulfur oxides (SO_x). As outlined in 40 CFR 93.153(b), the applicable *de minimis* level threshold for these pollutants is 50 tpy for VOCs and 100 tpy for NO_x and SO_x.

Local Ambient Air Quality. Existing ambient air quality conditions near Fort Meade can be estimated from measurements taken at nearby air quality monitors. **Table 3-4** summarizes the most recent measured air pollutant concentrations at air quality monitors near Fort Meade. These concentrations are used to indicate compliance with the NAAQS based on 3-year averages, which is the basis for USEPA attainment/nonattainment designations. These data represent the most recently collected upper bound levels of criteria pollutants in the area, and have been provided for informational purposes. **Table 3-5** includes the most recent available emissions inventory for Anne Arundel County.

Installation Emissions and Air Operating Permits. Per MDE Title V permit regulations (COMAR 26.11.02 and 26.11.03), a Title V permit is required for facilities that have the potential to emit above major source thresholds. The major source thresholds for facilities in Anne Arundel County are 25 tpy for VOCs and NO_x, and 100 tpy for all other criteria pollutants.

Table 3-4. 2022 Air Pollutant Concentrations near Fort Meade

Criteria Pollutant	Averaging Period	NAAQS	2022 Design Concentration[a]
CO	8-hour	9 ppm	0.7 ppm[b]
NO_2	1-hour	100 ppb	34 ppb[b]
O_3	8-hour	0.070 ppm	0.066 ppm[c]
$PM_{2.5}$	Annual	12 µg/m^3	5.9 µg/m^3 [b]
	24-hour	35 µg/m^3	14 µg/m^3 [b]
PM_{10}	24-hour	150 µg/m^3	0.0 µg/m^3 [c]
Pb	3-month	0.15 µg/m^3	Not available
SO_2	1-hour	75 ppb	4 ppb[d,e]

Source: USEPA 2023b

Key: µg/m^3 = micrograms per cubic meter; CO = carbon monoxide; NO_2 = nitrogen dioxide; O_3 = ozone; $PM_{2.5}$ = particulate matter equal to or less than 2.5 microns in diameter; PM_{10} = particulate matter equal to or less than 10 microns in diameter; ppb = parts per billion; ppm = parts per million; SO_2 = sulfur dioxide

[a] The design concentration is the monitored (ranked or percentiles based) concentration that is used to assess compliance with the NAAQS using an average of the previous 3 years.

[b] Design concentration for Prince George's County, Maryland. Monitor located approximately 6.5 miles southwest of Fort Meade.

[c] Design concentration for Anne Arundel County, Maryland. Monitor located approximately 6.5 miles northeast of Fort Meade.

[d] Design concentration for Anne Arundel County, Maryland. Monitory located approximately 12 miles east of Fort Meade.

[e] Anne Arundel County has been designated nonattainment for SO_2 based on modeling data; therefore, the determination of whether the county is meeting the NAAQS is based on modeling data rather than monitoring data, and the design concentrations are not considered in the attainment designation.

Table 3-5. 2020 Emissions Inventory for Anne Arundel County

County	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_x (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Pb (tpy)	CO_2e[a] (tpy)
Anne Arundel	7,961	18,084	50,014	2,285	4,318	1,892	0.3	4,911,319

Source: USEPA 2023a

Key: CO = carbon monoxide; CO_2e = equivalent emissions of carbon dioxide; NO_x = nitrogen oxide; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; PM_{10} = particulate matter equal to or less than 10 microns in diameter; SO_x = sulfur oxide; tpy = tons per year; VOC = volatile organic compound

[a] To calculate the total CO_2e, all GHGs are multiplied by their global warming potential and the results are added together. The global warming potentials used to calculate CO_2e are as follows: CO_2 = 1; CH_4 = 25; N_2O = 298.

The NSA campus is permitted separately from the rest of Fort Meade. NSA is considered a major source, as defined by 40 CFR 70 and COMAR 26.11.03, meaning that the facility has the potential to emit above major source thresholds. Therefore, NSA operates under a Title V air operating permit (24-003-0317) as issued by MDE on February 1, 2020, and expiring on January 31, 2025. Stationary sources of air emissions at the NSA campus include boilers, emergency generators, incinerators, classified-material reclamation furnaces, and painting and plating operations (MDE 2020b). **Table 3-6** summarizes the available yearly NSA air emissions from stationary sources.

Table 3-6. Emissions from Stationary Sources at the NSA Campus

Year	VOC (tpy)	NO_x (tpy)	CO (tpy)	SO_x (tpy)	PM_{10} (tpy)	CO_2e (tpy)
2017	3.90	40.57	7.79	2.16	4.39	34,019.32
2016	4.69	40.94	8.16	2.58	3.39	30,791.07
2015	3.27	48.01	7.34	3.20	4.69	29,815.31
2014	2.52	34.13	3.09	5.21	0.82	Not available
2013	2.45	35.49	2.76	2.41	0.84	Not available

Source: MDE 2020b

Key: CO = carbon monoxide; CO_2e = equivalent emissions of carbon dioxide; NO_x = nitrogen oxide; PM_{10} = particulate matter equal to or less than 10 microns in diameter; SO_x = sulfur oxide; tpy = tons per year; VOC = volatile organic compound

The rest of Fort Meade does not emit or have the potential to emit criteria pollutants above the major source thresholds and does not maintain an air operating permit (Fort Meade 2022b). Instead, Fort Meade obtains permits to construct minor sources of air emissions (e.g., emergency generators). Actual emissions for Fort Meade for 2021 are shown in **Table 3-7**. All stationary sources of air emissions on Fort Meade are registered with MDE and accounted for in the O_3 and SO_2 SIPs.

Table 3-7. 2021 Emissions Inventory for Fort Meade

Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_x (tpy)	Total Particulate Matter (tpy)	CO_2e[a] (tpy)
2021	16.82	10.30	13.77	0.41	1.26	40,157.27

Source: Fort Meade 2022b

Key: CO = carbon monoxide; CO_2e = equivalent emissions of carbon dioxide; NO_x = nitrogen oxide; SO_x = sulfur oxide; tpy = tons per year; VOC = volatile organic compound

[a] To calculate the total CO_2e, all GHGs are multiplied by their global warming potential and the results are added together. The globalwarming potentials used to calculate CO_2e are as follows: CO_2 = 1; CH_4 = 25; N_2O = 298.

No stationary sources of air emissions are located within Sites 1, 2, 3, or 5. Stationary sources of air emissions within Site 4 include one water heater, two boilers, and two generators at Building 9801; one water heater, two boilers, and two generators at Building 9802; two boilers at Building 9803; and one boiler at Building 9804. Stationary sources of air emissions at Building 9828, which is just east of Site 5, include one generator (Fort Meade 2022b, 2022c).

Climate Change and GHGs. The climate in central Maryland is affected by its proximity to Chesapeake Bay, Delaware Bay, and the Atlantic Ocean. Between 1991 and 2020, the Baltimore area has had an average high temperature of 88.8 degrees Fahrenheit (°F) in the hottest month of July and an average low temperature of 25.4°F in the coldest month of January. The average annual precipitation was 45 inches per year. The wettest month of the year was July, with an average rainfall of 4.48 inches per month (NOAA 2024).

Ongoing climate change in Maryland, including Anne Arundel County, has contributed to higher temperatures and more frequent heat waves, increased storm intensity, changes to precipitation patterns, rising seas and retreating shorelines, disruption of natural ecosystems and built infrastructure, and human-health effects. Climate change in Maryland results in intensified flooding in the winter and spring months, and drought during the summer and fall months. Sea-

level rise causes saltwater intrusion farther upstream and in groundwater supplies, and leads to increased acidity, which can affect ecosystems and wildlife. Homes and other infrastructure are vulnerable to increases in storm intensity and frequency. Higher air temperatures can cause adverse health effects such as heat stroke and dehydration, especially in vulnerable populations (i.e., children, elderly, sick, low-income populations), which can affect cardiovascular and nervous systems. Warmer air also can increase the formation of ground-level O_3, which has a variety of health effects, including aggravation of lung diseases and increased risk of death from heart or lung disease (Whitehead et al. 2023, USEPA 2016).

In 2020, Anne Arundel County produced 4,777,327 tons of GHGs (composed of CO_2, CH_4, and N_2O), equivalent to 4,911,319 tons of CO_2e. In the same year, Maryland produced approximately 50.1 million tons of CO_2e, and was ranked the 35th highest state producer of CO_2 in the United States (USEPA 2023a, USEIA 2023).

3.4.3 Environmental Consequences

3.4.3.1 EVALUATION CRITERIA

Impacts on air quality were evaluated by comparing the annual net change in emissions from the Proposed Action against the General Conformity Rule *de minimis* thresholds for nonattainment and maintenance pollutants and against the PSD threshold for attainment pollutants. Based on Anne Arundel County's compliance with the NAAQS, the General Conformity Rule is potentially applicable to emissions of VOCs and NO_x (because they are precursors of O_3) and SO_x, and the applicable *de minimis* level threshold for these pollutants is 50 tpy for VOCs and 100 tpy for NO_x and SO_x. For attainment pollutants, the PSD threshold is 250 tpy for CO, PM_{10}, and $PM_{2.5}$ and 25 tpy for lead. The PSD thresholds do not denote a significant impact; however, they do provide a threshold to identify actions that have insignificant impacts on air quality. Any action that results in net emissions below the PSD threshold for an attainment pollutant is considered so insignificant that the action would not cause or contribute to an exceedance of the NAAQS for that pollutant. For the purposes of this analysis, impacts on air quality would be considered significant if the Proposed Action or alternatives were to exceed the General Conformity Rule *de minimis* level or PSD thresholds.

Consistent with EO 14008, GHGs are analyzed as a category of air emissions. USEPA's PSD permitting change threshold of 75,000 tpy (68,039 metric tpy) of CO_2e was used as a significance indicator for GHG impacts. Any action with net GHG emissions below the indicator is considered too insignificant on a global scale to warrant any further analysis. Per CEQ guidance, the climate change analysis includes the social cost of GHG estimates and qualitatively assesses the Proposed Action's impacts on potential future climate scenarios and whether elements of the Proposed Action would be affected by climate change. This analysis does not attempt to measure the actual incremental impacts of GHG emissions from the Proposed Action, as there is a lack of consensus on how to measure such impacts.

3.4.3.2 ALTERNATIVE 1

Alternative 1 would result in short-term, minor, adverse impacts on air quality. Emissions of criteria and GHGs would be directly produced from operation of heavy construction equipment, demolition and construction of buildings and infrastructure, heavy-duty diesel vehicles hauling

supplies and debris to and from Sites 1 and 2, workers commuting daily to and from Sites 1 and 2 in their personal vehicles, and ground disturbance. All such emissions would be temporary in nature and produced only during the estimated 2-year construction period, from FY27 through FY28 (October 2026 through September 2028). The estimated net change in annual air emissions from Alternative 1 is shown in **Table 3-8**. Detailed emissions calculations are provided in **Appendix B**. The annual air emissions from construction would not be expected to exceed the *de minimis* level or PSD thresholds; therefore, short-term, adverse impacts on air quality would not be significant.

Table 3-8. Estimated Net Change in Annual Emissions from Alternative 1

Year	VOC (tpy)	NO_x (tpy)	CO (tpy)	SO_x (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Pb (tpy)	CO_2e (tpy)
2026 (construction)	0.139	1.470	1.408	0.003	11.028	0.047	<0.001	458.8
2027 (construction)	0.645	9.572	8.382	0.020	3.363	0.192	<0.001	4,855.4
2028 (construction)	28.000	6.054	5.367	0.012	0.134	0.123	<0.001	3,051.3
2029 and later (operations)	1.326	4.801	16.820	0.055	0.368	0.365	<0.001	6,777.3
Maximum	**28.000**	**9.572**	**16.820**	**0.055**	**11.028**	**0.365**	**<0.001**	**6,777.3**
***de minimis* level or PSD threshold**	**50**	**100**	**250**	**100**	**250**	**250**	**25**	**75,000**
Exceeds threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Key: CO = carbon monoxide; CO_2e = equivalent emissions of carbon dioxide; NO_x = nitrogen oxide; $PM_{2.5}$ = particulate matter equal to or less than 2.5 microns in diameter; PM_{10} = particulate matter equal to or less than 10 microns in diameter; SO_x = sulfur oxide; tpy = tons per year; VOC = volatile organic compound

To minimize fugitive dust emissions and reduce emissions of criteria pollutants during the construction period, best management practices (BMPs) (e.g., wetting the ground surface, using diesel particulate filters in vehicles and equipment, using VOC control technologies for surface coatings) would be incorporated. BMPs and other environmental control measures could reduce particulate matter emissions from a construction site by approximately 50 percent (USEPA 1985). Emissions from construction would cease once construction is completed.

Alternative 1 would result in long-term, minor, adverse impacts on air quality from operation of the new MOF and the additional 800 off-site and future personnel who would relocate to the NSA campus and commute to and from the MOF daily. Air emissions would be directly produced from a new natural gas–fired boiler required to heat the MOF and a new diesel life safety generator that would be installed at the MOF to provide backup power, which would increase emissions from stationary sources. Long-term, operational air emissions would begin following the construction period and would continue indefinitely. In addition, heating would no longer be needed for Building 9899 and other infrastructure following demolition, which would reduce stationary source air emissions. The estimated net change in annual operational air emissions from Alternative 1 is summarized in **Table 3-8**. The net increase in operational air emissions would not exceed the *de minimis* level or PSD thresholds. Therefore, a general conformity determination is not required. The net increase in annual emissions would not result in the exceedance of permitting thresholds for the NSA campus. As such, long-term, adverse impacts from Alternative 1 would not be significant. A Record of Non-Applicability to the General

Conformity Rule is provided in **Appendix B**. NSA would obtain permits to construct for all new stationary sources of air emissions, and all new sources would be registered with MDE.

Climate Change and GHGs. Construction under Alternative 1 would produce a total of approximately 8,366 tons of CO_2e. By comparison, 8,366 tons of CO_2e is the approximate GHG footprint of 1,806 passenger vehicles driven for 1 year or 990 homes' energy use for 1 year (USEPA 2024c). During the highest CO_2e emissions year during construction (i.e., 2027), approximately 4,855 tons of CO_2e would be produced, representing less than 0.1 percent of the 2020 annual CO_2e emissions in Anne Arundel County and less than 0.01 percent of the 2020 annual CO_2e emissions in Maryland. As such, air emissions produced during construction for Alternative 1 would not meaningfully contribute to the potential effects of climate change on a global scale and would not considerably increase the total CO_2e emissions produced by Anne Arundel County or the state. Therefore, construction would result in short-term, negligible, adverse impacts from GHGs. **Table 3-9** summarizes the annual GHG emissions and associated social cost from the Proposed Action alternatives. The estimated social cost of GHGs from construction under Alternative 1 would be approximately $452,845.

Table 3-9. Theoretical Social Cost of Carbon from Construction and Relative Comparison

Reference Scale	CO_2e[a,b] (tons)	Social Cost[c]	Comparison to Reference Scale
Alternative 1	8,365.4	$452,845	100%
Alternative 2	3,121.9	$169,020	37%
Alternative 3	8,419.9	$455,611	101%
Alternative 4	8,291.2	$448,929	99%
Anne Arundel County	14,733,957.0	$789,554,571	174,354%
Maryland	150,396,585.0	$8,063,168,061	1,780,557%
United States	8,863,422,126.5	$480,610,221,532	106,131,218%

Source: USEPA 2023a, 2023c; IWG-SCGHG 2021

Key: CO_2e = carbon dioxide equivalent

[a] Represents a sum of CO_2e emissions for construction years (i.e., 2026 through 2028). CO_2e emissions for Anne Arundel County, Maryland, and United States assumed to be consistent with 2020 or 2021 reported emissions.

[b] To calculate the total CO_2e, all GHGs are multiplied by their global warming potential and the results are added together. The global warming potentials used to calculate CO_2e are as follows: CO_2 = 1; CH_4 = 25; N_2O = 298.

[c] Social costs were calculated using a 3 percent average discount rate in 2020 dollars.

Operations under Alternative 1 would result in a net increase of annual CO_2e emissions by 6,777 tpy (6,148 metric tpy), which represents approximately 20 percent of the annual CO_2e emissions at the NSA campus, approximately 0.14 percent of annual CO_2e emissions in Anne Arundel County, and approximately 0.01 percent of annual CO_2e emissions in Maryland. By comparison, 6,777 tons of CO_2e is approximately the GHG footprint of 1,463 passenger vehicles driven for 1 year or 802 homes' energy use for 1 year (USEPA 2024c). As shown in **Table 3-10**, the estimated net social cost of GHGs from the first full year of operations would be approximately $375,518. Operational GHG emissions would continue indefinitely.

The annual net change of GHG emissions from construction and operation under Alternative 1 would not exceed the 75,000 tpy PSD threshold for CO_2e. Therefore, net GHG emissions are considered insignificant on a global scale and would not result in significant impacts on global climate change. To provide real-world context of the GHG and climate change impacts on a

national, state, and regional scale, **Table 3-9** and **Table 3-10** above provide a relative comparison of the net GHG emissions from the Proposed Action alternatives and the U.S., state, and county emissions for the same period.

Table 3-10. Theoretical Social Cost of Carbon from Operations and Relative Comparison

Reference Scale	CO_2e[a,b] (tons)	Social Cost[c,d]	Comparison to Reference Scale
Alternative 1	6,777.3	$375,518	100%
Alternative 2	6,777.3	$375,518	100%
Alternative 3	7,165.5	$397,025	106%
Alternative 4	6,377.1	$353,342	94%
Anne Arundel County	4,911,319.0	$273,611,683	72,862%
Maryland	50,132,195.0	$2,794,220,334	744,097%
United States	2,954,474,042.2	$166,517,178,722	44,343,323%

Source: USEPA 2023a, 2023c; IWG-SCGHG 2021

Key: CO_2e = equivalent emissions of carbon dioxide

[a] Represents a sum of CO_2e emissions for the first full year of operation (i.e., 2029). CO_2e emissions for Anne Arundel County, Maryland, and United States assumed to be consistent with 2020 or 2021 reported emissions.

[b] To calculate the total CO_2e, all GHGs are multiplied by their global warming potential and the results are added together. The global warming potentials used to calculate CO_2e are as follows: CO_2 = 1; CH_4 = 25; N_2O = 298.

[c] Social costs were calculated using a 3 percent average discount rate in 2020 dollars.

[d] The 2030 social cost shown represents the additive social cost from the first year of full operations for all installation development projects. Social cost for subsequent years would be higher than what is shown, as social cost of GHGs increases over time.

Ongoing changes to climate patterns in Maryland are described in **Section 3.4.1**. These climate changes are unlikely to affect the ability to implement Alternative 1. Sites 1 and 2 have been previously disturbed and are outside of the floodplain; therefore, increased storm intensity, changes to precipitation patterns, rising seas, disruption of natural ecosystems and built infrastructure, and other results from ongoing climate change would not affect implementation of Alternative 1. The climate stressors with the greatest potential to affect the Proposed Action are higher temperatures and more frequent heat waves, which can lead to greater air conditioning and utility demands, and has the potential to damage infrastructure.

3.4.3.3 ALTERNATIVE 2

As with Alternative 1, Alternative 2 would result in short-term, minor, adverse impacts on air quality from construction activities. Emissions from Alternative 2 would be less than those from Alternative 1 because it would not include construction of the WCPS on Site 2. The estimated net change in annual air emissions from Alternative 2 is shown in **Table 3-11**. Emissions from construction would be temporary in nature and produced only during the estimated 2-year construction period, from FY27 through FY28 (October 2026 through September 2028). The annual air emissions from construction under Alternative 2 would not be expected to exceed the *de minimis* level or PSD thresholds; therefore, short-term, adverse impacts on air quality would not be significant.

Table 3-11. Estimated Net Change in Annual Emissions from Alternative 2

Year	VOC (tpy)	NO_x (tpy)	CO (tpy)	SO_x (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Pb (tpy)	CO_2e (tpy)
2026 (construction)	0.039	0.413	0.464	0.001	4.053	0.013	<0.001	131.9
2027 (construction)	0.272	3.796	3.533	0.008	2.972	0.08	<0.001	1,850.8
2028 (construction)	8.875	2.368	2.248	0.005	0.056	0.051	<0.001	1,139.1
2029 and later (operations)	1.326	4.801	16.820	0.055	0.368	0.365	<0.001	6,777.3
Maximum	**8.875**	**4.801**	**16.820**	**0.055**	**4.053**	**0.365**	**<0.001**	**6,777.3**
***de minimis* level or PSD threshold**	**50**	**100**	**250**	**100**	**250**	**250**	**25**	**75,000**
Exceeds threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Key: CO = carbon monoxide; CO_2e = equivalent emissions of carbon dioxide; NO_x = nitrogen oxide; $PM_{2.5}$ = particulate matter equal to or less than 2.5 microns in diameter; PM_{10} = particulate matter equal to or less than 10 microns in diameter; SO_x = sulfur oxide; tpy = tons per year; VOC = volatile organic compound

Alternative 2 would result in long-term, minor, adverse impacts on air quality from operation of the new MOF, and the additional 800 off-site and future personnel who would relocate to the NSA campus and commute to and from the MOF daily. The estimated net increase in annual operational emissions from Alternative 2, shown in **Table 3-11**, would be identical to those for Alternative 1 and would not exceed the *de minimis* level or PSD thresholds. As such, long-term, adverse impacts from Alternative 2 would not be significant.

Climate Change and GHGs. Construction under Alternative 2 would produce a total of approximately 3,122 tons of CO_2e, which is approximately 37 percent of GHG emissions that would be produced from Alternative 1 over the same construction period. By comparison, 3,122 tons of CO_2e is the approximate GHG footprint of 674 passenger vehicles driven for 1 year or 369 homes' energy use for 1 year (USEPA 2024c). During the highest CO_2e emissions year during construction (i.e., 2027), approximately 1,851 tons of CO_2e would be produced, representing less than 0.04 percent of the 2020 annual CO_2e emissions in Anne Arundel County and less than 0.004 percent of the 2020 annual CO_2e emissions in Maryland. As such, air emissions produced during construction for Alternative 2 would not meaningfully contribute to the potential effects of climate change on a global scale and would not considerably increase the total CO_2e emissions produced by Anne Arundel County or the state. Therefore, construction for Alternative 2 would result in short-term, negligible, adverse impacts from GHGs. As summarized in **Table 3-9**, the estimated social cost of GHGs from construction under Alternative 2 would be approximately $169,020.

The net increase of annual CO_2e emissions under Alternative 2 would be identical to those estimated for Alternative 1. As discussed for Alternative 1, the annual net change of GHG emissions from construction and operation under Alternative 2 would not exceed the 75,000 tpy PSD threshold for CO_2e. Therefore, net GHG emissions are considered insignificant on a global scale and would not result in significant impacts on global climate change. **Table 3-9** and **Table 3-10** above provide a relative comparison of the net GHG emissions from Alternative 2 compared to Alternative 1 and U.S., state, and county emissions. The estimated net social cost

of GHGs from the first full year of operations under Alternative 2 would be identical to those under Alternative 1, at approximately $375,518.

As described for Alternative 1, the ongoing changes to climate patterns in Maryland described in **Section 3.4.1** are unlikely to affect the ability to implement Alternative 2. Site 1 has been previously disturbed and is outside of the floodplain; therefore, increased storm intensity, changes to precipitation patterns, rising seas, disruption of natural ecosystems and built infrastructure, and other results from ongoing climate change would not affect implementation of Alternative 2.

3.4.3.4 ALTERNATIVE 3

Similar to Alternative 1, Alternative 3 would result in short-term, minor, adverse impacts on air quality from construction activities. Emissions from Alternative 3 during the first year of construction would be slightly higher than those for Alternative 1 because Site 3 is greater in size and construction would disturb a greater area during site preparation activities. The estimated net change in annual air emissions from Alternative 3 is shown in **Table 3-12**. Emissions from construction would be temporary in nature and produced only during the estimated 2-year construction period, from FY27 through FY28 (October 2026 through September 2028). The annual air emissions from construction under Alternative 3 would not be expected to exceed the *de minimis* level or PSD thresholds; therefore, short-term, adverse impacts on air quality would not be significant.

Table 3-12. Estimated Net Change in Annual Emissions from Alternative 3

Year	VOC (tpy)	NO_x (tpy)	CO (tpy)	SO_x (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Pb (tpy)	CO_2e (tpy)
2026 (construction)	0.139	1.549	1.502	0.003	17.656	0.046	<0.001	553.4
2027 (construction)	0.642	9.51	8.339	0.019	1.561	0.192	<0.001	4,818.6
2028 (construction)	27.993	6.049	5.364	0.012	0.134	0.123	<0.001	3,047.8
2029 and later (operations)	1.344	5.123	17.090	0.057	0.392	0.390	<0.001	7,165.5
Maximum	**27.993**	**6.049**	**17.090**	**0.057**	**17.656**	**0.390**	**<0.001**	**7,165.5**
***de minimis* level or PSD threshold**	**50**	**100**	**250**	**100**	**250**	**250**	**25**	**75,000**
Exceeds threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Key: CO = carbon monoxide; CO_2e = equivalent emissions of carbon dioxide; NO_x = nitrogen oxide; $PM_{2.5}$ = particulate matter equal to or less than 2.5 microns in diameter; PM_{10} = particulate matter equal to or less than 10 microns in diameter; SO_x = sulfur oxide; tpy = tons per year; VOC = volatile organic compound

Alternative 3 would result in long-term, minor, adverse impacts on air quality from operation of the new MOF and the additional 800 off-site and future personnel who would relocate to the NSA campus and commute to and from the MOF daily. The estimated net increase in annual operational emissions from Alternative 3, shown in **Table 3-12**, would be greater than that estimated for Alternative 1 because Alternative 3 does not include demolition of facilities and the reduction in heating requirements that would lower emissions from stationary sources. The net increase in operational air emissions from Alternative 3 would not exceed the *de minimis* level

or PSD thresholds. As such, long-term, adverse impacts from Alternative 3 would not be significant.

Climate Change and GHGs. Construction under Alternative 3 would produce a total of approximately 8,420 tons of CO_2e, which is approximately 101 percent of GHG emissions that would be produced from Alternative 1 over the same construction period. By comparison, 8,420 tons of CO_2e is the approximate GHG footprint of 1,818 passenger vehicles driven for 1 year or 996 homes' energy use for 1 year (USEPA 2024c). During the highest CO_2e emissions year during construction (i.e., 2027), approximately 4,819 tons of CO_2e would be produced, representing less than 0.1 percent of the 2020 annual CO_2e emissions in Anne Arundel County and less than 0.01 percent of the 2020 annual CO_2e emissions in Maryland. As such, air emissions produced during construction for Alternative 3 would not meaningfully contribute to the potential effects of climate change on a global scale and would not considerably increase the total CO_2e emissions produced by Anne Arundel County or the state. Therefore, construction for Alternative 3 would result in short-term, negligible, adverse impacts from GHGs. As summarized in **Table 3-9**, the estimated social cost of GHGs from construction under Alternative 3 would be approximately $455,611.

The net increase of annual CO_2e emissions under Alternative 3 would be greater than that estimated for Alternative 1 because Alternative 3 does not include demolition of facilities and the reduction in heating requirements that would lower GHG emissions. As discussed for Alternatives 1 and 2, the annual net change of GHG emissions from construction and operation under Alternative 3 would not exceed the 75,000 tpy PSD threshold for CO_2e. Therefore, net GHG emissions are considered insignificant on a global scale and would not result in significant impacts on global climate change. **Table 3-9** and **Table 3-10** above provide a relative comparison of the net GHG emissions from Alternative 3 compared to Alternative 1 and U.S., state, and county emissions. The estimated net social cost of GHGs from the first full year of operations under Alternative 3 would be approximately $397,025, which is 6 percent greater than the annual net social cost from Alternative 1.

As described for Alternatives 1 and 2, the ongoing changes to climate patterns in Maryland described in **Section 3.4.1** are unlikely to affect the ability to implement Alternative 3. Site 3 has been previously disturbed as it was part of a former golf course, and is outside of the floodplain; therefore, increased storm intensity, changes to precipitation patterns, rising seas, disruption of natural ecosystems and built infrastructure, and other results from ongoing climate change would not affect implementation of Alternative 3.

3.4.3.5 ALTERNATIVE 4

Alternative 4 would result in short-term, minor, adverse impacts on air quality from construction activities. Such impacts would be similar to those described for Alternatives 1 and 3. Emissions from Alternative 4 would be similar to those for Alternative 1 but would differ slightly because of different requirements for grading, excavation, and pavement and facility demolition. The estimated net change in annual air emissions from Alternative 4 is shown in **Table 3-13**. Emissions from construction would be temporary in nature and produced only during the estimated 2-year construction period, from FY27 through FY28 (October 2026 through September 2028). The annual air emissions from construction under Alternative 4 would not be

expected to exceed the *de minimis* level or PSD thresholds; therefore, short-term, adverse impacts on air quality would not be significant.

Table 3-13. Estimated Net Change in Annual Emissions from Alternative 4

Year	VOC (tpy)	NO_x (tpy)	CO (tpy)	SO_x (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Pb (tpy)	CO_2e (tpy)
2026 (construction)	0.102	1.187	1.19	0.002	9.147	0.035	<0.001	425.9
2027 (construction)	0.642	9.509	8.339	0.019	3.322	0.192	<0.001	4,817.5
2028 (construction)	27.993	6.049	5.364	0.012	0.134	0.123	<0.001	3,047.8
2029 and later (operations)	1.210	4.091	16.294	-0.031	0.255	0.252	<0.001	6,377.1
Maximum	**27.993**	**6.049**	**16.294**	**0.019**	**9.147**	**0.252**	**<0.001**	**6,377.1**
***de minimis* level or PSD threshold**	**50**	**100**	**250**	**100**	**250**	**250**	**25**	**75,000**
Exceeds threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Key: CO = carbon monoxide; CO_2e = equivalent emissions of carbon dioxide; NO_x = nitrogen oxide; $PM_{2.5}$ = particulate matter equal to or less than 2.5 microns in diameter; PM_{10} = particulate matter equal to or less than 10 microns in diameter; SO_x = sulfur oxide; tpy = tons per year; VOC = volatile organic compound

Alternative 4 would result in long-term, minor, adverse impacts on air quality from operation of the new MOF, and the additional 800 off-site and future personnel who would relocate to the NSA campus and commute to and from the MOF daily. Alternative 4 would result in a net increase of annual GHG and criteria pollutant emissions, except for SO_x, which would be reduced by the demolition of facilities that would reduce heating requirements, and the removal of diesel life safety generators at Buildings 9801 and 9802. The estimated net change in annual operational emissions from Alternative 4, shown in **Table 3-13**, would not exceed the *de minimis* level or PSD thresholds. As such, long-term, adverse impacts from Alternative 4 would not be significant.

Climate Change and GHGs. Construction under Alternative 4 would produce a total of approximately 8,291 tons of CO_2e, which is approximately 99 percent of GHG emissions that would be produced from Alternative 1 over the same construction period. By comparison, 8,291 tons of CO_2e is the approximate GHG footprint of 1,790 passenger vehicles driven for 1 year or 981 homes' energy use for 1 year (USEPA 2024c). During the highest CO_2e emissions year during construction (i.e., 2027), approximately 4,818 tons of CO_2e would be produced, representing less than 0.1 percent of the 2020 annual CO_2e emissions in Anne Arundel County and less than 0.01 percent of the 2020 annual CO_2e emissions in Maryland. As such, air emissions produced during construction for Alternative 4 would not meaningfully contribute to the potential effects of climate change on a global scale and would not considerably increase the total CO_2e emissions produced by Anne Arundel County or the state. Therefore, construction for Alternative 4 would result in short-term, negligible, adverse impacts from GHGs. As summarized in **Table 3-9**, the estimated social cost of GHGs from construction under Alternative 4 would be approximately $448,929.

The net increase of annual CO_2e emissions under Alternative 4 would be less than that estimated for Alternative 1 because Alternative 1 does not include removal of diesel life safety generators that would reduce the potential for emissions. As discussed for the other

alternatives, the annual net change of GHG emissions from construction and operation under Alternative 4 would not exceed the 75,000 tpy PSD threshold for CO_2e. Therefore, net GHG emissions are considered insignificant on a global scale and would not result in significant impacts on global climate change. **Table 3-9** and **Table 3-10** above provide a relative comparison of the net GHG emissions from Alternative 4 compared to Alternative 1 and U.S., state, and county emissions. The estimated net social cost of GHGs from the first full year of operations under Alternative 4 would be approximately $353,342, which is 6 percent less than the annual net social cost from Alternative 1.

As described for the other alternatives, the ongoing changes to climate patterns in Maryland described in **Section 3.4.1** are unlikely to affect the ability to implement Alternative 4. Site 3 has been previously disturbed and is outside of the floodplain; therefore, increased storm intensity, changes to precipitation patterns, rising seas, disruption of natural ecosystems and built infrastructure, and other results from ongoing climate change would not affect implementation of Alternative 4.

3.4.3.6 NO ACTION ALTERNATIVE

Under the No Action Alternative, CNMF would not construct the MOF building and associated parking and infrastructure at Fort Meade, and the existing conditions discussed in **Section 3.4.2** would remain unchanged. Therefore, no impacts on air quality would be expected.

3.4.3.7 CUMULATIVE IMPACTS

The Proposed Action would result in short- and long-term, negligible to minor, adverse impacts on air quality from construction and operations. The future actions on Fort Meade listed in **Section 2.5.1** and the other actions outside the NSA campus and Fort Meade listed in **Section 2.5.2** may contribute additional and concurrent emissions of criteria pollutants and GHGs. Emissions from future construction actions, when combined with emissions from the Proposed Action, would be greater than what was analyzed for the Proposed Action alone, resulting in short-term, minor, adverse, cumulative impacts. All such occurrences would be temporary in nature and cease upon completion of such construction activities. The General Conformity Rule is applied only to individual federal projects; therefore, the additive (i.e., combined) emissions of criteria pollutants from the Proposed Action and the reasonably foreseeable federal projects would not be subject to a general conformity determination. Because emissions from the Proposed Action would not be considered significant for the region, cumulative impacts on air quality from the Proposed Action, when combined with future actions, would not be significant.

Long-term, negligible, adverse, cumulative impacts could occur from operations from the future actions (i.e., net increases in operational emissions from construction of new facilities and added vehicles traffic from new personnel) when combined with operations under the Proposed Action. Emissions from the Proposed Action would not be considered significant for the region; therefore, cumulative impacts on air quality from the Proposed Action, when combined with future actions, would not be significant. Although construction activities and new operations contribute to net increases in annual criteria pollutant and GHG emissions, incorporation of practices for enhanced energy efficiency for new facilities may reduce energy requirements and associated emissions on a long-term scale, resulting in beneficial cumulative impacts.

3.5 Geological Resources

3.5.1 Definition of the Resource

Geological resources consist of the Earth's surface and subsurface materials and their properties. They are defined as geology, soils, topography, and, when applicable, geologic hazards.

Physiography and Topography. Physiography and topography pertain to the general shape and arrangement of the land surface, including height, the position of its natural features, and human-made alterations of landforms.

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

Soils. 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 ability to support certain applications or uses. In some cases, soil properties must be examined for their compatibility with certain construction activities or types of land use.

Prime Farmland. Prime farmland is defined as land that has the best combination of both physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses. Prime farmland is protected under the Farmland Protection Policy Act (FPPA) of 1981. The Natural Resources Conservation Service is responsible for overseeing compliance with the FPPA and has developed rules and regulations for implementation. The implementing procedures of the FPPA require federal agencies to evaluate the adverse effects (direct and indirect) of their activities on farmland (i.e., prime and unique farmland and farmland of statewide and local importance) and consider alternative actions that could avoid adverse effects.

Geologic Hazards. Geologic hazards are defined as natural geologic events that can endanger human lives and threaten property. Potential geologic hazards in Maryland near Fort Meade include earthquakes and sinkholes.

3.5.2 Existing Conditions

The ROI for the analysis of impacts on geological resources includes the proposed sites and adjacent areas.

Physiography and Topography. The installation and Anne Arundel County lie within the Atlantic Coastal Plain Physiographic Province of Maryland. The Atlantic Coastal Plain is characterized by unconsolidated sediments, including gravel, sand, silt, and clay (MGS 2024, Fort Meade 2005). The lowest elevation on the installation is less than 100 feet above mean sea level and this occurs in the southwestern corner, along the Little Patuxent River. The highest point is 310 feet above mean seal level and occurs at the northernmost central portion of the

installation, the First Army Radio Station Tower (Fort Meade 2007a). Elevations and slopes for the proposed CNMF sites are listed in **Table 3-14**.

Table 3-14. CNMF Sites' Topography

CNMF Site Option	Slope (percent)	Elevation (feet)
Site 1	1.3	203
Site 2	1.9	180
Site 3	1.7	164
Site 4	0.6	180
Site 5	1.0	184

Source: MD iMAP 2024

Geology. The geologic history of the Fort Meade region is characterized by mountain-building processes and the cyclical opening and closing of a proto-Atlantic Ocean. During the Cenozoic era, the Blue Ridge–South Mountain anticlinorium began to erode, and the Atlantic Coastal Plain sediments were deposited in lower elevations (MGS 2024). Sediments underlying the region include interbedded, poorly sorted sand and gravel deposits up to 90 feet thick from the Pleistocene epoch and deposits from the Potomac Group during the Cretaceous period, including 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) (MGS 2024).

Soils. Five soil types have been mapped within the proposed sites. These include Downer-Hammonton Complex, Downer-Hammonton-Urban Land Complex, Evesboro and Galestown Soils, Patapsco-Evesboro-Fort Mott-Urban Land Complex, and Urban Land. Urban Land soil is classified as highly disturbed and retains little of its original properties. **Table 3-15** provides descriptions of the soil series and the proposed CNMF sites for which they are present. Site 2 is currently completely paved with the underlying soil classified as Urban Land. Sites 1, 4, and 5 also include soils classified as Urban Land.

Prime Farmland. Of the soils identified within the project areas, Downer-Hammonton Complex is the only soil identified as prime farmland. The Patapsco-Evesboro-Fort Mott Complex is identified as farmland of statewide importance (Fort Meade 2007b, MGS 2024). The prime farmland and farmland of statewide importance soils in the project areas have been previously disturbed and modified because of development and no agricultural use of these lands is occurring or planned to occur.

Table 3-15. Soil Series at the Project Sites Description

Soil Type	Slope (percent)	Description	Presence at CNMF Sites
Downer-Hammonton Complex	2–5	Well drained soils with negligible to high runoff rates and moderate or moderately rapid permeability	Sites 1, 4, 5
Downer-Hammonton-Urban Land Complex	0–5	Well drained soils with negligible to high runoff rates and moderate or moderately rapid permeability	Sites 1, 4, 5
Evesboro and Galestown Soils	5–10	Somewhat excessively drained soils with negligible runoff rates and rapid to moderately rapid permeability	Site 3
Patapsco-Evesboro-Fort Mott Complex	0–5	Somewhat excessively drained soils with very low runoff rates and moderately high to high permeability	Site 3

Source: USDA NRCS 2024
Key: N/A = not applicable

Geologic Hazards. The United States Geological Survey has produced seismic hazard 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 and is proportional to the hazard faced by a particular type of building. According to the 2014 Seismic Hazard Map for Maryland, both Fort Meade and Anne Arundel County have a very low seismic hazard rating of about 6 percent of the force of gravity (MGS 2024). No other potential geologic hazards have been identified for the project areas.

3.5.3 Environmental Consequences

3.5.3.1 EVALUATION CRITERIA

Protection of unique geological features, and minimization of soil erosion and loss of productivity 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. Impacts on geology and soils would be considered significant if they would alter the lithology, stratigraphy, and geological structures that control groundwater quality, distribution of aquifers and confining beds, and groundwater availability; or substantially change the soil composition, structure, or function, including prime farmland and other unique soils, within the environment.

3.5.3.2 ALTERNATIVE 1

Short- and long-term, minor, adverse impacts on soil, including soil quality, and geology would be expected from ground disturbance and the addition of impervious surface under Alternative 1. This alternative would result in demolition of Building 9899 and construction of the MOF on

Site 1 (an 8-acre parcel) and the WCPS on Site 2 (a 13-acre parcel). This would result in disturbance to the soils from excavation, grading, and compaction associated with demolition and construction. Because the sites have been previously disturbed, impacts would be minor. Loss of soil structure because of compaction from foot and vehicle traffic could temporarily 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 covered by new impervious surface. Soil erosion and sediment production would be minimized for all construction activities by following an approved erosion and sediment control plan (ESCP). Use of stormwater control measures that favor re-infiltration would help minimize the potential for erosion and sediment production from storms. Some areas would be converted to impervious surfaces for parking and infrastructure with proper drainage techniques, and the remaining areas affected by construction would be reseeded with native vegetation, as appropriate.

Site-specific soil surveys should be conducted, as appropriate, prior to implementation of the Proposed Action to determine the breadth and severity of any engineering limitations. Per COMAR 26.17.1, *Erosion and Sediment Control,* an ESCP would be required for the Proposed. Action, as it involves land clearing, grading, or other earth disturbances to a land area greater than 5,000 ft^2. The *2015 Maryland Standards and Specifications for Soil Erosion and Sediment Control* would serve as the official guide for erosion and sediment control principles, methods, and practices (MDE 2015). Construction BMPs would also be implemented to minimize soil erosion; therefore, no significant impacts on soils would be anticipated. BMPs could include installing silt fencing and sediment traps, applying water to disturbed soil, and revegetating disturbed areas as soon as possible after disturbance. If soil contamination is encountered during construction and demolition activities, CNMF would coordinate with MDE's Air and Radiation Management Administration on whether soil remediation would be required and obtain the appropriate permit, as applicable.

No impacts would be expected on or from geologic hazards as a result of the Proposed Action. It would be very unlikely for a geologic event to occur at the location of, or near, the project area because geologic events are not very common at Fort Meade or the surrounding area. If a geologic event were to happen, it would most likely be minor in nature and would not be expected to cause significant damage; therefore, no impacts from geological hazards would be expected.

3.5.3.3 ALTERNATIVE 2

Short- and long-term, negligible to minor, adverse impacts would be expected from soil disturbance associated with demolition and construction. Like Alternative 1, Alternative 2 includes demolition of Building 9899 and construction of the MOF on Site 1 (an 8-acre parcel). The associated parking at ECPS3 is currently under construction and ECPS4 is already planned for construction as part of the East Campus development. This construction will occur regardless of the implementation of Alternative 2. Like Alternative 1, soil erosion and sediment production would be minimized for all construction activities by following an approved ESCP. Use of stormwater control measures that favor re-infiltration would help minimize the potential for erosion and sediment production from storms. Some areas would be converted to impervious surfaces for parking and infrastructure with proper drainage techniques, and the

remaining areas affected by construction would be reseeded, as appropriate. Construction BMPs would also be implemented to minimize soil erosion.

3.5.3.4 ALTERNATIVE 3

Short- and long-term, minor to moderate, adverse impacts would be expected from soil disturbance associated with demolition and construction. Under Alternative 3, the MOF and associated parking structure would be constructed on Site 3 (a 24-acre parcel), which is forested with some remnant utilities infrastructure and asphalt walkways from previous development that would be relocated or removed during construction. Because Site 3 is largely forested and not currently developed, a larger amount of soil disturbance would likely occur at this site. The soil types within Site 3 do not include Urban Land and are not as disturbed as the other sites. Like Alternative 1, soil erosion and sediment production would be minimized for all construction activities by following an approved ESCP. Use of stormwater control measures that favor re-infiltration would help minimize the potential for erosion and sediment production from storms. Some areas would be converted to impervious surface for parking and infrastructure with proper drainage techniques, and the remaining areas affected by construction would be reseeded with native vegetation, as appropriate. Construction BMPs would also be implemented to minimize soil erosion.

3.5.3.5 ALTERNATIVE 4

Impacts under Alternative 4 would be slightly greater than those described for Alternative 1 because of the potentially larger area of disturbance. Like Alternative 1, soil erosion and sediment production would be minimized for all construction activities by following an approved ESCP. Use of stormwater control measures that favor re-infiltration would help minimize the potential for erosion and sediment production from storms. Some areas would be converted to impervious surfaces for parking and infrastructure with proper drainage techniques, and the remaining areas affected by construction would be reseeded, as appropriate. Construction BMPs would also be implemented to minimize soil erosion.

3.5.3.6 NO ACTION ALTERNATIVE

Under the No Action Alternative, CNMF would not construct the MOF building and associated parking and infrastructure at Fort Meade, and the existing conditions discussed in **Section 3.5.2** would remain unchanged. Therefore, no impacts on geological resources would be expected.

3.5.3.7 CUMULATIVE IMPACTS

Short-term, minor, adverse cumulative impacts on geological resources would be expected from construction-related ground disturbance, grading, and soil compaction associated with the Proposed Action. If construction and demolition associated with any of the on-site reasonably foreseeable projects discussed in **Section 2.5** were to occur concurrently with the Proposed Action, these impacts would be slightly greater. Impacts on topography, geology, and soils from construction would be localized to the site being developed. Construction sites that are greater than 5,000 ft^2 require BMPs, stormwater management plans, and ESCPs to minimize the potential for impacts off site. Long-term, negligible to moderate, adverse cumulative impacts from the Proposed Action and reasonably foreseeable projects may occur because of the

cumulative increase in impervious surfaces and the associated potential for increased soil erosion and sedimentation at Fort Meade.

3.6 Water Resources

3.6.1 Definition of the Resource

Surface Water. Surface water resources include streams, rivers, ponds, lakes, reservoirs, wetlands, and oceans, which are used for many purposes including ecological support, recreation, drinking water, agriculture, and power generation. The Clean Water Act (CWA) was established to protect these resources with federal permitting requirements developed under the National Pollutant Discharge Elimination System (NPDES) program and Section 404 of the CWA. For projects located within the state of Maryland, MDE has the authority to issue NPDES permits. MDE developed the *2000 Maryland Stormwater Design Manual,* which includes the ESD principles for systems and practices that integrate site design, natural hydrology, and additional controls to capture and treat stormwater runoff (MDE 2009). ESD design criteria include stormwater management controls identified as low impact development stormwater management design under DoD Unified Facilities Criteria (UFC) 3-210-10, *Low Impact Development.*

Groundwater. Groundwater includes water resources located below the Earth's surface and is often used as a primary source for irrigation and drinking water supplies. Nationally, groundwater resources are protected under the Safe Drinking Water Act. In Maryland, groundwater resources are also protected under the MDE's Water Appropriation and Use Permit System.

Floodplains. Floodplains are areas of low-lying, flat land present along rivers, stream channels, and coastal waters that are subject to periodic inundation of water because of rain or melting snow. Flood potential is evaluated by the Federal Emergency Management Agency which defines a 100-year floodplain as an area that has a 1 percent chance of inundation by a flood event in any given year, or a flood event in the area once every 100 years. A 500-year floodplain is an area that is predicted to flood during a 500-year storm, which has a 0.2 percent chance of occurring in any given year. EO 11988, *Floodplain Management*, as amended by EO 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input,* requires federal agencies to avoid, to the extent possible, adverse impacts associated with the occupancy and modification of a floodplain and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.

Coastal Zone. A coastal zone is composed of the coastal waters and adjacent shorelines that are strongly influenced by each other and in proximity to the shorelines of several coastal states; coastal zones include islands, transitional and intertidal areas, salt marshes, wetlands, and beaches. The Coastal Zone Management Act, administered by the National Oceanic and Atmospheric Administration, was developed to protect the coastal environment from human impact. The Maryland Department of Natural Resources (MDNR) is the lead agency for the Maryland Coastal Zone Management Program (CZMP); however, MDE regulates activities proposed within Maryland's coastal zone through federal consistency requirements. Core

policies of the Maryland CZMP include quality of life, waste and debris management, water resources protection and management, and flood hazardous and community resilience.

3.6.2 Existing Conditions

The ROI for the analysis of impacts on water resources includes the proposed sites and adjacent water features.

Surface Water. Most of Fort Meade, including the proposed CNMF sites, is within the Little Patuxent River watershed of the Patuxent River Basin. The very northeastern corner of the installation is within the Severn River watershed. The Little Patuxent River, which is designated a "scenic river" under the Maryland Scenic and Wild Rivers Act of 1968, is approximately 0.3 mile west of the installation's western boundary flowing south, then southeast toward the Patuxent River. More than 7 miles of perennial streams, including intermittent and ephemeral channels, are present within the Fort Meade boundary. Primary surface waters include Burba Lake, Midway Branch and its primary tributary, and the Franklin Branch, both of which are tributaries of the Little Patuxent River (see **Figure 3-7**). Stormwater at Fort Meade flows through an extensive stormwater drainage network including storm drains, swales, ditches, and retention basins. Primary stormwater flow is ultimately discharged into the Little Patuxent River via the Midway and Franklin Branches (NSA n.d.).

The Little Patuxent River is currently listed on Maryland's list of impaired waters under Section 303(d) of the CWA with impairments identified as sediments, metals (cadmium), and impacts to biological communities. Total maximum daily loads for chlorides and total suspended solids have been established for multiple segments of the Little Patuxent River and associated tributaries located within the boundaries of Fort Meade. Additionally, to minimize impacts and degradation of local water bodies, Fort Meade maintains a voluntary 100-foot riparian forest buffer along streams and abutting wetlands to the maximum extent possible as established in the Fort Meade Comprehensive Expansion Management Plan (NSA 2024).

Five NPDES stormwater permits are in place for Fort Meade. These include an NPDES Wastewater Treatment Plant State Discharge Permit issued to American Water Operations and Maintenance, Inc. (American Water), an NPDES General Permit for a Small Municipal Separate Storm Sewer System, and two NPDES General Permits for discharges from stormwater associated with industrial activities for Fort Meade and NSA. The following plans developed for Fort Meade include required stormwater BMPs and ESD requirements to assist with stormwater management and protection of water resources:

- NSA and Fort Meade Spill Prevention, Control, and Countermeasure (SPCC) Plans (NSA OHESS 2019a, Fort Meade 2022d), as required under 40 CFR 112.5(a): to help prevent release of oil into the environment
- Fort Meade Pollution Prevention (P2) Plan (Fort Meade 2011): identifies installation-specific environmental regulatory requirements including goals and objectives of the water and wastewater programs
- Fort Meade ADP (Army 2020): incorporates long-term planning goals including land conservation practices

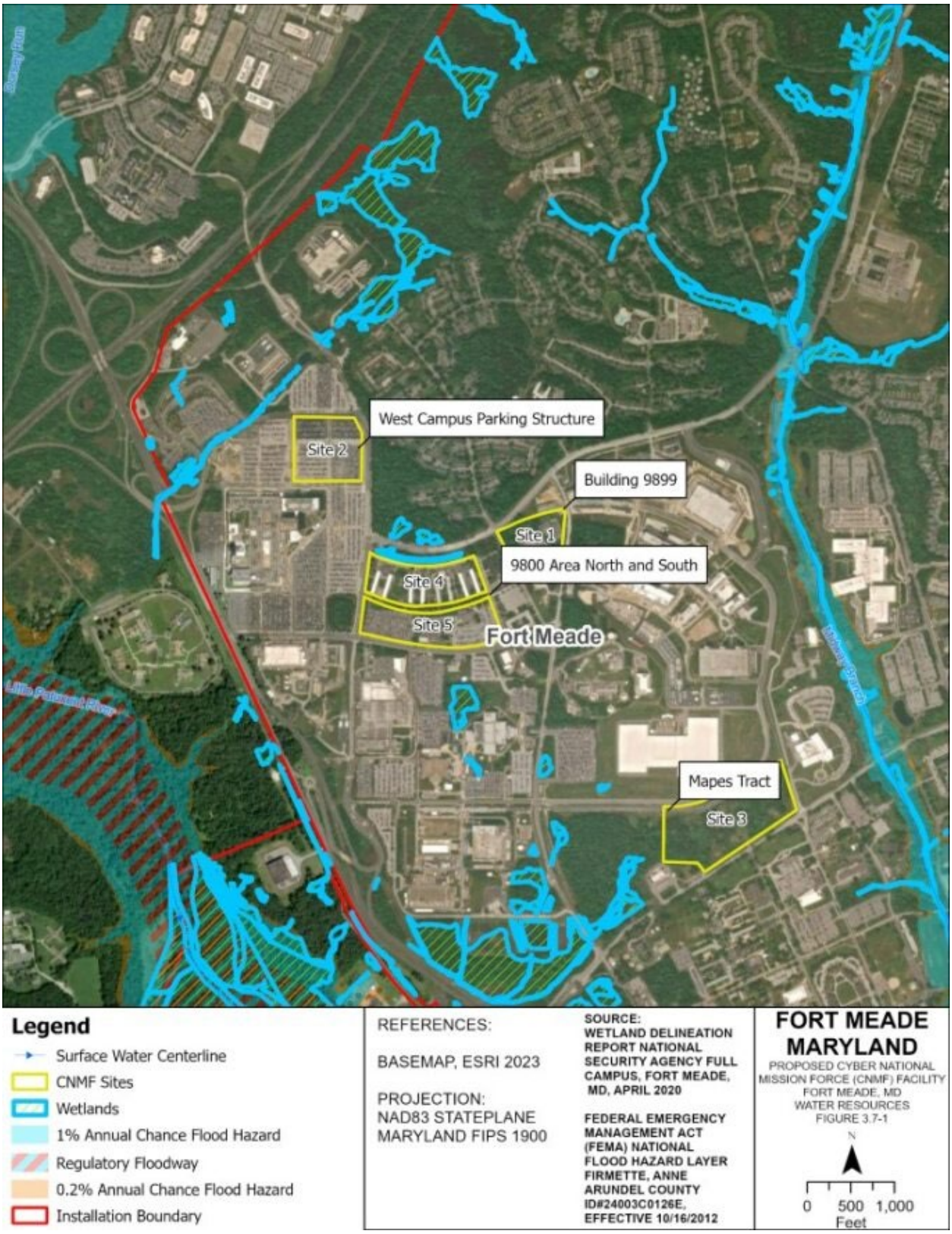


Figure 3-7. Water Resources at Fort Meade

In-depth resource evaluation of wetland resources is discussed in **Section 3.7** and detailed evaluation of stormwater infrastructure is provided in **Section 3.9**.

Groundwater. Three aquifers are present at Fort Meade—the Upper Patapsco aquifer is the unconfined, shallow water-table aquifer with a variable direction of flow, the Lower Patapsco is separated from the Upper Patapsco by the Middle Patapsco Clay Unit, and the Patuxent aquifer is the deep aquifer with the Arundel Clay as the confining unit. VOCs, pesticides, and explosives have been detected in the Upper and Lower Patapsco aquifers within the installation's boundary. Groundwater quality impacts for these aquifers have also been detected off-installation and beneath the city of Odenton, southeast of Fort Meade (AAC Department of Health 2024).

The Patuxent aquifer is the deepest aquifer, with a primary groundwater flow direction to the southeast. This aquifer is the primary drinking water source for Fort Meade. Six on-installation drinking water wells, ranging in depths of 500 to 800 feet below ground surface, are present and permitted under an MDE Appropriation and Use Permit. Groundwater sampling results for the six drinking water wells have not identified water quality concerns associated with the aquifer (American Water 2024). None of the wells are within the vicinity of the CNMF sites.

Floodplains. Federal Emergency Management Agency floodplain maps for Anne Arundel Unincorporated County Areas identified 100- and 500-year floodplains within Fort Meade along the Midway and Franklin Branch stream segments (see **Figure 3-7**) (FEMA 2012). There are 100-foot riparian buffers in place along these stream segments to help protect the integrity of the streams and associated floodplains.

Coastal Zone. Fort Meade, including the proposed CNMF sites, falls within Maryland's Coastal Zone; therefore, the installation is subject to Maryland's CZMP. Requirements include applicants of federal or state licenses or permits to certify their proposed permitted activity will be conducted in a manner consistent with the CZMP under a Coastal Zone Contingency Determination. If a state permit is not required for the project, MDE has the authority to concur or object to the federal consistency determination.

3.6.3 Environmental Consequences

3.6.3.1 EVALUATION CRITERIA

Impacts on water resources would be considered significant if the proposed action would result in any of the following: substantial degradation of surface water or groundwater quality or quantity; modification or damage to existing surface water drainage patterns; or violation of established water quality or water resource protection laws.

3.6.3.2 ALTERNATIVE 1

Short-term, negligible to minor, adverse and beneficial impacts on water resources would be expected from increased sedimentation and erosion associated with stormwater runoff from demolition and construction activities. Impacts would be minimized to the greatest extent possible with the incorporation of ESD practices and implementation of proper stormwater management controls, including stormwater BMPs. Long-term, negligible, adverse impacts on water resources would be expected from increased stormwater runoff as well as sediment and

erosion potential associated with the increase in impervious surfaces under Alternative 1. Long-term, negligible, beneficial impacts on water resources would occur due to improved stormwater management on the sites.

Surface Water. Short-term, negligible to minor, adverse impacts on surface water would be expected from increased sedimentation and erosion associated with runoff because of construction-related ground disturbance and increased impervious surfaces associated with facility development. Under Alternative 1, project activities would include soil disturbances greater than 5,000 ft^2 and more than 1 acre within the southernmost sub-watershed basin on Fort Meade. This area drains south-southwest into an unnamed tributary of the Little Patuxent River. Project design would be required to meet Section 438 of the Energy Independence and Security Act (EISA), and a Stormwater Management Plan with an approved ESCP would be required under COMAR 26.17.01, *Erosion and Control*. With implementation of stormwater BMPs, construction-related stormwater runoff would be contained to the greatest extent possible within the project footprint during construction. BMPs may include the following:

- Complete work phases to the greatest extent possible to reduce overall soil exposure at one time to help reduce sedimentation impacts on nearby waterways
- Implement erosion control practices, including installation of silt control devices and preservation of vegetation to the greatest extent possible for prevention of a release of sediment into nearby waterways
- Install grade stabilization structures to minimize erosion along steep grades

The increase in impervious surfaces from the footprint of the MOF and associated infrastructure would increase stormwater runoff and sediment and erosion potential, resulting in long-term, negligible, adverse impacts on water resources. These impacts would be minimized due to improved stormwater management on Site 1 due to implementation of ESD practices and stormwater management controls, such as stormwater collection ponds, bioretention systems, and swales as identified in the MDE Stormwater Management Manual and the DoD UFC 3-210-10 guidelines.

Groundwater. Short-term, negligible, adverse impacts on groundwater could result from incidental spills because shallow groundwater is present throughout Fort Meade. With the proper use of BMPs, as required under federal and state policies, permits, and the planning documents identified in **Sections 3.6.2** and **3.9.2**, potential impacts on groundwater would be minimized. Impacts on deeper groundwater aquifers are not anticipated because of their depth and presence of confining layers.

Floodplains. No impacts on floodplains would be expected because Alternative 1 would not occur in a 100- or 500-year floodplain (see **Figure 3-7**).

Coastal Zone. Short-term, negligible to minor, adverse impacts on coastal zone resources would be expected because of surface soil disturbance and the potential for soil erosion or sedimentation during construction. Implementation of ESD, BMPs, and a site-specific ESCP, as required under Maryland's Section 438 program, would minimize potential impacts to the greatest extent practicable. The Alternative 1 project areas are not within a Chesapeake Bay

Critical Area or 100-foot buffer. This EA has been provided to MDNR as the Federal Coastal Zone Consistency Determination.

3.6.3.3 ALTERNATIVE 2

Impacts on water resources from Alternative 2 would be the same as those described for Alternative 1.

3.6.3.4 ALTERNATIVE 3

Surface Water. Short- and long-term, minor, adverse impacts on surface water would be expected from increased sedimentation and erosion from construction-related ground disturbance and the increase in impervious surfaces associated with Alternative 3. Impacts on surface water for Alternative 3 would be similar to those described for Alternative 1; however, additional impervious areas would be incorporated under Alternative 3 because of the conversion of partially forested land to impervious areas at Site 3. Incorporation of ESD practices and stormwater management controls would help to minimize potential impacts.

Groundwater. Impacts on groundwater from construction would be similar to those described for Alternative 1. Long-term, minor, adverse impacts on groundwater would be expected because of impacts associated with groundwater recharge in the area converted from a pervious area to an impervious area at Site 3. Implementation of ESD practices and stormwater management controls would minimize impacts resulting from additional impervious areas.

Floodplains. No impacts on floodplains would be expected because Alternative 3 would not occur in a 100- or 500-year floodplain (see **Figure 3-7**).

Coastal Zone. Short-term, minor, adverse impacts would be expected on coastal zone resources because of soil disturbance and the potential for erosion or sedimentation during construction. Implementation of ESD practices, stormwater management controls, BMPs, and a site-specific ESCP, as required under Maryland's Section 438 program, would minimize potential impacts. Long-term, negligible to minor, adverse impacts would be expected because of vegetation removal and conversion of undeveloped land to impervious surfaces. Incorporation of ESD practices and stormwater management controls would minimize impacts on the coastal zone to the greatest extent practicable. The Alternative 3 project area is not within a Chesapeake Bay Critical Area or 100-foot buffer, and non-tidal wetlands west of Site 3 would be avoided.

3.6.3.5 ALTERNATIVE 4

Impacts on water resources under Alternative 4 would be similar to those described for Alternative 1. The Alternative 4 project areas are not within a Chesapeake Bay Critical Area or 100-foot buffer, and the non-tidal wetlands north of Site 4 would be avoided.

3.6.3.6 NO ACTION ALTERNATIVE

Under the No Action Alternative, CNMF would not construct the MOF building and associated parking and infrastructure at Fort Meade, and the existing conditions discussed in **Section 3.6.2** would remain unchanged. Therefore, no impacts on water resources would be expected.

3.6.3.7 CUMULATIVE IMPACTS

Development under the Proposed Action, in combination with that of the reasonably foreseeable future projects discussed in **Section 2.5**, would result in long-term, minor to moderate, adverse cumulative impacts on water resources. The additional increase in impervious surfaces at Fort Meade would contribute to a decrease in groundwater recharge; increased stormwater runoff; and subsequent potential increase in erosion, sedimentation, and pollutant loading. Impacts would be minimized to the greatest extent possible with the incorporation of ESD practices and implementation of proper stormwater management controls, including stormwater BMPs, to help improve groundwater recharge, prevent erosion and sedimentation, and pollutant loading into local surface water and groundwater.

3.7 Biological Resources

3.7.1 Definition of the Resource

Biological resources include native or naturalized plants and animals, and the habitat in which they exist. Protected and sensitive biological resources include species federally listed as endangered or threatened, candidate, or proposed, and critical habitat; and state-listed species.

Forest Conservation. The Maryland Forest Conservation Act (FCA) minimizes the loss of the state'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. Prime interest areas include 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. The MDNR Forest Service administers and implements the FCA for non-federal land. NSA demonstrates compliance with the FCA by ensuring that its development and construction projects follow the current Fort Meade FCA and Tree Management Policy to the extent practicable.

Wetlands. Wetlands are valuable natural systems and habitats that can support a diverse number of species. Wetlands perform several important biological functions. Wetlands are protected as a subset of waters of the United States and Section 404 of the CWA. 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 328). USACE has jurisdiction over wetlands that are determined to be jurisdictional under Section 404 of the CWA.

EO 11990, *Protection of Wetlands*, requires that federal agencies take actions to minimize or avoid the destruction, loss, or degradation of wetlands and preserve and enhance the natural and beneficial values of wetlands.

MDE is the state agency largely responsible for administering Maryland's environmental laws, regulations, and environmental permits related to wetlands, water withdrawal, discharges, stormwater, and water and sewage treatment. Freshwater wetlands in Maryland are protected by the Nontidal Wetlands Protection Program from loss and degradation, which sets a state goal of no overall net loss of nontidal wetlands acreage and functions.

Threatened and Endangered Species. The Endangered Species Act (ESA) (16 USC Section 1536) defines an "endangered species" as any species that is in danger of extinction throughout all or a significant portion of its range. Under the ESA, federal agencies are required to provide documentation that ensures that agency actions will not jeopardize the continued existence of any federally threatened or endangered species, or adversely modify or remove critical habitat. The ESA requires that all federal agencies avoid "taking" threatened or endangered species, meaning to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct unless authorized. The provision under Section 7 of the ESA directs all federal agencies to work to conserve endangered and threated species and to use their authority to further the purposes of the ESA.

Migratory Birds. The Migratory Bird Treaty Act (MBTA) of 1918 is the primary legislation in the United States established to conserve migratory birds. The MBTA prohibits the intentional and unintentional taking, killing, or possessing of migratory birds unless permitted by regulation. EO 13186, *Responsibilities of Federal Agencies to Protect Birds*, provides a specific framework for the federal government's compliance with its MBTA obligations and aids in incorporating national planning for bird conservation into agency programs. A Memorandum of Understanding (MOU) between DoD and the United States Fish and Wildlife Service (USFWS) promotes the conservation of migratory birds in compliance with EO 13186, while sustaining the use of military-managed lands and airspace for testing, training, and operations. The MOU expired in 2019; however, an addendum signed on April 21, 2022, extended the MOU indefinitely or until either party determines that the MOU needs to be revised (DoD and USFWS 2022).

Bald and Golden Eagle Protection Act. Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 USC Sections 668–668c), as amended in 1962. The BGEPA prohibits the take, possession, or transport of bald eagles; golden eagles; and the parts (e.g., feathers, body parts), nests, and eggs without authorization from USFWS. Activities that directly or indirectly lead to a "take" are prohibited without a permit from USFWS.

3.7.2 Existing Conditions

The ROI for analysis of impacts on biological resources includes the proposed sites and surrounding areas.

Vegetation. Vegetative cover at Fort Meade consists of forested areas, open space, meadows, wetlands, maintained turf, roadside vegetation, and landscaped areas. The proposed sites cover approximately 74 acres of the 5,500-acre Fort Meade property. In 2024, a forest stand delineation (FSD) was conducted to assess trees greater than 30 inches diameter at breast height (25 inches for Virginia pine [*Pinus virginiana*], 28 inches for loblolly pine [*Pinus taeda*]) for the CNMF sites. The FSD delineated two forest stands encompassed within the proposed Site 3 (USACE 2024a). Stand 1, located in the western portion of Site 3, was designated as Priority 1 for retention because of its mature successional stage, low invasive-species coverage, and specimen trees. Stand 2, more centrally located within Site 3, was designated as Priority 2 for its specimen trees and mature secessional stage. The main forest cover types identified in the 2024 FSD include tulip poplar (*Liriodendron tulipifera*) and red maple (*Acer rubrum*) within Stand 1, and loblolly pine (*Pinus taeda)* within Stand 2 (USACE 2024a). Site 1 has approximately 1.6 acres of forest cover, and none of the other sites have forest stands.

The most commonly identified invasive species in the 2012 *Invasive Species Management Plan* for Fort Meade include Asiatic bittersweet (*Celastrus orbiculatus*), Japanese honeysuckle (*Lonicera japonica*), Nepalese browntop (*Microstegium vimineum*), and mile-a-minute (*Mikania cordata*) (Fort Meade 2012).

Wetlands. A base-wide wetland delineation for the installation was conducted in 2018 and a separate delineation of the NSA campus was conducted in 2020. The NSA campus encompasses approximately 23.2 acres of wetlands, mostly within the southwestern portion of the installation; 20.6 acres are considered jurisdictional wetlands (USACE 2018, 2020). No jurisdictional wetlands were documented within any of the CNMF sites (see **Figure 3-7**) (USACE 2020); the nearest wetland to the sites occurs north of Site 4. The 2024 FSD survey for Site 3 documented standing water near a culvert that appears to be stormwater runoff within the northwestern portion of the site. This area did not meet the parameter for hydric soils pursuant to the 1987 *Corps of Engineers Wetland Delineation Manual* (USACE 2024a). No wetland or standing-water areas are located within Sites 1, 2, 4, or 5.

Wildlife. With the exception of portions of Site 1 and most of Site 3, project areas are primarily developed; however, Sites 1 and 3 may provide habitat for a variety of wildlife. A 2014 fauna and wildlife survey documented 11 mammal, 13 bird, and 11 reptile and amphibian species on Fort Meade (Fort Meade 2014). Representative mammals include white-tail deer (*Odocoileus virginianus*), gray squirrel (*Sciurus carolinensis*), groundhog (*Marmota monax*), and raccoon (*Procyon lotor*); representative bird species include Baltimore oriole, Canada warbler (*Cardellina canadensis*), hooded merganser (*Lophodytes cucullatus*), and scarlet tanager (*Piranga olivacea*) (Fort Meade 2014).

Bird survey conducted in 2021 indicated that 111 bird species were documented on the installation. None of the bird species observed were federally or state-listed as threatened or endangered; however, 86 are MBTA-protected, and one is both BGEPA- and MBTA-protected (see the **Special Status Species** discussion). The nearest bird survey areas are more than 0.75 mile to the west of Site 3 and southwest of Sites 1, 2, 4, and 5. Pollinator surveys documented 58 bee species from five families and 33 butterfly species, including the federal candidate monarch butterfly (*Danaus plexippus*). Other than the monarch butterfly, no other federally or state-listed threatened or endangered butterfly or bee species were observed. None of the designated important pollinator sites overlap with proposed CNMF sites (CMI 2022).

Special Status Species. Special status species include federally listed species protected under the ESA, federal proposed species, federal candidate species, species under federal review for listing, state-listed species, and BGEPA- and MBTA-protected species that occur on or near the installation. The list of special status species was developed based on data provided in the Fort Meade Integrated Natural Resources Management Plan (INRMP); threatened and endangered species surveys; the USFWS Information for Planning and Consultation report generated for the installation; the USFWS MBTA list; and the Maryland list of rare, threatened, and endangered wildlife species. The potential exists for 2 federally and state-listed species, 1 federally proposed species,1 federal candidate species, 2 species under review for federal listing, 1 state-listed species, and 15 MBTA-protected birds, 2 of which are also protected under the BGEPA (Fort Meade 2007b, 2014; CMI 2018, 2019; USFWS 2023, 2024a; MDNR 2023). **Table 3-16** below

lists potential special status species that could be present on or around the proposed CNMF sites, though none of these species have been documented within any of them.

Ten bat species were confirmed acoustically during the 2017–2018 surveys. This included two federally endangered bats, northern long-eared bat (*Myotis septentrionalis*) and Indiana bat (*Myotis sodalis*), as well as the proposed endangered tricolored bat (*Perimyotis subflavus*) and under review little brown bat (*Myotis lucifugus*) (CMI 2018). A maternity colony is unlikely to be present on Fort Meade as there are no known hibernaculum; however, bat species may use the forested areas of Sites 1 and 3 for roosting and foraging. Indiana bats, little brown bats, and tricolored bats are associated with forested wetland and riparian areas. The northeastern portion of the installation was where the acoustical detections of northern long-eared bat and Indiana bat activity were highest. The tricolored and little brown bats were documented acoustically throughout the installation (CMI 2018). Tree clearing could be restricted to avoid pupping season between June 1 and July 31.

A 2018 wood turtle (*Glyptemys insculpta*) habitat survey estimated 1,689 acres of potential wood turtle habitat on Fort Meade (CMI 2019). A single wood turtle was found near Burba Lake south of the proposed CNMF sites and may have been a pet release; no other wood turtles have been confirmed on the installation (Fort Meade 2022a, CMI 2019). The wood turtle is currently under review by USFWS for listing (USFWS 2024b).

Adult and caterpillar monarch butterflies (*Danaus plexippus*) were observed on common milkweed and swamp milkweed (*Asclepias incarnata*) during 2021 surveys. None of the monarch butterfly observations were on any of the proposed CNMF sites (Fort Meade 2014).

Three migratory birds (see **Table 3-16**) were documented at Fort Meade. None of the observations occurred on or near any of the proposed CNMF sites.

To the extent practicable, Fort Meade cooperates with MDNR to identify and conserve state-listed species. Three state-listed wildlife species have been detected on Fort Meade (see **Table 3-16**). No state-listed wildlife species have been documented within the CNMF sites.

No federally or state-listed plant species or critical habitats for listed flora or fauna have been documented on the installation.

Table 3-16. Special Status Species that Potentially Occur on Fort Meade

Species Name	Status	Documented on the Installation?
Mammals		
Indiana bat (*Myotis sodalis*)	FE/SE	Yes
Little brown bat (*Myotis lucifugus*)	UR	Yes
Northern long-eared bat (*Myotis septentrionalis*)	FE/SE	Yes
Tricolored bat (*Perimyotis subflavus*)	PE	Yes
Birds[a]		
Bald eagle (*Haliaeetus leucocephalus)*	BGEPA/MBTA	Yes
Black-billed cuckoo (*Coccyzus erythrophthalmus*)	MBTA	No
Bobolink (*Dolichonyx oryzovous*)	MBTA	No
Canada warbler (*Cardellina canadensis*)	MBTA	Yes
Chimney swift (*Chaetura pelagica*)	MBTA	Yes
Eastern whip-poor-will (*Antrostomus vociferus*)	MBTA	No
Golden eagle (*Aquila chrysaetos*)	BGEPA/MBTA	No
King rail (*Rallus elegans*)	MBTA	No
Lesser yellowlegs (*Tringa flavipes*)	MBTA	No
Pectoral sandpiper (*Calidris Melanotos*)	MBTA	No
Prothonotary warbler (*Protonotaria citrea*)	MBTA	No
Red-headed woodpecker (*Melanerpes erythrocephalus*)	MBTA	No
Rusty blackbird (*Euphagus carolinus*)	MBTA	No
Willet (*Tringa semipalmata*)	MBTA	No
Wood thrush (*Hylocichla mustelina*)	MBTA	Yes
Fishes		
Glassy darter (*Etheostoma vitreum*)	ST	Yes
Reptiles		
Wood turtle (*Glyptemys insculpta*)	UR	Yes
Insects		
Monarch butterfly (*Danaus plexippus*)	FC	Yes

Sources: Fort Meade 2007b, 2014; CMI 2018, 2019; USFWS 2023, 2024a; MDNR 2023

Key: BGEPA = Bald and Golden Eagle Protection Act; C = Candidate (federal designation); E = Endangered; F = Federal; MBTA = Migratory Bird Treaty Act; S = State; T = Threatened; UR = Under Review (federal designation)

[a] Only includes MBTA-species identified in INRMP and USFWS Information for Planning and Consultation. The MBTA-protected species identified within the Avian and Pollinator Planning Level Surveys to Support INRMP Implementation at Fort George G. Meade, Maryland were not within close proximity of the CNMF sites.

3.7.3 Environmental Consequences

3.7.3.1 EVALUATION CRITERIA

Potential impacts on biological resources are evaluated based on the proportion of the resource that would be affected relative to its occurrence within the region, the sensitivity of the resource to proposed activities, and the duration of ecological impacts. Potential impacts on threatened and endangered species are evaluated based on the potential for the Proposed Action to directly or indirectly adversely affect listed species or designated critical habitat, jeopardize the continued existence of species that are proposed for listing, or adversely modify proposed

critical habitat. Consideration is given to context and intensity of the effects, and the measures proposed to avoid effects on listed species.

3.7.3.2 ALTERNATIVE 1

Vegetation. Short- and long-term, minor, adverse impacts on vegetation from implementation of Alternative 1 would occur from temporary disturbance of vegetation and soil compaction during demolition of Building 9899 and construction of the MOF from permanent vegetation removal for new facilities and associated infrastructure within Site 1. Short-term impacts on up to 4.5 acres of vegetation (including up to 1.6 acres of forest cover) would occur from temporary disturbance resulting from the use of heavy equipment and may include trampling and soil compaction. Areas of temporary ground disturbance would be reseeded with native vegetation. Permanent removal of vegetation and trees at new construction sites would result in long-term impacts to approximately 115,000 ft^2 from permanent reduction in cover on the installation. Because Site 2 is already paved, there would be no impacts on vegetation from WCPS construction.

Wildlife. Short- and long-term, minor, adverse impacts on wildlife may occur from increased noise and potential displacement associated with demolition and construction activities. Some birds, small mammals, invertebrates, and other common small wildlife species may use the vegetation within Site 1 for shelter and feeding.

Short-term, negligible, adverse impacts on wildlife would occur from noise associated with heavy equipment use and increased human presence during demolition and construction at Sites 1 and 2. The increase in the frequency or intensity of noise from demolition and construction could temporarily displace wildlife, and proposed construction activities would require use of heavy equipment that would generate short-term increases in noise near the area. Individual pieces of heavy equipment typically generate noise levels of 80 to 90 dBA at a distance of 50 feet. With multiple items of equipment operating concurrently, noise levels can be high within several hundred feet of active construction sites. Wildlife species would be expected to use adjacent suitable habitat during construction and may return to the area once the noise from heavy equipment use has ceased. Furthermore, wildlife currently inhabiting the project areas would be habituated to noise disturbances because of the existing highly urbanized environment; however, a small increase in the frequency of startle responses or other behavioral modifications caused by the proposed construction activities could occur. For portions of Site 1 where birds may be likely to nest, the installation could conduct surveys prior to construction activities. Wildlife-friendly construction standards would be implemented to minimize impacts to species that may be present.

Long-term, minor, adverse impacts on wildlife would occur from the permanent loss of potential habitat for wildlife. The loss of habitat would have only minor impacts because the proposed construction activities would occur on predominantly improved or semi-improved areas that do not provide high-quality habitat for wildlife species. Removal of dead trees and vegetation, which provide habitat for birds and bats, would be permanently lost. BMPs would be followed to the greatest extent practicable to avoid or minimize impacts.

Special Status Species. Impacts relating to noise exposures on special status species would be similar to those described in the **Section 3.7.3.4 *Wildlife*** discussion. No special status

species have been documented on or near Sites 1 and 2. Long-term impacts could include operational noise and lighting on foraging species such as bats, and impacts would be minimized by implementation of BMPs such as using wildlife-friendly construction standards and installing downward-facing lighting.

In compliance with Section 7 of the ESA, informal consultation with USFWS has been initiated for this project (see **Appendix A**).

Wetlands. No impacts on wetlands would occur under Alternative 1 because no wetlands are located within Sites 1 and 2.

3.7.3.3 ALTERNATIVE 2

Because Alternative 2 would construct the MOF on Site 1, and facility parking under this alternative would be in the ECPS3 and ECPS4 structures, which are being constructed under a separate action, impacts under Alternative 2 would be expected to be similar but slightly less than those described for Alternative 1.

3.7.3.4 ALTERNATIVE 3

Vegetation. Adverse impacts on vegetation from implementation of Alternative 3 would be similar to but greater than Alternative 1. Short- and long-term, moderate impacts would occur from temporary disturbance of vegetation and soil compaction during construction of the MOF from permanent vegetation removal for new facilities and associated infrastructure. Temporary disturbance of up to approximately 24 acres of vegetation would occur from operation of heavy equipment, resulting in trampling and soil compaction. Areas of temporary ground disturbance would be reseeded with native vegetation. There would be long-term impacts to up to 14.3 acres from permanent reduction in cover on the installation.

Wildlife. Short-term, minor and long-term, moderate, adverse impacts on wildlife would result from habitat loss, increased noise, and potential displacement associated with construction activities.

Short-term, moderate, adverse impacts on wildlife would occur from noise associated with heavy equipment use and increased human presence during habitat removal and construction activities. Noise stressors would be similar to those described for Alternative 1. The installation could conduct surveys prior to implementation of construction activities, and BMPs would be implemented to minimize impacts to species that may be present.

Long-term, minor, adverse impacts on wildlife would occur from the permanent loss of up to 14.3 acres of potential habitat for wildlife. Impacts are expected to be minor because adjacent suitable-habitat wildlife species would likely move to either temporarily or permanently. Removal of dead trees and vegetation, which provide habitat for birds and bats, would be permanently lost. BMPs would be followed to the greatest extent practicable to reduce or avoid impacts.

Special Status Species. Impacts relating to noise exposures on special status species would be similar to those described in the **Section 3.7.3.4 *Wildlife*** discussion. No special status species have been documented on or near Site 3. If present during the time of construction, long-term impacts on special status species could include operational noise and lighting. Short-

and long-term impacts from added lighting would be minimized by implementation of BMPs. Long-term, minor, adverse impacts from noise exposure on special status species would be unchanged from existing conditions as these species have been continuously exposed to activities associated with day-to-day installation maintenance and operations.

Wetlands. No impacts on wetlands would occur under Alternative 3 because no wetlands are located within Site 3.

3.7.3.5 ALTERNATIVE 4

Impacts under Alternative 4 would be similar but slightly less than those described for Alternative 1. No impacts on vegetation would occur under Alternative 4 because Sites 4 and 5 are already developed. The wetlands north of Site 4 would be avoided.

3.7.3.6 NO ACTION ALTERNATIVE

Under the No Action Alternative, CNMF would not construct the MOF building and associated parking and infrastructure at Fort Meade, and the existing conditions discussed in **Section 3.7.2** would remain unchanged. Therefore, no impacts on biological resources would be expected.

3.7.3.7 CUMULATIVE IMPACTS

The Proposed Action could result in short- and long-term, negligible to moderate, adverse impacts on vegetation, wildlife, and special status species. In combination with the construction and development under the reasonably foreseeable future projects discussed in **Section 2.5**, cumulative impacts would be expected to be similar. The Venona Road Improvements and Consolidated Mission Support Facility could impact vegetation, decrease available habitat, and create short- and long-term noise that could impact vegetation and disturb wildlife and special status species at Site 3. CNMF MOSF could impact wildlife and special status species with short- and long-term noise impacts at Site 5. These impacts would be less than significant because the proposed developments would occur where few native wildlife and no protected species have been documented.

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), Archaeological and Historic Preservation Act (1974), American Indian Religious Freedom Act (1978), Archaeological Protection Act (1979), Native American Graves Protection and Repatriation Act (1990), and EO 13007, *Indian Sacred Sites*.

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, subculture, or community for scientific, traditional, religious, or other reason. Such resources might provide insight into the cultural practices of previous civilizations, or they might represent a cultural or religious significance to modern groups. Resources found significant 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. The Native American Graves Protection and Repatriation Act 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.

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 a reasonable opportunity to comment. Under this process, the federal agency evaluates the NRHP eligibility of resources within a proposed undertaking's Area of Potential Effects (APE) and assesses the possible effects of the proposed undertaking on historic properties in consultation with the State Historic Preservation Office and other parties. The APE is defined as the geographic area "within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." The APE for the Proposed Action is defined as the expected area of direct effects from ground disturbance and infrastructure demolition, renovation, and development within the proposed sites and indirect effects such as temporary construction noise and visual effects from changes to the visual landscape. For this EA, the APE comprises Sites 1 through 5 under the Proposed Action. The historic properties evaluated under this EA were identified previously pursuant to Section 110 of the NHPA, which requires federal agencies to establish programs to inventory and nominate cultural resources under their purview to the NRHP.

Typically, cultural resources are subdivided into archaeological resources; architectural resources; and resources of traditional, cultural, or religious significance.

Archaeological Resources. Archaeological resources include prehistoric or historic sites containing physical evidence of human activity, but no structures remain standing. These are areas where human activity has measurably altered the earth or deposits of physical remains are found (e.g., projectile points, bottles).

Architectural Resources. Architectural resources include standing buildings, bridges, dams, other structures, groups of buildings or structures, or designed landscapes of historic or aesthetic significance. Generally, architectural resources must be more than 50 years old to warrant consideration for the NRHP. More recent buildings or structures 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. Resources of traditional, religious, or cultural significance can include archaeological resources, sacred sites, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals considered essential for the preservation of traditional culture.

3.8.2 Existing Conditions

Cultural resources on Fort Meade are detailed in Fort Meade's Integrated Cultural Resources Management Plan (ICRMP) (Fort Meade 2018a). Encompassing the period from 2018 to 2022, the ICRMP offers guidelines and procedures aimed at assisting Fort Meade in fulfilling its legal obligations concerning historic preservation and cultural resources management at the installation. A comprehensive Phase I–level archaeological investigation has been conducted

across Fort Meade to assess the presence of archaeological resources. Information regarding previous cultural resources investigations and their results are specified in detail in the ICRMP.

Archaeological Sites and Cemeteries. According to the 2018 ICRMP, Fort Meade hosts a total of 33 prehistoric and/or historic archaeological sites, with none currently listed in the NRHP. All these sites underwent evaluations for NRHP eligibility. Out of the evaluated sites, only one, 18AN1240, a prehistoric site, was deemed eligible. Thirty-two sites were found not eligible for NRHP inclusion. Nine additional sites are historic cemeteries that were found to be not eligible for inclusion in the NRHP. Because of the presence of buried human remains, however, these cemeteries are recommended for maintenance and avoidance. None of these archaeological sites fall within the APE (Fort Meade 2018a).

Architectural Resources. A prior examination assessed all structures on Fort Meade constructed before 1960 for potential inclusion in the NRHP. The Base Realignment and Closure Act of 2005 prompted various construction activities, necessitating cultural resource reviews and field investigations; however, no new cultural resources were identified in the course of these projects. Between 2015 and 2018, 24 buildings underwent NRHP eligibility evaluations, and draft forms were submitted to the Maryland Historical Trust (MHT) for their approval. The Maintenance Guidelines for the Historic District were revised in 2018. In 2019, 27 buildings were reevaluated to resolve any discrepancies between MHT's and Fort Meade's records (Fort Meade 2018a). Fort Meade determined that these buildings were ineligible for listing in the NRHP. Of these, MHT concurred with the determination of not eligible for 22 buildings and requested that revised Determinations of Eligibility be prepared for the remainder. None of these buildings are in or near the APE.

In 2016, 15 buildings and 3 surface parking lots in the NSA 9800 Troop Support Area (location of CNMF Site 4) were proposed to be demolished as part of the East Campus Integration Program. An NRHP survey and evaluation of these architectural resources was conducted, and a review of files at MHT and the Fort Meade ICRMP revealed that there were no previously identified historic properties within the NSA campus and no potential for archaeological resources because of high levels of disturbance. A total of 17 buildings constructed before 1979 were evaluated for NRHP listing. Through consultation with MHT, two of these resources, Buildings 9800 and 9800A, were recommended eligible for listing in the NRHP under Criterion A, and MHT concurred that the facilities in the 9800 Troop Support Area were not eligible. NSA developed a Memorandum of Agreement in consultation with MHT to mitigate the adverse effect on the identified historic properties (NSA 2017). Neither of these two eligible resources are near the APE. No buildings on Fort Meade are listed in the NRHP. Fort Meade has seven historic properties that have been determined as eligible for listing in the NRHP and are subject to the regulatory requirements of the NHPA. The historic architectural properties are the Fort Meade Historic District, three culverts built by German prisoners of war during World War II, a water treatment plant (Building 8688), and Buildings 9800 and 9800A. The Fort Meade Historic District encompasses 13 contributing buildings that are a mix of barracks and administrative and support buildings (NSA 2017; Fort Meade 2018a).

Resources of Traditional, Religious, or Cultural Significance to Native American Tribes. While no federally recognized tribes are present in Maryland, seven federally recognized tribes

elsewhere in the United States have historical affiliations with the land occupied by Fort Meade (Fort Meade 2018a). At present, no known traditional cultural properties or Native American sacred sites are known to occur within or near the APE.

3.8.3 Environmental Consequences

3.8.3.1 EVALUATION CRITERIA

Adverse effects on 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 selling, transferring, or leasing the property out of agency ownership (or control) without adequate legally enforceable restrictions or conditions to ensure preservation of the property's historic significance. Both temporary and long-term project effects on cultural resources were considered and evaluated for their potential effects.

3.8.3.2 ALTERNATIVE 1

Under Alternative 1, no identified cultural resources are located within or in close proximity to either Building 9899 or the WCPS, and no historic buildings are identified in this section of the installation. Construction of the new MOF and parking structure at the Alternative 1 locations would have no adverse impacts on historic properties located on Fort Meade; however, the height of the proposed WCPS would be up to 10 stories and could be viewed from the Baltimore–Washington Parkway, a historic resource located approximately 0.3 mile northwest of Site 2. This height is no greater than that of the existing structures in the area and is not anticipated to create any adverse impacts to this resource. Section 106 consultation with MHT and the National Park Service is ongoing to ensure that any potential adverse effects on the viewshed from the Baltimore–Washington Parkway are avoided or minimized. MHT concurred that the project would have no adverse effect on cultural resources (see **Appendix A**). No response has yet been received from the National Park Service.

3.8.3.3 ALTERNATIVE 2

No cultural resources, including historical buildings, are within or near the Alternative 2 site. Therefore, Alternative 2 would have no adverse effect on historic properties.

3.8.3.4 ALTERNATIVE 3

No cultural resources, including historical buildings, are within or near the Alternative 3 site. Therefore, Alternative 3 would have no adverse effect on historic properties.

3.8.3.5 ALTERNATIVE 4

No cultural resources, including historical buildings, are within or near the Alternative 4 sites. Therefore, Alternative 4 would have no adverse effect on historic properties.

3.8.3.6 NO ACTION ALTERNATIVE

Under the No Action Alternative, CNMF would not construct the MOF building and associated parking and infrastructure at Fort Meade, and the existing conditions discussed in **Section 3.8.2** would remain unchanged. Therefore, no impacts on cultural resources would be expected.

3.8.3.7 CUMULATIVE IMPACTS

Past construction activities both on and off Fort Meade have likely resulted in impacts on archaeological sites and architectural resources, as these areas experienced disturbances from prior development activities. No cumulative impacts, however, have been identified on any previously recognized archaeological or architectural resources in connection with the construction of the Proposed Action when combined with other reasonably foreseeable future projects. The Proposed Action does not involve the demolition of any NRHP-eligible buildings, and no adverse effects are anticipated on archaeological sites. Furthermore, there is no knowledge of any traditional cultural properties or Native American sacred sites within the APE.

3.9 Infrastructure

3.9.1 Definition of the Resource

Infrastructure consists of the systems, physical structures, and utilities that enable a population in a specified area to function. Infrastructure is wholly human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as “urban” or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to the economic growth of an area. The infrastructure components discussed in this section are potable water supply, sanitary sewer and wastewater treatment system, stormwater drainage, electrical supply, natural gas system, liquid fuel supply, steam and chilled water systems, and solid waste.

3.9.2 Existing Conditions

The ROI for the analysis of impacts on infrastructure includes the proposed CNMF sites.

Potable Water Supply. The NSA campus is connected to the Fort Meade water supply, treatment, distribution, and storage system. This line runs all throughout the campus, primarily drawn from the Patuxent/Patapsco Aquifer and using the Little Patuxent River as a secondary water source. This water is then pumped to the Fort Meade Treatment Plant, treated, and distributed to the pump stations and storage tanks. The water distribution mains were replaced throughout the West and Central Campuses within the last few years. American Water has maintained a state Water Appropriation and Use Permit (Permit AA1969G021 (07)), which expires on June 1, 2024. This allows for the water withdrawn to be used for a central water supply (MDE 2012). The total operating capacity is 5 million gallons per day (mgd) with a current peak demand of 3.90 mgd, although it is expected that the peak demand will rise with future growth and exceed capacity (NSA 2019).

Potable water infrastructure exists on Site 1 connected to Building 9899 and Site 2. No potable water infrastructure is present on Site 3, the Mapes Tract. Potable water infrastructure on Sites 4 and 5 is connected to Buildings 9801, 9802, 9803, and 9804; the Eagle Fitness Center; and the Four Hats Dining Facility (USACE 2023a).

Sanitary Sewer and Wastewater Treatment System. The sanitary sewer system connects across the entire NSA campus, and is owned by American Water through a Utility Privatization contract under an NPDES General Discharge Permit (MDR055501) that expired on October 30, 2023, but was administratively extended by MDE, and an NPDES State Discharge Permit

(MD0021717) (MDE 2018, 2020c, 2024). All sewage and wastewater filters through the Fort Meade Advanced Wastewater Treatment Plant, which has a daily flow average of 1.8 mgd and a design daily flow of 4.5 mgd. This is not expected to require an increase in the near future. The system consists of clay piping that has potential for failure because of deterioration and is due for an upgrade. The sanitary system itself has had very few problems (NSA 2019). See **Section 3.10** for discussion on the reclaimed water program on the NSA campus.

A sanitary sewer line connects to Building 9899 on Site 1, and lines are present along the eastern side of Site 2. The sewer system does not connect to Site 3. The sewer system is connected to Sites 4 and 5 via Buildings 9801, 9802, 9803, and 9804; the Eagle Fitness Center; and the Four Hats Dining Facility (NSA 2019, USACE 2023a).

Stormwater Drainage. The stormwater system on Fort Meade consists of swales, drains, and retention basins connected throughout the entire NSA campus. Fort Meade has been issued an NPDES Municipal Separate Storm Sewer System General Permit by MDE, and a General Permit for Discharges Associated with Industrial Activities (MDE 2018, 2023b). The NSA campus is divided into five stormwater drainage basins where stormwater collects at a common outfall discharge point. In three of the drainage basins, human-made stormwater management ponds collect all or a portion of the stormwater flow prior to discharge. These basins are beginning to reach maximum capacity, and no new basins are currently planned to be built. Several stormwater management facilities are in poor condition and are in need of replacement. Stormwater drainage lines are present on Sites 1, 2, 4, and 5 (NSA 2019, USACE 2023a). Sites 1 and 4 are approximately 32 and 34 percent impervious area, respectively. Site 3 has no impervious surfaces. Sites 2 and 5 exceed the 40 percent impervious area threshold at approximately 100 and 59 percent impervious area, respectively, which means they are considered “redevelopment” by MDE and have the lowest stormwater management requirements (USACE 2022).

Electrical Supply. The electrical infrastructure crosses across the entire NSA campus, using three substations with feeds from the local utility and on-site backup generation, operated by the Baltimore Gas and Electric Company. Electricity runs to the buildings via a loop feed system.

An electrical line runs west of Building 9899 at Site 1 and connects to Sites 4 and 5. A large electrical duct bank is present on Site 2. No electrical line currently reaches Site 3 at the Mapes Tract (NSA 2019, USACE 2023a).

Natural Gas System. The natural gas infrastructure that runs across most of the NSA campus has several entrance points, the main service being on the West and Central Campuses by the existing central boiler plant. Distribution is owned and operated by the Baltimore Gas and Electric Company. Most of the infrastructure is new, and has been replaced recently, although natural gas fired emergency power generation may require a new service on campus (NSA 2019).

A natural gas line connects to Site 1 via Building 9899 and to Sites 4 and 5. A gas line does not connect to Site 2 or 3 (NSA 2019, USACE 2023a).

Steam and Chilled Water Systems. The majority of buildings on the NSA West and Central Campuses are provided steam from the central boiler plant and distribution system. This system is at the end of its useful service life, and future options include replacing the central system or adding regional plants or local boilers. East Campus buildings are served by local condensing boilers with no interconnection or backup fuel, and future plans have been proposed to connect the steam line to this area. Most buildings on the NSA campus have water-cooled chillers. It is anticipated that future interconnections would be established between select buildings on the East Campus to create a small chiller plant on the Central Campus (NSA 2019).

None of the proposed CNMF sites currently connect to steam or chilled water systems on the NSA campus, and existing buildings on these sites use local condensing boilers and water-cooled chillers (NSA 2019).

Solid Waste. The NSA campus operates its own solid waste and recycling programs, apart from the ones run by Fort Meade. Waste is collected by garbage trucks anywhere from a weekly to daily basis, and disposed of at a local contracted landfill, as no landfills are located on Fort Meade itself. Solid waste disposed of at these landfills follows the Anne Arundel County solid waste management plan, which is renewed every 10 years (AAC 2023). Solid waste management and recycling follow the installation's Integrated Solid Waste Management Plan (ISWMP). Fort Meade aims for a 20 percent waste intensity reduction by 2025, and 85 percent recycle rate of waste generated. Fort Meade personnel aim to follow general management policy and applicable federal, state, and Army solid waste management regulations (NSA 2019, Fort Meade 2017).

3.9.3 Environmental Consequences

3.9.3.1 EVALUATION CRITERIA

Impacts on infrastructure would be significant if the proposed action would result in substantial changes to utilities, such as long-term interruption, exceeding capacity for any utility, or violating related permit conditions. Additionally, obstructing other construction that relies on or is focused on utilities would be significant if not coordinated properly with other contractors, who should be aware of nearby projects; utility locations; and federal, state, and installation safety regulations at the time of construction.

3.9.3.2 ALTERNATIVE 1

Potable Water Supply. Under Alternative 1, short-term, negligible to minor, adverse impacts on the potable water supply on Fort Meade would occur from temporary service disruptions during demolition of Building 9899 and the East Campus development laydown area, as well as the construction of the MOF. Long-term, negligible, adverse impacts would also occur during operation of the MOF from an increased demand due to an increase in personnel. Based on the current population of 7,357 personnel on Fort Meade, an addition of 800 personnel present on the installation would be an 11 percent increase in potable water usage. The increased water demand associated with moving 2,500 personnel, with 800 coming from off-post, would result in a maximum daily demand of 167 gallons per minute assuming 2,430 personnel working for 8-hour shifts and 30 personnel working for 24-hour shifts (USACE 2023b). The existing infrastructure would be able to handle this increase of supply needed, and future plans for

increasing the available supply of potable water would be suitable for continued growth on Fort Meade. A 25-foot-diameter, 17-foot-tall potable water storage tank would be included to ensure sufficient potable water system pressure for the facility (USACE 2022).

Sanitary Sewer and Wastewater Treatment System. Short- and long-term, negligible to minor, adverse impacts on the sanitary sewer and wastewater treatment system on Fort Meade would occur from temporary service disruptions during construction and demolition activities under Alternative 1. Temporary disruptions would be expected during demolition of Building 9899 and construction of the MOF when disconnecting and reconnecting to the sanitary sewer line. Operation of the MOF would result in an average daily demand of 116,800 gallons per day, or 188 gallons per minute, but no capacity issues would be expected although the additional load would incentivize an upgrade to the piping to prevent failure (USACE 2022). See **Section 3.10** for discussion on impacts from use of reclaimed water for the MOF.

Stormwater Drainage. Short-term, negligible to minor as well as long-term, negligible, adverse impacts on stormwater drainage on Fort Meade would occur from increased runoff because of construction activities and an increase in impervious surface under Alternative 1. Stormwater management and lines would be altered for the duration of demolition and construction, temporarily increasing stormwater runoff. Because of associated increased erosion and sedimentation, nearby water quality would temporarily decrease during this period. Contractors would follow BMPs for stormwater management during construction by implementing drainage to divert stormwater away from the work area, and covering resources, such as sand and soil, to prevent contamination of runoff, in accordance with federal and state regulations.

Electrical Supply. Short- and long-term, negligible to minor, adverse impacts would occur on the electrical supply system on Fort Meade from temporary disruptions during construction and demolition activities under Alternative 1. Demolition and construction would cause temporary disruptions to nearby buildings when disconnecting and connecting to the electrical distribution line. Operation of the MOF would increase the electrical load proportionate to the building's size, drawing from the East Campus Substation. Construction of the WCPS would also require more electricity, as each floor would need ample lighting for all hours of the day (USACE 2023a). This would increase the load on the North Campus Substation, although it would not exceed capacity. Upgrades would likely be necessary in time to accommodate for the increased load that the MOF would place on the East Campus Substation.

Natural Gas System. No impacts would occur on the natural gas system on Fort Meade under Alternative 1 because natural gas is not planned to be used at the MOF or WCPS.

Steam and Chilled Water Systems. Long-term negligible, adverse impacts would occur on chilled water systems from increased demand under Alternative 1. A chiller plant would be constructed in the basement of the MOF and receive 3,000 tons of chilled water from the East Campus Utility Plant. This would increase chilled water used on the NSA campus, but would not be expected to exceed capacity (USACE 2022). Similar impacts would occur when constructing a condensing boiler for hot water.

Solid Waste. Short- and long-term, negligible to minor, adverse impacts would occur from an increase in solid waste generation on Fort Meade under Alternative 1. Demolition of Building

9899 would result in a temporary increase in solid waste from the generation of construction and demolition debris, which would be disposed of, recycled, or reused in accordance with federal, installation, and local regulations and guidelines. Operation of the MOF would increase solid waste generation, although this would not be considered excessive (USACE 2022). See **Table 3-17** for calculations of generation of solid waste. The total debris generated from construction and demolition activities would be approximately 4,500 tons. Waste would be recycled to the greatest extent practicable. The contractor would be responsible for taking the debris to permitted landfills or recycling centers. The increase of personnel on site would increase the generation of solid waste during MOF operation, which would be handled according to the ISWMP and Anne Arundel County's solid waste management plan.

Table 3-17. Estimated Construction and Demolition Debris Generated from Implementation of Alternative 1

Phase	ft^2	Multiplier (lb/ft^2)	Debris Generated	
			lb	Tons
Building 9899 demolition	20,000	158	3,160,000	1,433.4
Construction of MOF	750,000	4.34	3,255,000	1,612.5
Construction of WCPS	609,840	4.34	2,646,706	1,200.5
		Total	**9,061,706**	**4,531**

Source: USEPA 2009
Key: ft^2 = square feet; lb = pounds; MOF = Mission Operations Facility; WCPS = West Campus Parking Structure

3.9.3.3 ALTERNATIVE 2

Short- and long-term, negligible to minor, adverse impacts on utilities would be similar to but slightly less than those described for Alternative 1. The WCPS would not be constructed. Operation of the MOF under Alternative 2 would increase solid waste generation, although it would not exceed capacity. See **Table 3-18** for calculations of generation of solid waste. The total debris generated from construction and demolition activities would be approximately 8,000 tons. Waste would be recycled to the greatest extent practicable.

Table 3-18. Estimated Construction and Demolition Debris Generated from Implementation of Alternative 2

Phase	ft^2	Multiplier (lb/ft^2)	Debris Generated	
			lb	Tons
Pavement demolition	181,806	69.9	12,708,239	6,354.1
Construction of MOF	750,000	4.34	3,255,000	1,612.5
		Total	**15,963,239**	**7,967**

Source: USEPA 2009
Key: ft^2 = square feet; lb = pounds

3.9.3.4 ALTERNATIVE 3

Short- and long-term, negligible, adverse impacts on utilities would be similar to those described for Alternative 1. Constructing and connecting the MOF at Site 3 to utility mains would likely cause brief interruptions to the systems.

Operation of the MOF and the associated parking structure would increase the load on electricity similar to the impacts under Alternative 1, but would draw from the East Campus Substation, which has sufficient capacity for this addition (NSA 2019). New duct banks and cabling would be required from the substation to the garage to supply ample power (USACE 2022). Vegetation clearing, leveling, and construction on Site 3 would result in an increase in solid waste, which would be recycled or disposed of in accordance with federal, installation, and local regulations and guidelines. Operation of the MOF would increase solid waste generation, although it would not exceed capacity. See **Table 3-19** for calculations of generation of solid waste. The total debris generated from construction and demolition activities would be approximately 20,000 tons. Waste would be recycled to the greatest extent practicable.

Table 3-19. Estimated Construction and Demolition Debris Generated from Implementation of Alternative 3

Phase	ft^2	Multipliers (lb/ft^2)	Debris Generated	
			lb	Tons
Vegetation clearing	852,889	40	34,115,560	17,057.8
Construction of MOF	750,000	4.34	3,255,000	1,612.5
Construction of parking structure	609,840	4.34	2,646,707	1,323.4
		Total	**40,017,267**	**20,009**

Sources: USEPA 2009, 2018
Key: ft^2 = square feet; lb = pounds, MOF = Mission Operations Facility

3.9.3.5 ALTERNATIVE 4

Short- and long-term, negligible to minor, adverse impacts on utilities would be similar to those described for Alternative 1. Temporary disruptions would likely be slightly greater as more buildings would be demolished under this alternative, and disconnected/reconnected to utilities as the MOF is constructed.

The proposed parking structure near ECPS3 would likely require the same amount of power required under Alternative 2 for the WCPS. Demolition of Buildings 9801, 9802, 9803, or 9804, or the Eagle Fitness Center and the Four Hats Dining Facility, and the associated ancillary support buildings and other buildings would result in an increase in solid waste from the generation of construction and demolition debris, which would be recycled or disposed of in accordance with federal, installation, and local regulations and guidelines. Operation of the MOF would increase solid waste generation, although it would not exceed capacity. See **Table 3-20** for calculations of generation of solid waste. The total debris generated from construction and demolition would be approximately 57,400 tons. Waste would be recycled to the greatest extent practicable.

Table 3-20. Estimated Construction and Demolition Debris Generated from Implementation of Alternative 4

Phase	ft^2	Multipliers (lb/ft^2)	Debris Generated	
			lb	Tons
Demolition	204,181	158	32,260,598	14,633.2
Pavement and site demolition	1,095,863	69.9	76,600,824	34,745.6
Construction of MOF	750,000	4.34	3,255,000	1,612.5
Construction of parking structure	609,840	4.34	2,646,707	1,200.5
		Total	**114,763,129**	**57,382**

Source: USEPA 2009
Key: ft^2 = square feet; lb = pounds; MOF = Mission Operations Facility

3.9.3.6 NO ACTION ALTERNATIVE

Under the No Action Alternative, CNMF would not construct the MOF building and associated parking and infrastructure at Fort Meade, and the existing conditions discussed in **Section 3.9.2** would remain unchanged. Therefore, no impacts on infrastructure would be expected.

3.9.3.7 CUMULATIVE IMPACTS

The Proposed Action, when combined with other reasonably foreseeable future projects, would result in short- and long-term, negligible to minor, cumulative adverse impacts on infrastructure. Several other construction projects, including the Freedom Barracks, PAF, Anne Arundel County Potable Water Transmission Line, and Consolidated Mission Support Facility, would have similar impacts on utilities. Each new facility and infrastructure project would create temporary disruptions to utilities, an increased amount of erosion and runoff during construction, and the generation of solid waste with demolition and construction. Solid waste would be handled by contractors and follow the ISWMP or other applicable solid waste management plans, recycling to the maximum extent practicable. With the ongoing development of the NSA campus, the incentive to upgrade utility lines would increase, furthering modernization of the campus. The utility demands from these proposed projects, however, when combined with the Proposed Action, would be less than significant.

3.10 Sustainability

3.10.1 Definition of the Resource

“Sustainability” refers to the ability to maintain or support a process or manage establishments over time without depleting natural or physical resources. Sustainable conditions are those in which human and nature can exist in productive harmony to support present and future generations. According to USEPA, three main pillars of sustainability have been established to acknowledge and specify a set of principles and assumptions that underlie its approach to sustainability. These three social, environmental, and economic pillars are well-recognized and establish a model for evaluating sustainability (USEPA 2011).

Since 1970, multiple regulations, policies, acts, and EOs have been established in support of sustainability, sustainable practices, and guidance on sustainable planning for both state and federal activities.

The 2005 Energy Policy Act (42 USC Section 13201 et seq.) was established to address energy production in the United States, including energy efficiency, renewable energy, oil and gas, coal, tribal, nuclear matters and security, vehicles and motor fuels (including ethanol), hydrogen, electricity, energy tax incentives, hydropower, geothermal energy, and climate change technology. Additionally, the Energy Policy Act provides guidance and requirements for the development and management of more reliable, cost-efficient energy infrastructure (USEPA 2024d).

The 2007 EISA aims to increase U.S. energy security, develop renewable energy production, and improve vehicle fuel economy. The EISA provides specific guidance on sustainable building actions. Under the EISA, designs for new buildings or major renovations begun in FY 2030 or later must reduce fossil fuel–generated energy consumption by 100 percent compared to an FY 2003 baseline. Additionally, the EISA requires federal agencies to lease space that has earned the "Energy Star" label in the most recent year (USEPA 2024e).

EO 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*, enacted in 2021, directs agencies to reduce emissions associated with federal operations, invest in the American clean energy industry, and strive to maintain healthy communities. Section 205 of the EO, titled Achieving Net-Zero Emission Buildings, Campuses, and Installations, provides guidance to federal agencies to improve sustainability conditions. New construction should pursue building electrification strategies in conjunction with carbon pollution-free energy use, deep-energy retrofits, whole-building commissioning, energy and water conservation measures, and space reduction and consolidation. Additionally, federal actions that will design new construction and modernization projects greater than 25,000 gross ft^2 must meet net-zero emissions by 2030 (White House 2021a).

EO 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability*, established in 2021, focuses on reduction in emissions and pollution and development of sustainable practices. EO 14057 specifically states that federal agencies are required to achieve net-zero buildings emissions by 2045, including a 50 percent reduction by 2032, and to develop a climate- and sustainability-focused workplace. EO 14057 revoked and replaced 2018 EO 13834, *Efficient Federal Operations* (White House 2021b).

3.10.2 Existing Conditions

The ROI for the analysis of impacts on sustainability includes the NSA campus.

The NSA 2019 Master Plan states that the vision statement is to "provide a secure and accessible campus that enhances quality of life and integrated sustainability" (NSA 2019). Integration of sustainability and promotion of stewardship of land and natural resources is a common theme throughout the NSA campus. Additionally, the NSA Central Security Service has established an energy and sustainability plan focused on water, stormwater, energy, and waste.

Reclaimed Water. Reclaimed water is considered to be water that can be collected and reused or repurposed for multiple uses including agricultural, irrigation, planned potable use, or industrial reuse purposes. The use of reclaimed water on Fort Meade reduces withdraw from and reliance on the local aquifer. The reclaimed water program at Fort Meade is relatively new on the campus and currently serves buildings on the eastern portion of the installation (NSA 2019). Reclaimed water is used as makeup water in the heating, ventilation, and air conditioning cooling towers system and computing cooling. The reclaimed water system currently serving the cooling system is considered to be in good condition and has adequate capacity to serve all anticipated future demand for the East Campus. Reclaimed water storage tanks help provide system redundancy. An elevated storage tank at Chaffee Hill serves the reclaimed water piping on the East Campus as a part of the East Zone Distribution loop. A reclaimed water extension project is actively being designed to include the reclaimed water distribution to the West and Central Campuses.

Strategies for Efficient Stormwater Management. The NSA campus currently implements multiple strategies to support an effective and efficient stormwater management system. The main strategies used by the installation include stormwater retention areas, effective ESD (also known as low impact development outside of Maryland), and use of natural stormwater mitigation methods. The goal of ESD related to stormwater is to create the opportunity for water to soak into the ground or to be harnessed elsewhere. Three main drainage basin areas are located on the installation in the northern, southern, and eastern areas to accommodate stormwater after precipitation events. The current stormwater management system at Fort Meade is considered to be two components in differing stages of development, which is gradually being blended together into a single, cohesive operation according to the 2015 NSA Sustainability Plan (NSA 2015). ESD planning is also a useful method for efficient stormwater management at Fort Meade when construction or development is taking place. ESD components at Fort Meade include the use of swales, drainage ditches, conveyance systems, and biologically based decentralized features. These features are designed to minimize the impact on the installation's stormwater system and reduce runoff rates into nearby water sources. ESD also emphasizes non-structural construction techniques to more naturally manage stormwater and restore natural hydrologic functions of an area. Natural stormwater management methods include planting vegetation along pathways, parking lots, and other impervious surface areas to increase absorption during precipitation events and throughout the installation to aid in water retention and reduce erosion. Additional non-biological stormwater catchment methods may include either large cisterns or rain barrels for collecting water during precipitation events. NSA has enlisted a "best scenario" case goal of a 40 percent reduction in untreated stormwater runoff or reduction in impervious surfaces (NSA 2015, 2019).

Energy and Materials Conservation. NSA strives to use efficient building materials and implement energy-saving practices whenever possible. The installation has been in the process of increasing the number of buildings on campus that have the classification of Leadership in Energy and Environmental Design (LEED) Silver-certified buildings. LEED certifications are a green-building rating system used to provide a set of standards for environmentally sustainable buildings, established by the U.S. Green Building Council. LEED is a globally recognized program that symbolizes sustainability and provides a baseline for efficient, cost-saving buildings. In addition to LEED-certified building status, NSA has implemented sustainability

features, specifically tailored to buildings that include vegetated roofs and horizontal surfaces (awnings, canopies, walkways) and vertical structures (buildings façades and parking structure walls) as solar energy platforms to provide an energy source for buildings. The main objective for sustainable development at the installation is to integrate the natural systems of the campus in the siting and design of new facilities and infrastructure (NSA 2015, 2019).

3.10.3 Environmental Consequences

3.10.3.1 EVALUATION CRITERIA

A sustainability analysis would determine the viability of the proposed action with adherence to existing NSA, Fort Meade, DoD, and federal regulations/requirements associated with sustainable development and the efficient use of energy and other resources.

3.10.3.2 ALTERNATIVE 1

Reclaimed Water. Long-term, negligible to minor, beneficial impacts would be expected from use of reclaimed water at Fort Meade under the Proposed Action. The primary makeup water for the cooling towers would be supplied by the reclaimed water system, reducing reliance on potable water for cooling. The cooling tower makeup water tanks would be filled by the potable water system and used as a secondary backup supply. The reclaimed water building connection to the MOF would tie into a 20-inch reclaimed water main between the MOF site and ECB4 (USACE 2024b).

Strategies for Efficient Stormwater Management. Long-term, negligible to minor, beneficial impacts on strategies for efficient stormwater management would be expected to occur under Alternative 1. Implementation of ESD planning and design during the construction stage would minimize adverse impacts on stormwater during construction activities. See **Section 3.9.3** for more information on stormwater impacts. The proposed MOF would require that stormwater features be designed to comply with the MDE requirements to the maximum extent technically feasible, Section 438 of the EISA, and to facilitate LEED site development credits associated with stormwater management. Additionally, the proposed MOF would comply with UFC 3-210-10 for ESD requirements for design toward a sustainable site (USACE 2023b, NSA 2019).

Stormwater management features that would be implemented include retention areas and vegetation planting in areas surrounding impervious surface cover, such as buildings, parking areas, roadways, and sidewalks. Planting along streets would provide shade to those using the sidewalks, reduce local temperatures, and support stormwater retention. Additionally, stormwater features such as bioswales, when included near impervious areas, can further enhance the environment by providing green spaces and plantings (NSA 2019).

Energy and Materials Conservation. Short-and long-term, negligible to minor, beneficial impacts on energy and materials conservation would be expected to occur under Alternative 1. Short-term impacts would occur from the sustainable practice of reusing and recycling any waste generated during construction wherever and whenever possible. The proposed MOF would be designed to establish a recycling program for common recyclable materials, including paper, plastics, materials, cardboards, glass, and metals. The MOF would be constructed using recycled materials where possible, such as steel, ceiling panels, gypsum wallboard, and glass. An additional sustainability practice would include sourcing construction material from local

establishments near the installation. Using locally sourced materials would decrease energy used for transportation and reduce pollution. The proposed MOF would adhere to efficient building development set forth in DoD, federal, and state regulations, guidance, and EOs as described in **Section 3.10.1**.

Long-term, beneficial impacts would be expected to occur from efficient energy use and design in an operational phase. The proposed MOF would strive to meet the goal of EO 14057 to pursue building electrification strategies in conjunction with carbon pollution-free energy use and reach net-zero emissions. The MOF project could also strive to use renewable energy strategies, such as solar panels or wind energy whenever feasible, reducing grid energy demand in the operational phase.

3.10.3.3 ALTERNATIVE 2

Impacts on sustainability under Alternative 2 would be similar to those described for Alternative 1.

3.10.3.4 ALTERNATIVE 3

Impacts on sustainability under Alternative 3 would be similar to those described for Alternative 1.

3.10.3.5 ALTERNATIVE 4

Impacts on sustainability under Alternative 4 would be similar to those described for Alternative 1.

3.10.3.6 NO ACTION ALTERNATIVE

Under the No Action Alternative, CNMF would not construct the MOF building and associated parking and infrastructure at Fort Meade, and the existing conditions discussed in **Section 3.10.1** would remain unchanged.

3.10.3.7 CUMULATIVE IMPACTS

Long-term, negligible to moderate, beneficial impacts on sustainability would be expected under the Proposed Action in combination with identified reasonably foreseeable future projects discussed in **Section 2.5**. The cumulative impacts under the Proposed Action and reasonably foreseeable future projects would collectively improve the established and future sustainability effort throughout Fort Meade and the surrounding area. The implementation of LEED standards in all facilities, the use of renewable energy wherever possible, established reclaimed water and stormwater efficiency strategies, and an emphasis on sustainable practices would improve the sustainability of Fort Meade and benefit the surround areas.

3.11 Hazardous Materials and Wastes

3.11.1 Definition of the Resource

Hazardous Materials and Petroleum Products. Hazardous materials are items or agents, including biological, chemical, or physical materials, that have the potential to cause harm to humans, animals, and/or the environment. USEPA, OSHA, the United States Department of

Transportation (USDOT), and the U.S. Nuclear Regulatory Commission regulate hazardous materials; each agency provides its own definition of hazardous materials for regulatory purposes. USDOT regulates transportation of hazardous materials per 49 CFR 105–180, and a Hazardous Materials Table provided in 49 CFR 172.101 lists hazardous materials identified by USDOT.

Hazardous and Petroleum Wastes. Hazardous waste is a waste with properties that make it dangerous or capable of having a harmful effect on human health or the environment and is generated from many sources including industrial processes. Under the Resource Conservation and Recovery Act (RCRA), regulated hazardous waste includes solid waste that meets hazardous waste classification under RCRA Subtitle C. Management of hazardous waste includes a comprehensive regulatory program that tracks waste from incorporation to final disposal as identified under 40 CFR 262, *Standards Applicable to Generators of Hazardous Waste*. Universal wastes are common hazardous wastes subject to special management provisions under 40 CFR 273, *Standards for Universal Waste Management*.

Toxic Substances. Under the Toxic Substances Control Act, 15 USC Section 53, USEPA regulates toxic chemicals and substances, including mercury, polychlorinated biphenyls (PCBs), and asbestos-containing materials (ACMs). PCBs are organic chemicals known as chlorinated hydrocarbons that were used in multiple industrial and commercial applications including, but not limited to, electrical and hydraulic equipment. PCBs were banned in the United States in 1979 and are regulated under 40 CFR 761. ACMs are primarily regulated in building materials and include materials that contain more than 1 percent asbestos and are categorized as friable or non-friable. Disposal of PCBs is addressed under 40 CFR 750.

Lead-based paint (LBP) in building materials is regulated under Section 302(c) of the Lead-Based Poisoning Act of 1971. The regulatory threshold of lead in paint for residences is identified at levels equal to or exceeding 0.5 percent by weight for residential structures constructed post-1978 and all buildings constructed prior to 1978 are considered to contain LBP. Disposal of LBP waste is regulated by RCRA under 40 CFR 260, dependent upon quantity or concentration.

Environmental Contamination and Ordnance. Cleanup of hazardous substances, pollutants or contaminants, and munitions in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act and other applicable federal laws addressing environmental restoration at DoD installations and facilities are addressed under the Defense Environmental Restoration Program (DERP).

3.11.2 Existing Conditions

The ROI for the analysis of impacts on hazardous materials and wastes includes the proposed sites and adjacent areas.

Hazardous Materials and Petroleum Products. Hazardous materials and petroleum products, including but not limited to fuels, petroleum products, dielectric fluid, pesticides, cleaners, and hydraulic fluids, are used, stored, and transported throughout the NSA campus and various facilities throughout Fort Meade. An Installation Hazardous Waste Management Plan (HWMP) and P2 Plan are in place at Fort Meade. These plans identify installation-specific personnel

responsibilities and waste management procedures for the identification, management, transport, spill response, and waste reduction plans for hazardous materials and waste.

NSA and Fort Meade operate under SPCC Plans, and the NSA campus also operates under a Facility Response Plan (FRP), as required under 40 CFR 112, *Oil Pollution Prevention.* The SPCC Plans identify locations of bulk petroleum product storage, operations and management controls, spill response, and BMPs to prevent and minimize impact of use and storage of these products on the environment (NSA OHESS 2019a, Fort Meade 2022d). FRPs are associated with response planning action and demonstrate a facility's preparedness to respond during a worst-case scenario discharge of oil (NSA OHESS 2019b).

Hazardous and Petroleum Wastes. The NSA campus at Fort Meade generates greater than 1,000 kilograms of hazardous waste, or more than 1 kilogram of acute hazardous waste per month, and is thereby permitted as a RCRA Large Quantity Generator through USEPA (USEPA Identifier# MD2970590004) (USEPA 2024f). Under NSA practices, a Hazardous Waste Generator's Guide identifies personnel roles and responsibilities for waste stream identification and inventory, hazardous waste management, pollution prevention, training, and emergency response (NSA 2017).

Storage Tanks and Oil/Water Separators. Fuel tanks, including underground storage tanks (USTs) and aboveground storage tanks (ASTs), are located throughout the NSA campus for various operational purposes including the use of fuel for generators. Based on available information, four generators with associated ASTs and one additional AST are present at Site 4 and two ASTs are present at Site 5; no USTs are present within the proposed CNMF sites. Based on information provided in the 2023 Site Management Plan (SMP) update for Fort Meade, a former UST was present and identified to have leaked or had the potential to leak at Site 5 (Area of Interest [AOI] FGGM-75). The UST has been removed and closed according to regulatory requirements with a No Further Action (NFA) issued by USEPA on February 23, 2012 (USACE 2023c).

Oil/water separators (OWSs) are also present throughout the installation for a variety of maintenance and industrial operations. Waste streams from these operations may be impacted with oil or grease; therefore, OWSs are installed to remove these contaminants. OWSs are not required to be identified on a facility's SPCC Plan; however, oil and grease are periodically removed in accordance with the SPCC Plan (Fort Meade 2022d). No OWSs are present with the CNMF project areas.

Pesticides. Per DoD Instruction 4150.07, *DoD Pest Management Program*, NSA minimally uses pesticides. The Army also operates under Army Regulation 2001-1, *Environmental Protection and Enhancement,* and has established an Integrated Pest Management approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks. Pesticides may have historically been used within the proposed sites; however, no known spills have occurred, and no bulk pesticide storage is present.

Asbestos. ACMs at Fort Meade, including building components associated with the NSA campus, are managed according to the Fort Meade Asbestos Management Program, which

identifies personnel responsibilities, required qualifications and training, asbestos survey and assessment requirements, maintenance and operations procedures, required personal protective equipment (PPE), and record retention requirements (Fort Meade 2008). Because of ACM regulations, ACMs are often not present in buildings constructed since the late 1980s. Existing structures within the proposed sites may contain ACMs because they were constructed prior to 1980.

Lead-Based Paint. The Fort Meade Lead Hazard Management Plan is used for the management of LBP within the boundaries of Fort Meade, including the NSA campus. The plan identifies procedures for identification and control of LBP hazards. The structures present within the proposed sites were constructed prior to 1978, and therefore are assumed to contain LBP.

PCBs. Potential PCB-containing materials present within the proposed sites include electric light ballasts, capacitors, and electrical surge protectors located within the existing buildings and infrastructure. Records denote that an approximately 2-foot area of PCB-contaminated concrete was identified in a transformer vault located at Building 9803 (located at Site 4). The impacted area was encapsulated and USEPA granted a one-time waiver in July 1993, waiving the requirement to remove the contaminated concrete if (1) the release was identified on the property deed and (2) re-testing of the area was completed within 3 years to evaluate if PCBs were appropriately contained (Fort Meade 1993). No additional areas of PCB contamination within the proposed sites were identified. PCB-containing waste is managed under the Fort Meade HWMP and ISCP.

Radon. Radon is a radioactive gas that forms naturally when uranium, thorium, or radium naturally degrade in rocks, soil, and/or groundwater. Radon gas at levels greater than 4 picoCuries per liter (pCi/L) is considered to represent a health risk. According to the USEPA online Radon Zone Map, Anne Arundel County is in Radon Zone 2—areas predicted to average indoor radon screening levels from 2 to 4 pCi/L. In 1990, an installation-wide radon screening survey was conducted, and all radon levels were below 4 pCi/L (USEPA 2024h).

Environmental Contamination and Ordnance. Under the DERP, DoD installations are to identify, investigate, and clean up contaminated sites. The Fort Meade SMP identifies and summarizes the status and cleanup strategy for known or potential contaminated sites, including sites within the NSA campus. Each site identified is referenced as an AOI. According to the 2023 Fort Meade SMP Annual Update, four AOIs are present within the proposed sites (USACE 2023c); refer to **Table 3-21** for additional details.

Table 3-21. AOIs within Proposed CNMF Sites

CNMF Site Option	AOI Identifier#	AOI Description/Contamination of Potential Concern	Summary and Current Status
Site 1	FGGM-003-R-02 (OU-40)	Training Area Munitions Response Site **Potential concern:** MEC in soil	Risk evaluation identified low probability for human receptors to encounter MEC **Current status:** Ongoing annual land use control inspections and surface sweeps
Site 3	FGGM-003-R-01 (OU-40)	Mortar Area Munitions Response Site **Potential concern:** MEC in soil	Risk evaluation identified low probability for human receptors to encounter MEC **Current status:** Ongoing annual land use control inspections and surface sweeps
Site 4	FGGM-96 (OU-46)	Barracks and Administrative Buildings 9802 and 9803 (Non-SWMUs 12 and 13) **Potential concern:** Not Determined	Buildings were evaluated during 1996 SWMU survey **Current status:** No evidence or known release of hazardous substances; USEPA issued NFA for AOI on 6/15/2011
	FGGM-003-R-02-01 (OU-40)	Mortar Area Munitions Response Site **Potential concern:** MEC	Risk evaluation identified low probability for human receptors to encounter MEC **Current status:** Ongoing annual land use control inspections and surface sweeps
Site 5	FGGM-75 (OU-30)	USTs prior to 1984	AOI consists of all USTs on Fort Meade prior to 1984 with known or potential releases **Current status:** All pre-1984 USTs have been removed, remediated with approved closure; USEPA issued NFA on 2/23/2012

Key: AOI = Area of Interest; MEC = munitions and explosives of concern; NFA = No Further Action; OU = Operational Unit; SWMU = Solid Waste Management Unit; USEPA = United States Environmental Protection Agency; UST = underground storage tank.

3.11.3 Environmental Consequences

3.11.3.1 EVALUATION CRITERIA

Impacts on hazardous materials and waste would be considered adverse if a proposed action resulted in any of the following: an increase in hazardous materials or wastes generated, used, stored, or required disposal that resulted in noncompliance of applicable federal or state regulatory requirements; wastes generated beyond current management procedures or capabilities, or that resulted in disturbance of ACMs, LBP, or PCBs; and contaminated sites that cause negative effects on human health and/or the environment.

3.11.3.2 ALTERNATIVE 1

Hazardous Materials, Hazardous Wastes, and Petroleum Products. Short- and long-term, negligible, adverse impacts would occur from the use of hazardous materials and petroleum products and the generation of hazardous wastes during construction and operation under Alternative 1. Any hazardous materials, petroleum products, or hazardous wastes currently stored within the boundary of Sites 1 and 2 would be removed and properly disposed of in accordance with regulatory and policy requirements. Hazardous materials that would be used during site development activities include paints, welding gases, solvents, preservatives, and sealants. Additionally, hydraulic fluids and petroleum products, such as diesel and gasoline, would be used in many of the heavy vehicles and equipment needed for the implementation of the Proposed Action. Fort Meade is operating under a Facility Consent Decree under the Comprehensive Environmental Response, Compensation, and Liability Act; therefore, any hazardous materials discovered during construction of the MOF and WCPS would be addressed in accordance with the Consent Decree (NSA 2017).

Long-term, negligible, adverse impacts would occur from the use of hazardous materials and the generation of hazardous waste during operation of the proposed MOF. Minimal quantities of hazardous materials and waste would result from day-to-day operations because of use of various chemicals for cleaning and equipment needs. All hazardous materials and waste would be managed in accordance with the SMP, P2 Plan, and applicable installation-specific guidelines. The emergency generator to be installed under the Proposed Action would require installation of an AST for fuel storage, thus requiring reoccurring fuel deliveries. Dependent upon the volume of the AST, applicable state or local tank registrations may be required, and use of BMPs under the SPCC Plans and FRP would be used to minimize impacts associated with spills or releases. All hazardous materials, petroleum products, and hazardous wastes would be handled, stored, and disposed of in accordance with regulatory and policy requirements.

Storage Tanks and Oil/Water Separators. Short- and long-term, negligible, adverse impacts on storage tanks and OWSs would occur from temporary storage during construction and permanent storage required for the emergency generation under Alternative 1. On-site storage of petroleum products for construction and demolition equipment would be accomplished through the installation of temporary ASTs for fuel. Installation and maintenance of temporary ASTs would adhere to BMPs in the SPCC Plans and FRP and applicable federal and state regulations. The temporary ASTs would be removed following completion of the Proposed Action. Any ASTs associated with the buildings proposed for demolition would also be removed in accordance with applicable federal and state regulations. An OWS would be constructed in the WCPS.

Long-term, negligible, adverse impacts would occur from the use of petroleum storage tanks. The emergency generator to be installed under the Proposed Action would require installation of an AST for fuel storage, thus requiring reoccurring fuel deliveries. Based on the volume of the tanks, applicable state or local tank registrations may be required and use of BMPs under the SPCC Plans and FRP would be used to minimize impacts associated with spills or releases, such as use of secondary containment systems, leak detection systems, and alarm systems.

Permanent storage tanks would be installed and maintained in accordance with applicable federal and state regulations.

Pesticides*.* No impacts from pesticides would be anticipated because of implementation of installation-specific practices according to the 2018 Integrated Pest Management Plan and DoD instruction, and because no on-site storage of pesticides would be associated with the Proposed Action (Fort Meade 2018b).

ACMs. Short-term, minor, adverse, and long-term, negligible, beneficial impacts would occur from handling and disposal of ACMs during demolition under Alternative 1. Adverse impacts would occur from the demolition of Building 9899 at Site 1 because the building likely contains ACMs based on time of construction (prior to 1980). The structure would be surveyed for asbestos by a licensed contractor to ensure that appropriate measures would be taken during demolition to reduce potential exposure to, and release of, asbestos. Asbestos abatement and demolition contractors would wear appropriate PPE and would be required to adhere to all federal, state, and local regulations and the Fort Meade AMP.

Long-term, negligible, beneficial impacts would occur because of removal of ACMs and a potential exposure route to personnel, and reducing the amount of building materials that require management under the Fort Meade Asbestos Management Program. Army policy prohibits the use of ACMs for new construction when asbestos-free substitute materials exist.

LBP. Short-term, minor, adverse, and long-term, negligible, beneficial impacts would occur from handling and disposal of LBP during demolition under Alternative 1. Adverse impacts would occur from the demolition of Building 9899 at Site 1 because the building likely contains LBP based on time of construction (prior to 1978). Structures would be surveyed for LBP by a licensed contractor, or the building materials will be assumed to contain LBP. Demolition-related building materials containing LBP can be disposed of at a USEPA-approved landfill without removing or encapsulating the LBP prior to disposal. Appropriate PPE would be used to minimize impacts on demolition workers and implementation of the Fort Meade LHMP and applicable regulatory requirements would be used to ensure minimal impact to the environment.

Long-term, negligible, beneficial impacts would occur because of removal of LBP, thus removing a potential exposure route of lead to personnel and reducing the amount of building materials that require management under the LHMP.

PCBs. Short-term, negligible, adverse and long-term, negligible, beneficial impacts would occur from handling and disposal of PCBs during demolition under Alternative 1. Short-term, negligible, adverse impacts would occur from handling and disposal of any PCB-containing equipment encountered during demolition under Alternative 1. Any potential PCB-containing equipment not labeled PCB-free or missing date-of-manufacture labels would be assumed to contain PCBs and removed and handled in accordance with applicable regulatory requirements and the NSA HWMP. PCB-containing materials would be transported and disposed of as hazardous waste.

Long-term, negligible, beneficial impacts would occur from the removal of any PCB-containing equipment within the buildings and infrastructure at Site 1, thus removing a potential exposure route to personnel. Federal law prohibits the use of PCBs in new construction.

Radon. No impacts from radon would be encountered. Based on the results of past radon sampling events at Fort Meade, it is unlikely that levels of radon inside of any of the proposed buildings would exceed the acceptable thresholds. Under Alternative 1, proper ventilation would be incorporated into all new building system designs.

Environmental Contamination and Ordnance. Short-term, minor, adverse impacts would occur during the land-clearing, excavation, and grading phases of construction because Site 1 is present within AOI FGGM-003-R-02 (Training Area Munitions Response Site). To minimize impacts, land use controls are required for the management of the DERP-based AOIs. Controls, including dig permits, must be obtained from Fort Meade for any intrusive activity, unexploded ordnance (UXO) construction support for intrusive construction projects, and UXO avoidance procedures. Additionally, a UXO specialist would be available in the event of the discovery of suspected materials during earth-disturbance activities. A stop-work order would be required if ordnance were encountered during implementation of the Proposed Action. Contractors and site personnel are required to immediately report the discovery of munitions and explosives of concern (MEC) to the installation and implement appropriate safety measures. All ordnance would be collected and disposed of in accordance with federal and Army regulations by trained and certified personnel. Commencement of field activities would not continue in the impacted area until the issue is resolved. Once construction of the MOF is complete, Fort Meade would continue to perform long-term management on FGGM-003-R-02. If soil contamination were to be encountered during construction or demolition activities, CNMF would obtain the appropriate permits from MDE.

3.11.3.3 ALTERNATIVE 2

Impacts on hazardous materials and wastes from Alternative 2 would be the same as those described for Alternative 1.

3.11.3.4 ALTERNATIVE 3

Impacts on hazardous materials and wastes from Alternative 3 would be similar to, but slightly less than, those described for Alternative 1. AOI FGGM-003-R-01 is present within Site 3. Anticipated environmental contamination and ordnance impacts would be similar to impacts described for FGGM-003-R-02 (see Alternative 1) because the current risk status for both sites is identified as “low probability for human receptors to encounter MEC” as described in **Table 3-21**. Limited remnant utility infrastructure on Site 3 would be removed or abandoned in place under Alternative 3. Anticipated impacts and applicable land use controls would also be implemented as described for Alternative 1.

3.11.3.5 ALTERNATIVE 4

Impacts on hazardous materials and wastes from Alternative 4 would be similar to, but slightly greater than, those described for Alternative 1. Additional details associated with Alternative 4 are discussed below.

Four emergency generators and associated ASTs plus one additional AST are currently present at Site 4 near Buildings 9801 and 9802, and two ASTs are present at Site 5 near Building 9820. Prior to demolition and construction activities, the ASTs would be closed and removed in accordance with applicable regulatory requirements. No additional impacts from the removal of the ASTs are anticipated because records do not indicate historical spills or releases.

ACM and LBP encapsulation or removal would occur as appropriate in accordance with applicable regulations during demolition of the buildings on Sites 4 and 5. The approximately 2 ft^2 area of PCB-contaminated concrete in the basement transformer vault of Building 9803 at Site 4 would be excavated and properly disposed of during building demolition. The 2 ft^2 area of contaminated concrete is considered minimal and would not result in additional impacts on hazardous materials and wastes.

Three documented environmental contamination sites are associated with Alternative 4: FGGM-96, FGGM-75, and FGGM-003-R-02-01. No additional impacts on hazardous materials and wastes would occur for FGGM-75 and FGGM-95 because the sites are closed with NFAs issued by USEPA (see **Table 3-21**). Anticipated impacts and applicable land use controls for FGGM-003-R-02-01 are discussed under Alternative 1.

3.11.3.6 NO ACTION ALTERNATIVE

Under the No Action Alternative, CNMF would not construct the MOF building and associated parking and infrastructure at Fort Meade, and the existing conditions discussed in **Section 3.11.2** would remain unchanged. Therefore, no impacts on hazardous materials and wastes would be expected.

3.11.3.7 CUMULATIVE IMPACTS

Short- and long-term, negligible to minor, adverse impacts on hazardous materials and wastes would occur under the Proposed Action as a result of handling, storage, and disposal of hazardous and toxic materials and generation of hazardous wastes during construction and operations. In combination with the reasonably foreseeable future projects described in **Section 2.5,** cumulative impacts would be similar. Cumulative, negligible, beneficial impacts could also occur from the demolition of buildings containing ACMs, LBP, and PCBs. Hazardous materials, hazardous wastes, and petroleum products would be managed and disposed of according to regulatory requirements and according to applicable guidance and planning documents.

3.12 Socioeconomics and Environmental Justice

3.12.1 Definition of the Resource

Socioeconomics. Socioeconomics are defined as a social science that studies the correlations between economic activity and social behavior. Several components can be used as indicators of economic conditions for a certain area, including demographics, median household income, unemployment rates, percentage of families living below the poverty line, employment data, and property value. Data on unemployment identify gross numbers of employees, employment by industry or trade, and unemployment trends. Data on industrial, commercial, and other sectors of the economy provide baseline information on the economic health of a region. These data are gathered to understand the effects of a given action on income or jobs generated or lost.

Environmental Justice. Environmental justice is defined as the just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, tribal affiliation, or disability, in agency decisionmaking and other federal activities that affect human health and the environment so that individuals:

- Are fully protected from disproportionate and adverse human-health and environmental effects (including risks) and hazards, including those related to climate change, the cumulative impacts of environmental and other burdens, and the legacy of racism or other structural or systemic barriers
- Have equitable access to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices (EO 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All*; April 21, 2023)

Table 3-22 describes the EOs that provide guidance and considerations for environmental justice impacts analyses.

Table 3-22. EOs Pertaining to Environmental Justice

EO	Description
EO 12898 *Federal Action to Address Environmental Justice in Minority Populations and Low Income Populations* (issued February 1994)	Enacted to ensure protections, fair treatment, and meaningful involvement of all people regardless of income, race, color, or national origin with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EO 12898 requires federal agencies, to the greatest extent practicable and permitted by law, to identify and address any disproportionate groups of people including racial, ethnic, or socioeconomic groups and if their proposed actions would result in adverse environmental or health impacts on low-income or minority populations. These groups should not bear a disproportionate share of negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, tribal, and local programs and policies.
EO 13045 *Protection of Children from Environmental Health Risks and Safety Risks* (issued April 2007)	Enacted to require each federal agency to "make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately impact children; and (b) shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks. Areas that may have an increased population of children including schools or childcare facilities may further the potential impact on children. To the extent to which children may be impacted, disproportionate impact on children is inherent because of their inherent vulnerabilities."
EO 13985 *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government* (issued January 2021)	Enacted to direct federal agencies to evaluate whether their policies generate racially inequitable results when implemented and to make necessary changes to ensure that underserved communities are being supported. EO 13985 also requires the acknowledgement that advancing racial equity and support for underserved communities would be a commitment over multiple generations.
EO 14008 *Tackling the Climate Crisis at Home and*	Amends EO 12898 to create, within the Executive Office of the President, a White House Environmental Justice Interagency Council

EO	Description
Abroad (issued January 2021)	(Interagency Council) and called for the Interagency Council to provide recommendations for further updating EO 12898.
EO 14031 *Advancing Equity, Justice, and Opportunity for Asian Americans, Native Hawaiians, and Pacific Islanders* (issued May 2021)	Enacted to supplement prior EOs and aim to diminish barriers for additional equity and justice for Asian American, Native Hawaiian, and Pacific Islander populations.
EO 14091 *Further Advancing Racial Equity and Support for Underserved Communities Through the Federal Government* (issued February 2023)	Enacted to supplement EO 13985 by mandating a whole-of-government, multi-generational commitment to extending and strengthening equity-advancing requirements to support underserved community workforces, economy, housing, equity in health (including mental and behavioral health), civil rights, and equal justice under law.
EO 14096 *Revitalizing Our Nation's Commitment to Environmental Justice for All* (issued April 2023)	Enacted to direct federal agencies to prioritize outreach to communities with environmental justice concerns, which may include all demographics, and possible legacy and systemic treatment. EO 14096 involves providing and encouraging engagement opportunities for the public to share concerns and participate in decision-making such as revising agency procedures, which is especially encouraged for people affected by federal actions. Additionally, this EO formally defined environmental justice, and revised the EO 12898 reporting threshold such that federal agencies must now identify and disclose disproportionate and adverse impacts low-income or minority populations.

Pursuant to EO 13985, the DoD Equity Action Plan includes a strategy to further equality and amend previous injustices from environmental and other impacts because of defense activities on ancestral lands.

As defined by CEQ, minority or low-income communities with environmental justice concerns should be identified either if the percentage of persons characterized as being a minority or low-income population within the ROI is greater than 50 percent, or if the minority or low-income population percentage is meaningfully greater than the population percentage of the community of comparison. In this EA, the analysis uses a conservative interpretation of "meaningfully greater than" to include any minority or low-income population that is 1 percentage point greater than that of the community of comparison. CEQ also states, "A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds" (CEQ 1997). The community of comparison is the smallest jurisdiction for which United States Census Bureau (USCB) data encompass the footprint of impacts for each resource and is used to establish appropriate thresholds for the impacts analysis. Environmental justice communities present within the ROI were determined using these thresholds. For purposes of this EA, minority and low-income communities with environmental justice concerns, and other vulnerable populations (child and elderly populations), are defined as follows:

- **Minority population:** Minority populations are defined as members of the following population groups: Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, multi-race that includes one of the aforementioned races; and Hispanic or Latino (CEQ 1997). USCB considers race and Hispanic or Latino origin (ethnicity) as two separate concepts, and these data are recorded separately.
- **Low-income population:** Low-income populations are defined as individuals whose income is below the federal poverty threshold based on income data collected in the 2018–2022 American Community Survey (ACS) (USCB 2024a). In 2023 the federal poverty threshold for an individual was $15,490 and for a household with at least two individuals it was $19,680 (USCB 2024b).
- **Child population:** Children are defined as all people 17 years of age and under.
- **Elderly population:** Elderly persons are defined as all people 65 years of age and over.

3.12.2 Existing Conditions

Socioeconomics. Fort Meade is the third largest installation by population and is home to eight of DoD's cyber and intelligence agencies. In addition to cyber and intelligence activities, Fort Meade has a strong garrison presence with multiple soldier support services for all five branches of the military, which makes up approximately 15,000 military personnel working and living on Fort Meade. With a total of 55,00 people working on site, Fort Meade in itself is equivalent to a small city and is continuing to grow. Fort Meade is Maryland's largest employer and has the third largest workforce of any Army installation in the continental United States. Fort Meade, in combination with NSA, generates a total of approximately $17.8 billion in economic activity in Maryland. Fort Meade's and NSA's employment of 48,389 accounts for 1.4 percent of all employees in Maryland and, when multiplier impacts are included, the 125,729 jobs in, created by, or supported by Fort Meade and NSA account or 3.6 percent of all employment in Maryland (Fort Meade Alliance 2024).

Environmental Justice. Population and demographics data used to determine the presence of communities with environmental justice considerations within the ROI were collected from multiple databases and tools. The following lists the data sources typically required to determine existing conditions for minority, low-income, and other vulnerable populations:

- **USCB database:** Demographics (race, age, and income) data for Anne Arundel County, Maryland, and communities neighboring Fort Meade were retrieved online from the USCB database (www.data.census.gov). Data reviewed for this analysis were from the 2018 ACS (USCB 2024c).

- **Climate and Economic Justice Screening Tool (CEJST):** Per EO 14008, the CEJST was developed to provide a consistent government-wide identification of communities with environmental justice concerns. The CEJST (https://screeningtool.geoplatform.gov/en/) has an interactive map and uses many data sets (including best available 2020 census data) as indicators of burdens in eight categories: climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development.

- The CEJST identifies communities using the USCB-assigned geographic identifiers (GEOIDs), or numeric codes that "nest" state, county, tract, and block information for a particular area. Fort Meade is almost entirely encompassed within GEOID Tract 24003740603. Per the GEOID system, the first two digits of a GEOID identify the state or territory (Maryland is 24), the next three digits identify the county (Anne Arundel County is 003), and the next six digits identify the tract (740603), which simplifies to "7406.3" to correlate with U.S. Census tract numbers.

- **Environmental Justice Screening Tool (EJScreen)**: USEPA developed EJScreen (https://ejscreen.epa.gov/mapper/) to support federal agency compliance with EO 12898 and to provide environmental and demographic information down to the community level for any part of the country. This tool uses the most recent data from the ACS as well as data on climate change and other health vulnerabilities. This information helps to identify existing socioeconomic, environmental justice, health, and climate stresses and critical service gaps (such as limited Internet access, health insurance, housing, access to transportation, and access to healthy food) affecting communities. EJScreen reports reviewed for this project used ACS data from 2017–2021 (USEPA 2024g).

The ROI for this environmental justice analysis consists of the following census tracts: 7406, which covers the installation, and 7406.1, 7406.2, 7406.3, and 7515 (USCB 2024c). **Table 3-22** lists the minority, low-income, child, and elderly populations for each of the census tracts. The community of comparison is Anne Arundel County, and the state of Maryland is provided as an additional area of comparison. **Table 3-23** provides the USCB population estimates for the census tracts included with Fort Meade and in the immediate vicinity. Fort Meade is partially encompassed within four census tracts: 7406.1, 7406.2, 7406.3, and 7515. The population total of the four census tracts that encompass Fort Meade is approximately 17,322 with an average of 38 percent of the population belonging to a minority group (USCB 2024a).

Table 3-23. Minority, Low-Income, Child, and Elderly Population within the ROI

Geographic Area	Total Population	Total Percent Minority	Total Percent Low-Income	Total Percent Elderly	Percent Children
Census Tract					
7406.1	4,244	38.7[a]	6.1	1.2	43.6
7406.2	3,352	44.2[a]	6.3	2.4	37
7406.3	2,814	27.1[a]	8.9	0	26.8
7515	6,912	42.6[a]	8.9	9.2	29.9
Community of Comparison					
Anne Arundel County	567,696	26.7	8.7	14.1	24.7
Maryland	6,003,435	43.8	13.6	14.6	25

Source: USCB 2024a

[a] The minority population percentage is meaningfully (at least 1 percentage point) greater than the percentage of the reference population of the community of comparison (Anne Arundel County) and is therefore considered a community with environmental justice concerns.

Based on the ACS estimates for 2018–2022, the total minority population percentages ranged between 27.1 and 44.2 percent in the census tracts surrounding Fort Meade—all meaningfully greater than the minority population percentage for Anne Arundel County. Therefore, minority populations in each of the four census tracts are considered communities with environmental justice concerns. Total low-income percentages range between 6.1 and 8.9 percent in the ROI—none meaningfully greater than Anne Arundel County to be considered low-income communities of environmental justice concerns.

Additionally, upon review of the CEJST data for census tracts in the ROI, none of the tracts in the ROI exceeded thresholds for a categorical burden and an associated economic burden to be designated as disadvantaged communities. CEJST GEOID tract 24003740603 (census tract 7406.3) was determined to have the following legacy pollution and workforce development vulnerabilities: 91 percent (greater than 90 percent threshold) of the population in proximity to listed Superfund (or National Priorities List) sites within 5 kilometers and 95 percent (greater than 90 percent threshold) projected unemployment risk, respectively (CEQ 2024).

A review of EJScreen reports identified six block groups within the ROI: 240037406011, 240037406012, 240037406021, 240037406022, 2400374006023, and 240037406032 (USEPA 2024g). Nearly all of these had higher reported values for reduced air quality (particulate matter, toxic air releases, ozone, diesel particulate matter, and air toxic respiratory risk) than were reported for the county or nation. Block groups 240037406011, 240037406012, and 240037406021 had indices for wastewater discharge that were higher than the national percentiles. Block groups 240037406022 and 240037406032 had higher reported values for traffic proximity, LBP, Superfund proximity, and hazardous waste proximity as compared to the average national percentile. Block groups 240037406023 had higher reported values for USTs and insufficient access to healthy food (USEPA 2024g).

Child and elderly populations within the census tracts are associated with residential communities located outside of Fort Meade. Child populations in the census tracts surrounding Fort Meade were approximately 26.8 to 43.6 percent of the total populations of those tracts and higher than that of Anne Arundel County's and Maryland's child populations, which were 24.7 percent and 25.0 percent, respectively (USCB 2024a). Elderly populations in the census tracts ranged from 0.0 to 9.2 percent and were less than the county (14.1 percent) and state (14.6 percent) reference populations.

3.12.3 Environmental Consequences

3.12.3.1 EVALUATION CRITERIA

Impacts would be considered significant if they disproportionately affect environmental justice populations or sensitive receptors compared to the general population. Significant impacts on environmental justice populations and sensitive receptors could include a substantial increase in noise levels and air emissions during construction, renovation, and demolition. Disproportionate impacts on vulnerable and overburdened communities are considered significant under NEPA if they would disrupt public services (such as emergency and protective services, schools, hospitals, and childcare centers) that are geared to support these overburdened and vulnerable communities; reduce environmental quality to affect reduced health or safety; result in a deficit of resources (utilities, drinking water, waste management infrastructure, biological resources

used for subsistence) upon which these communities rely; or cause changes in income, availability of housing, or availability of jobs that would further reduce existing socioeconomic conditions.

3.12.3.2 ALTERNATIVE 1

Short-term, negligible, beneficial impacts would be expected under Alternative 1 from the economic stimulation associated with the construction of the proposed MOF and WCPS. The use of locally sourced materials and construction jobs would increase the flow of commerce in the regional economy surrounding Fort Meade. Long-term beneficial impacts on socioeconomics would be expected from impacts associated with the additional 800 employees that would be commuting onto Fort Meade and in the surrounding area. There is also potential for the employee families to relocate to the area, adding to the economic benefits anticipated.

Short- and long-term, minor, disproportionate, and adverse impacts on minority communities with environmental justice concerns would potentially occur from the increased construction- and commuter-related traffic, noise, and air emissions associated with Alternative 1. Though it is likely that there would be traffic noise and emissions from the additional construction and commuter populations accessing the installation, the short-term construction and long-term mission activities would not be located near facilities or areas that particularly serve children or the elderly to result in appreciable impacts on these populations. Minorities and children living in the residential community located immediately north of Site 1 (east of Site 2) would potentially experience the highest construction-related noise and air emissions resulting from Alternative 1. Construction BMPs would be implemented wherever and whenever possible to minimize noise and air emissions from construction vehicles and equipment. These include use of vehicle and equipment mufflers, working within daylight hours to minimize noise impacts on nearby residential areas, and using alternative routes for local traffic. NSA would continue to use BMPs wherever possible to minimize impacts to the surrounding community to the greatest extent possible. To inform and include local populations, including environmental justice populations, in the EA and decision-making process for this project, NSA is conducting public outreach as described in **Section 1.4**.

3.12.3.3 ALTERNATIVE 2

Impacts on socioeconomic resources, communities with environmental justice concerns, children, and the elderly under Alternative 2 would be similar to, but less than, those described for Alternative 1, because the Alternative 2 parking needs would be met via ECPS3 and ECPS4, which are currently proposed for construction under a separate project. Therefore, additional development activity that would generate air and noise emissions would not be required.

3.12.3.4 ALTERNATIVE 3

Impacts on socioeconomic resources, communities with environmental justice concerns, children, and the elderly under Alternative 3 would be similar to, but less than, those described for Alternative 2. Site 3 is located more than 0.5 mile away from the nearest residential area, and therefore, appreciable noise or construction- and mission-related air emissions that would affect communities with environmental justice concerns, children, or elderly populations are not anticipated. Construction- and commuter-related traffic increases, noise, and air emissions may

impact individuals and residences near the main roads and access gates where the additional vehicles would be operated.

3.12.3.5 ALTERNATIVE 4

Impacts on socioeconomic and environmental justice resources under Alternative 4 would be similar to those discussed for Alternative 2 because development of the MOF would be proximal to residential populations, and parking needs would be met through combined access to existing spaces, construction of a new parking facility associated with this project near ECPS3, and via access to other parking structures that are being developed for a separate project. Depending on the location of a proposed parking facility near ECPS3, construction noise may be audible to individual homes in the residential community directly north of Sites 4 and 5.

3.12.3.6 NO ACTION ALTERNATIVE

Under the No Action Alternative, CNMF would not construct the MOF building and associated parking and infrastructure at Fort Meade, and the existing conditions discussed in **Section 3.12.2** would remain unchanged. Therefore, no impact on environmental justice would be expected.

3.12.3.7 CUMULATIVE IMPACTS

Short-term, negligible to moderate, adverse and beneficial impacts would be expected to occur on socioeconomic and environmental justice resources under the Proposed Action in combination with the listed foreseeable future actions listed in **Section 2.5**. Short-term, beneficial impacts are expected to occur on the socioeconomics of the areas from the additional personnel growth and economic stimulation anticipated from the proposed PAF and CNMF MOSF. Short-term, adverse, cumulative impacts also would be expected from noise and air emissions from construction projects and traffic congestion from the proposed roadway improvement projects both on Fort Meade and in the surrounding area. Cumulative impacts from the Proposed Action and reasonably foreseeable actions would potentially disproportionately affect environmental justice communities of concern near construction sites.

3.13 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, a permanent loss of agricultural productivity would occur. Implementation of the proposed projects would involve the irreversible and irretrievable commitment of biological resources, materials, energy, labor, and landfill space. The impacts on these resources would be permanent.

Biological Resources. The implementation of the Proposed Action would create a permanent loss of habitat that would become impervious surface and would not be vegetated, representing irreversible or irretrievable resources.

Materials. Material resources, including hazardous materials used for the Proposed Action, would potentially include asphalt, steel, and various construction materials and supplies. The materials that would be consumed are not in short supply, would not limit other unrelated construction activities, and would not be considered significant. Additionally, their purchase would benefit local construction material sellers.

Energy. Energy resources, including petroleum-based products (e.g., gasoline, diesel), used for the Proposed Action would be irretrievably lost. During construction, gasoline and diesel fuel would be used for the operation of vehicles and construction equipment. Consumption of these energy resources would not place a significant demand on their availability within the region.

Labor. Individuals hired by construction companies to support the Proposed Action would be part of a temporary and irretrievable loss of labor resources because the new construction workers would temporarily be unable to support other projects or activities within the area. This would be considered beneficial overall for the Anne Arundel County economy.

Landfill Space. Generation of solid waste from construction, renovation, and demolition under the Proposed Action would reduce overall landfill space in the local area.

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Interagency Coordination and Public Involvement

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Appendix A: Interagency Coordination and Public Involvement

Stakeholder Distribution List

The following agencies and individuals were sent agency coordination letters as part of the EA process:

Federal, State, and Local Agencies

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Lewistown, NY 14092

Sample Scoping Letter

NATIONAL SECURITY AGENCY
CENTRAL SECURITY SERVICE
Fort George G. Meade, Maryland 20755

Fort Meade DPW-Environmental Division
4216 Roberts Avenue
Fort Meade, MD 20755

RE: Environmental Assessment (EA) for the National Security Agency (NSA) Cyber National Mission Force (CNMF) at Fort George G. Meade, Maryland

In accordance with the National Environmental Policy Act (NEPA), the NSA is announcing its intent to prepare an EA as part of the environmental planning process for the CNMF complex at Fort George G. Meade, Maryland.

NSA proposes to construct a new 750,000-square foot CNMF mission operations facility (MOF), 700,000-square foot mission operations support facility (MOSF), and associated infrastructure to consolidate CNMF personnel and operations on the NSA campus and optimize NSA, U.S. Cyber Command (USCYBERCOM), and CNMF mission and collaboration. The current dispersal of operations across the NSA campus leads to inefficiencies in critical national security operations. The MOF would accommodate 2,500 personnel, including 1,700 currently onsite and 800 coming from off-site facilities and future growth. The MOSF would accommodate 2,500 personnel, including 1,250 currently onsite and 1,250 coming from offsite and future growth.

Multiple site combination options are being considered for the CNMF complex. Figure 1 shows all the proposed alternatives for sites for the CNMF complex. Alternative 1 includes locating the MOF at Building 9899 (Site 1) and associated parking at the West Campus Parking 2 (Site 2), and the MOSF and associated parking at the Mapes Tract (Site 3). Alternative 2 includes the MOF at Building 9899 (Site 1) and associated parking at East Campus Parking Structures (ECPSs) 3 and 4 currently under or separately proposed for construction, and the MOSF at 9800 Area North and South (Sites 4 and 5) and associated parking next to ECPS3. Alternative 3 includes the MOF at Building 9899 (Site 1) and associated parking at ECPSs 3 and 4, and the MOSF and associated parking at 9800 Area North and South (Sites 4 and 5).

NSA anticipates that the proposed CNMF complex would result in generally minor adverse impacts during construction but provide long-term beneficial impacts on land use. The height of the proposed West Campus Parking Structure 2 would be up to 10 stories and not be greater than that of the existing structures in the area and, therefore, would not be anticipated to create new viewshed impacts to the historic Baltimore-Washington Parkway. Detailed analysis of the project impacts will be provided in the Draft EA, which is anticipated to be available for public review in mid-2024.

The purpose of this correspondence is to solicit your scoping 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, within 30 days of receipt of this letter to CNMF EA, c/o HDR, 2650 Park Tower Drive, Suite 400, Vienna, VA 22180 or via email at jdwill2@nsa.gov.

Your input and comment are greatly appreciated. If you have any questions, please contact me at (301) 688-2970. Thank you for your interest.

Sincerely,

Jeffrey D. Williams

Jeffrey D. Williams, LEED-AP
Sr. Environmental Engineer
NSA Sustainability and Environmental Compliance

Figure 1. Project Area Map

State Historic Preservation Office Section 106 Letter

NATIONAL SECURITY AGENCY
CENTRAL SECURITY SERVICE
Fort George G. Meade, Maryland 20755

February 2, 2024

Elizabeth Hughes, Director
State Historic Preservation Officer
Maryland Historical Trust
100 Community Place
Crownsville, MD 21032

RE: Environmental Assessment (EA) for the National Security Agency (NSA)
Cyber National Mission Force (CNMF) at Fort George G. Meade, Maryland

Dear Ms. Hughes,

In accordance with the National Environmental Policy Act (NEPA), the NSA is announcing its intent to prepare an EA as part of the environmental planning process for the CNMF complex at Fort George G. Meade, Maryland.

NSA proposes to construct a new CNMF mission operations facility (MOF), mission operations support facility (MOSF), and associated infrastructure to consolidate CNMF personnel and operations on the NSA campus and optimize NSA, U.S. Cyber Command (USCYBERCOM), and CNMF mission and collaboration. The current dispersal of operations across the NSA campus leads to inefficiencies in critical national security operations. The MOF would accommodate 2,500 personnel, including 1,700 currently onsite and 800 coming from off-site facilities and future growth. The MOSF would accommodate 2,500 personnel, including 1,250 currently onsite and 1,250 coming from offsite and future growth.

Multiple site combination options are being considered for the CNMF complex. Figure 1 shows all the proposed alternatives for sites for the CNMF complex. Alternative 1 includes locating the MOF at Building 9899 (Site 1) and associated parking at the West Campus Parking 2 (Site 2), and the MOSF and associated parking at the Mapes Tract (Site 3). Alternative 2 includes the MOF at Building 9899 (Site 1) and associated parking at East Campus Parking Structures (ECPSs) 3 and 4 currently under or separately proposed for construction, and the MOSF at 9800 Area North and South (Sites 4 and 5) and associated parking next to ECPS3. Alternative 3 includes the MOF at Building 9899 (Site 1) and associated parking at ECPSs 3 and 4, and the MOSF and associated parking at 9800 Area North and South (Sites 4 and 5).

NSA anticipates that the proposed CNMF complex would result in generally minor adverse impacts during construction but provide long-term beneficial impacts on land use. The buildings in the 9800 Troop Support area (Sites 4 and 5 in Figure 1) have been determined not eligible for the NRHP as evaluated by the Maryland Historic Trust during development of the 2017 *East Campus Integration Program Environmental Impact Statement* or would not reach 50 years before project construction. There are no buildings on Sites 2 or 3. Building 9899 would not reach 50 years before project construction. Buildings 9800 and 9800-A, southwest of the proposed West Campus Parking Structure 2, were determined eligible for the NRHP as evaluated by the Maryland Historic Trust, but they would not be affected by the Proposed Action. The height of the proposed West Campus Parking Structure 2 would be up to 10 stories and not be greater than that of the existing structures in the area and, therefore, would not be anticipated to create new viewshed impacts to the historic Baltimore-Washington Parkway. Detailed analysis of the project impacts will be provided in the Draft EA, which is anticipated to be available for public review in mid-2024.

The purpose of this correspondence is to solicit your scoping 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, within 30 days of receipt of this letter to CNMF EA, c/o HDR, 2650 Park Tower Drive, Suite 400, Vienna, VA 22180 or via email at jdwill2@nsa.gov.

Sincerely,

Jeffrey D. Williams

Jeffrey D. Williams, LEED-AP
Sr. Environmental Engineer
NSA Sustainability and Environmental Compliance

cc: Beth Cole, Administrator of Review and Compliance, MHT

Figure 1. Project Area Map

Sample Tribal Scoping Letter

NATIONAL SECURITY AGENCY
CENTRAL SECURITY SERVICE
Fort George G. Meade, Maryland 20755

Keith Colston, Administrative Director
Maryland Commission on Indian Affairs
100 Community Place
Crownsville, MD 21032

RE: Environmental Assessment (EA) for the National Security Agency (NSA)
Cyber National Mission Force (CNMF) at Fort George G. Meade, Maryland

In accordance with the National Environmental Policy Act (NEPA), the NSA is announcing its intent to prepare an EA as part of the environmental planning process for the CNMF complex at Fort George G. Meade, Maryland.

NSA proposes to construct a new CNMF mission operations facility, mission operations support facility, and associated infrastructure to consolidate CNMF personnel and operations on the NSA campus and optimize NSA, U.S. Cyber Command (USCYBERCOM), and CNMF mission and collaboration. The current dispersal of operations across the NSA campus leads to inefficiencies in critical national security operations. The MOF would accommodate 2,500 personnel, including 1,700 currently onsite and 800 coming from off-site facilities and future growth. The MOSF would accommodate 2,500 personnel, including 1,250 currently onsite and 1,250 coming from offsite and future growth.

Multiple site combination options are being considered for the CNMF complex. Figure 1 shows all the proposed alternatives for sites for the CNMF complex. Alternative 1 includes locating the MOF at Building 9899 (Site 1) and associated parking at the West Campus Parking 2 (Site 2), and the MOSF and associated parking at the Mapes Tract (Site 3). Alternative 2 includes the MOF at Building 9899 (Site 1) and associated parking at East Campus Parking Structures (ECPSs) 3 and 4 currently under or separately proposed for construction, and the MOSF at 9800 Area North and South (Sites 4 and 5) and associated parking next to ECPS3. Alternative 3 includes the MOF at Building 9899 (Site 1) and associated parking at ECPSs 3 and 4, and the MOSF and associated parking at 9800 Area North and South (Sites 4 and 5).

NSA anticipates that the proposed CNMF complex would result in generally minor adverse impacts during construction but provide long-term beneficial impacts on land use. The height of the proposed West Campus Parking Structure 2 would be up to 10 stories and not be greater than that of the existing structures in the area and, therefore, would not be anticipated to create new viewshed impacts to the historic Baltimore-Washington Parkway. Detailed analysis of the project impacts will be provided in the Draft EA, which is anticipated to be available for public review in mid-2024.

The purpose of this correspondence is to solicit your scoping comments regarding environmental aspects of the proposed project. To assist us in complying with NEPA, Executive Order 12372, *Intergovernmental Review of Federal Programs,* (as amended by EO 12416), and Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*, 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 within 30 days of receipt of this letter to CNMF EA, c/o HDR, 2650 Park Tower Drive, Suite 400, Vienna, VA 22180 or via email at jdwill2@nsa.gov.

Your input and comment are greatly appreciated. If you have any questions, please contact me at (301) 688-2970. Thank you for your interest.

Sincerely,

Jeffrey D. Williams

Jeffrey D. Williams, LEED-AP
Sr. Environmental Engineer
NSA Sustainability and Environmental Compliance

Figure 1. Project Area Map

Agency Scoping Responses

Monacan Indian Nation

From: Williams, Jeffrey
To: Solomon, Patrick D; Humphreys, Abbey; "mbdough@uwe.nsa.gov"
Cc: "Marson, Rebecca J CIV USARMY ID-SUSTAINMENT (USA)"; Glodek, Jerald W CIV USARMY USAG (USA)
Subject: FW: Environmental Assessment for the NSA CNMF at Fort George G. Meade, MD
Date: Monday, February 26, 2024 6:49:37 AM
Attachments: image001.png

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good morning
FYI and future consideration

Thanks
Jeff

Jeffrey Williams, LEED-AP
Sr. Environmental Engineer
National Security Agency
9800 Savage Road Suite 6218
Fort Meade, MD 20755
301-688-2970

From: John Pierce <john@monacannation.gov>
Sent: Friday, February 23, 2024 1:55 PM
To: Williams, Jeffrey <jdwill2@nsa.gov>
Subject: [Non-DoD Source] Environmental Assessment for the NSA CNMF at Fort George G. Meade, MD

Good Afternoon,

Thank you for contacting us about the proposed project. The Monacan Indian Nation is a federally recognized sovereign tribe, headquartered on Bear Mountain in Amherst County. Citizens of the Nation are descended from Virginia and North Carolina Eastern Siouan cultural and linguistic groups, and our ancestral territory includes Virginia west of the fall line of the rivers, sections of southeastern West Virginia, and portions of northern North Carolina. At this time, the active Monacan consultation areas include:

Virginia: Albemarle, Alleghany, Amherst, Appomattox, Augusta, Bath, Bedford, Bland, Buchanan, Buckingham, Campbell, Carroll, Charlotte, Clarke, Craig, Culpepper, Cumberland, Dickenson, Floyd, Fluvanna, Franklin, Frederick, Giles, Goochland, Grayson, Greene, Halifax, Henry, Highland, Lee, Loudoun, Louisa, Madison, Mecklenburg, Montgomery, Nelson, Orange, Page, Patrick, Pittsylvania, Powhatan, Prince Edward, Pulaski, Rappahannock, Roanoke, Rockbridge, Rockingham, Russell, Scott, Shenandoah, Smyth, Tazewell, Warren, Washington, Wise, and Wythe Counties,

and all contiguous cities.

West Virginia: Greenbrier, Mercer, Monroe, Pendleton, Pocahontas, and Summers Counties.

North Carolina: Alamance, Caswell, Granville, Orange, Person, Rockingham, Vance, and Warren Counties.

At this time, the Nation does not wish to actively participate in this consultation project, because:

X	This project is outside our ancestral territory
	The project's impacts are anticipated to be minimal
	The project is more closely related to _____, which should be contacted to participate in consultation
	The tribal office does not currently have the capacity to participate in this project
	Other:

However, the Nation requests to be contacted if:

- Sites associated with native history may be impacted by this project;
- Adverse effects associated with this project are identified;
- Human remains are encountered during this project;
- Unanticipated native cultural remains are encountered during this project;
- Other tribes consulting on this project cease consultation; or
- The project size or scope becomes larger or more potentially destructive than currently described.

Please do not make any assumptions about future consultation interests based on this decision, as priorities and information may change. We request that you send any future consultation communications in electronic form to Consultation@MonacanNation.com. We appreciate your outreach to the Monacan Indian Nation and look forward to working with you in the future.

Many Thanks,

John Pierce

Environmental Programs Manager

Monacan Indian Nation

111 Highview Dr

Madison Heights, VA 24572

O: (434) 300-5052 xt 1002

C: (434) 849-1049

Maryland Historical Trust

From:	Williams, Jeffrey
To:	Solomon, Patrick D; Humphreys, Abbey; Gene Galloglv; Wetmore, Marisa L CIV USARMY CENAB (USA); "rebecca.j.marson.civ@army.mil"; "mbdough@uwe.nsa.gov"
Subject:	FW: [Non-DoD Source] MHT e106 project review – MHT Completed Comments
Date:	Monday, March 4, 2024 6:49:11 AM

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

FYSA

Jeffrey Williams, LEED-AP
Sr. Environmental Engineer
National Security Agency
9800 Savage Road Suite 6218
Fort Meade, MD 20755
301-688-2970

From: Maryland Historical Trust <donotreply@maryland.gov>
Sent: Friday, March 1, 2024 2:44 PM
To: Williams, Jeffrey <jdwill2@nsa.gov>
Subject: [Non-DoD Source] MHT e106 project review – MHT Completed Comments

Date:	March 01, 2024
To:	Jeffrey Williams NSA
Project Name:	NSA Cyber National Mission Force (CNMF) at Fort George G. Meade
County:	Anne Arundel County
Agency:	National Security Agency
Second Agency:	-- Not noted --
MHT Log #:	202400859

MHT Response: Thank you for providing the Maryland Historical Trust the opportunity to comment on the above-referenced undertaking using the MHT e106 system. The Maryland Historical Trust has reviewed the submitted project for its effects on historic and archeological resources, pursuant to Section 106 of the National Historic Preservation Act of 1966 and/or the Maryland Historical Trust Act of 1985. We offer the following comments and/or concurrence with the agency's findings:

The undertaking will have no adverse effect on historic properties. Additional consultation with our office may be required if there are any significant changes in project scope or location.

Thank you for your cooperation in this review process. Since the MHT response is now complete, this response will appear in the Completed section of your project dashboard. No hard copy of this response or attachments will be sent. If you have questions, please contact the following MHT project reviewers:

Becky Roman becky.roman@maryland.gov

Dixie Henry dixie.henry@maryland.gov

Maryland Historical Trust
Project Review and Compliance
100 Community Place
Crownsville, MD 21032
mht.section106@maryland.gov

MHT.Maryland.gov
Planning.Maryland.gov

Maryland Department of Planning State Clearinghouse

March 15, 2024

Mr. Jeffrey Williams, Sr. Environmental Engineer, Office of Occupational Health, Environmental and Safety Services
National Security Agency Central Security Service
9800 Savage Road, Suite 6218
Fort Meade, MD 20755-6218

STATE CLEARINGHOUSE RECOMMENDATION

State Application Identifier: **MD20240213-0116**
Applicant: National Security Agency Central Security Service
Project Description: Notice of Intent to Prepare Environmental Assessment: Proposed Action Includes Construction of a New 750,000 Square-Foot Cyber National Mission Force (CNMF) Mission Operations Facility, 700,000 Square-Foot Mission Operations Support Facility, and Associated Infrastructure to Consolidate CNMF Personnel & Operations and to Optimize Mission and Collaboration
Project Address: O'Brien Road & Rockenbach Road (Site 1); Canine Road & Dennis Road (Site 2), Taylor Avenue & Mapes Road (Site 3), Canine Road, Cochrane Road, Emory Rd (Sites 4 & 5), Fort Meade, MD 20755
Project Location: Anne Arundel County
Recommendation: **Consistent with Qualifying Comments**

Dear Mr. Williams:

In accordance with Presidential Executive Order 12372 and Code of Maryland Regulation 34.02.02.04-.07, the State Clearinghouse has coordinated the intergovernmental review of the referenced project. This letter constitutes the State process review and recommendation. This recommendation is valid for a period of three years from the date of this letter.

Review comments were requested from the Maryland Departments of General Services, Natural Resources, Transportation, and the Environment; Maryland Military Department; Anne Arundel County; and the Maryland Department of Planning, including the Maryland Historical Trust. The Maryland Departments of General Services, and Natural Resources; and Maryland Military Department did not have comments.

Anne Arundel County; and the Maryland Department of Planning, including the Maryland Historical Trust found this project to be consistent with their plans, programs, and objectives.

The Maryland Department of Planning provided the following comments:

> "The proposed construction project supports Fort Meade's mission and Vision 8: Economic Development of the state's 12 Planning Visions. The military ecosystem supports $61.4B (FY21) of economic impact across the state and promotes employment opportunities for all income levels as called for within the Planning Visions. The proposed project takes place on federal property and has no impact on surrounding land use."

301 West Preston Street - Suite 1101 - Baltimore - Maryland - 21201
Tel: 410.767.4500 - Toll Free: 1.877.767.6272 - TTY users: Maryland Relay - Planning.Maryland.gov

The Maryland Historical Trust has determined that the project will have "no adverse effect" on historic properties and that the federal and/or State historic preservation requirements have been met.

Anne Arundel County provided the following comments:

> "DPW [Department of Public Works] - DPW would be concerned with this project if they use groundwater as a cooling source for any data centers. We have had several data centers come through the development process surrounding Fort Meade that have initially intended to use public drinking water as the cooling source for the equipment. In discussions with these data centers, we have moved them to install mechanical cooling (i.e. air conditioning) rather than use drinking water. Fort Meade also uses 'recycled' (reuse wastewater) from Howard County for some of their needs. It looks like the new facilities will house personnel rather than data centers, however we would like it noted that we encourage them to not use drinking water for cooling requirements."

The Maryland Department of Transportation found this project to be generally consistent with their plans, programs, and objectives, but included certain qualifying comments summarized below.

> "Any heavy load access to the proposed development will require Hauling Permits. Please coordinate potential permitting with SHA [State Highway Administration] Office of Traffic and Safety Motor Carrier Division (OOTS MCD) Chief, Mr. Duane Pearce, at 410-582-5719 or email at dpearce@mdot.maryland.gov, or OOTS MCD Hauling Permits Manager, Ms. Josette Kaintuck, at 410-582-5723 or via email at Jkaintuck@mdot.maryland.gov."

The Maryland Department of the Environment (MDE) found this project to be generally consistent with their plans, programs, and objectives, but included certain qualifying comments summarized below.

1. "If the applicant suspects that asbestos is present in any portion of the structure that will be renovated/demolished, then the applicant should contact the Community Environmental Services Program, Air and Radiation Management Administration at (410) 537-3215 to learn about the State's requirements for asbestos handling.
2. Construction, renovation and/or demolition of buildings and roadways must be performed in conformance with State regulations pertaining to 'Particulate Matter from Materials Handling and Construction' (COMAR 26.11.06.03D), requiring that during any construction and/or demolition work, reasonable precaution must be taken to prevent particulate matter, such as fugitive dust, from becoming airborne.
3. During the duration of the project, soil excavation/grading/site work will be performed; there is a potential for encountering soil contamination. If soil contamination is present, a permit for soil remediation is required from MDE's Air and Radiation Management Administration. Please contact the New Source Permits Division, Air and Radiation Management Administration at (410) 537-3230 to learn about the State's requirements for these permits.
4. Emissions from mobile sources are one of the primary contributors to both climate change and local air pollution, vehicles powered by electricity are one way to reduce the impacts of these emissions. A variety of funding initiatives are becoming available to allow for the faster adoption of electric vehicles, any funding opportunity that can help with this should be examined, especially for electric vehicle charging or refueling infrastructure.
5. Any above ground or underground petroleum storage tanks, which may be utilized, must be installed and maintained in accordance with applicable State and federal laws and regulations. Underground storage tanks must be registered and the installation must be conducted and performed by a contractor certified to install underground

storage tanks by the Land and Materials Administration in accordance with COMAR 26.10. Contact the Oil Control Program at (410) 537-3442 for additional information.

6. If the proposed project involves demolition – Any above ground or underground petroleum storage tanks that may be on site must have contents and tanks along with any contamination removed. Please contact the Oil Control Program at (410) 537-3442 for additional information.
7. 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) 537-3315 for additional information regarding solid waste activities and contact the Resource Management Program at (410) 537-3314 for additional information regarding recycling activities.
8. The Solid Waste Program should be contacted directly at (410) 537-3315 by those facilities which generate or propose to generate or handle hazardous wastes to ensure these activities are being conducted in compliance with applicable State and federal laws and regulations. The Program should also be contacted 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.
9. The proposed project may involve rehabilitation, redevelopment, revitalization, or property acquisition of commercial, industrial property. Accordingly, MDE's Brownfields Site Assessment and Voluntary Cleanup Programs (VCP) may provide valuable assistance to you in this project. These programs involve environmental site assessment in accordance with accepted industry and financial institution standards for property transfer. For specific information about these programs and eligibility, please call the Land Restoration Program at (410) 537-3437.
10. Borrow areas used to provide clean earth back fill material may require a surface mine permit. Disposal of excess cut material at a surface mine may require site approval. Contact the Mining Program at (410) 537-3557 for further details."

The State Application Identifier Number must be placed on any correspondence pertaining to this project.

Please remember, you must comply with all applicable state and local laws and regulations. If you need assistance or have questions, contact the State Clearinghouse staff person noted above at 410-767-4490 or through e-mail at sylvia.mosser@maryland.gov.

Thank you for your cooperation with the MIRC process.

Sincerely,

Jason Dubow, Manager
Resource Conservation and Management

JD:SM
cc:

Tanja Rucci - DGS	Karl Munder - MDE	Taylor Bensley - MILT	Susan Llareus - MDPLS
Tyson Byrne - MDOT	Tony Redman - DNR	Stephen Walker - ANAR	Beth Cole - MHT

24-0116_CRR.CLS.docx

Maryland Department of Natural Resources

March 4, 2024

Mr. Jeffrey D. Williams
National Security Agency
Central Security Service
Cherry Hill, MD 20755

RE: Environmental Review for EA for NSA Cyber National Mission Force (CNMF) at Fort George G. Meade, Anne Arundel County, Maryland

Dear Mr. Williams:

The Wildlife and Heritage Service has no official records for State or Federal listed, candidate, proposed, or rare plant or animal species within the project area shown on the map provided. As a result, we have no specific concerns regarding potential impacts to such species or recommendations for protection measures at this time. If the project changes in the future such that the limits of proposed disturbance or overall site boundaries are modified, please provide us with revised project maps and we will provide you with an updated evaluation.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at lori.byrne@maryland.gov or at (410) 260-8573.

Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2024.0271.aa

Tawes State Office Building – 580 Taylor Avenue – Annapolis, Maryland 21401
410-260-8DNR or toll free in Maryland 877-620-8DNR – *dnr.maryland.gov* – TTY Users Call via the Maryland Relay

Endangered Species Act Section 7 Consultation

NATIONAL SECURITY AGENCY
CENTRAL SECURITY SERVICE
Fort George G. Meade, Maryland 20755

September 18, 2024

Ms. Genevieve LaRouche
Chesapeake Bay Field Office
U.S. Fish & Wildlife Service
177 Admiral Cochrane Drive
Annapolis, MD 21401

RE: Environmental Assessment (EA) Addressing the Cyber National Mission Force (CNMF) Facility, Fort Meade, Maryland, Endangered Species Act Section 7 Informal Consultation Initiation

Dear Ms. LaRouche,

The Department of Defense (DoD) has prepared a Draft EA addressing the CNMF Facility at Fort Meade, Maryland. The DoD proposes to construct a new 750,000-square foot CNMF mission operations facility and associated infrastructure to consolidate CNMF personnel and operations on the National Security Agency (NSA) campus and optimize NSA, United States Cyber Command, and CNMF mission and collaboration. The Draft EA and Draft Finding of No Significant Impact are available for review at https://www.nab.usace.army.mil/cyber-national-mission-force-facility/.

Northern long-eared bat (*Myotis septentrionalis*; endangered), Indiana bat (*Myotis sodalis*; endangered), tri-colored bat (*Perimyotis subflavus;* proposed for listing as endangered on September 13, 2022), and the monarch butterfly (*Danaus plexippus;* candidate for listing as of the date of this letter) could occur within the proposed project area. In accordance with Section 7(a)(2) of the Endangered Species Act, as amended (50 CFR 402.14(a)), NSA seeks to consult with the USFWS regarding the Proposed Action and requests your concurrence on the following effects determination. The DoD proposes that the CNMF facility project may affect, but is not likely to adversely affect federally listed species with implementation of existing conservation measures.

Should you have any questions or comments, please contact me by telephone at 301-688-2970, or email at jdwill2@nsa.gov.

Sincerely,

Jeffrey D. Williams

Jeffrey D. Williams, LEED-AP
Sr. Environmental Engineer
NSA Sustainability and Environmental Compliance

Attachments:
1. Project Description/Environmental Baseline/Effects Analysis
2. IPaC Report

Attachment 1. Project Description/Environmental Baseline/Effects Analysis

1. Project Description

The Department of Defense (DoD) proposes to construct a new 750,000-square foot Cyber National Mission Force (CNMF) mission operations facility (MOF) and associated infrastructure to consolidate CNMF personnel and operations on the National Security Agency (NSA) campus and optimize NSA, United States Cyber Command, and CNMF mission and collaboration. The footprint of the proposed MOF would be approximately 115,000 square feet with the total square footage distributed between six levels and a basement. The height of the MOF would be approximately 122 feet above grade, excluding mechanical rooms and utilities located on the roof level. Features within the MOF would include administrative, conference, and meeting spaces; operations and operations support areas; support services (e.g., cafeteria fitness center); and loading dock/platform.

The MOF would accommodate 2,500 personnel, including 1,700 currently on site and 800 coming from off-site facilities and future growth. The majority of privately owned and government-owned vehicle traffic is expected to enter the NSA campus via Vehicle Control Points 1, 2, and 6, depending on the alternative, which have sufficient capacity to accommodate the future growth (USACE 2022, 2023a). In addition to the construction of the MOF, a parking structure would be constructed to accommodate 90 percent of the personnel located in the proposed MOF, or 2,250 parking spaces, in addition to the number of parking spaces displaced by construction of the parking structure, which would vary by alternative.

Construction of the proposed CNMF facility would include Architectural Barriers Act/Americans with Disabilities Act accessible walkways and courtyard areas; landscaping; inspection canopies; vehicle parking; diesel life safety generator; access roads; electric-vehicle support equipment infrastructure; utilities and related infrastructure; and installation of Environmental Site Design stormwater management techniques as required for all roadways, facilities, and utilities (USACE 2022, 2023a).

Site preparation for the proposed facility would include demolition of any relevant existing structures and infrastructure in the area, such as buildings and parking, clearing and grubbing, cut/fill and grading, and erosion and sediment control measures (USACE 2022). Construction would be expected to start in fiscal year 27 and occur for approximately 2 years. Facility operations would be expected to start within 2 years of construction completion.

Four alternatives involving use of four sites have been identified and carried forward for the potential location of the MOF and associated parking, as shown in **Figure 1**. Site 1, containing existing Building 9899, which is currently the construction office for the East Campus development on the NSA campus, is located southwest of the intersection of Rockenbach and O'Brien Roads, and is on a parcel of approximately 8 acres. Site 2, which is approximately 13 acres, is east of Site 1 in the northeastern corner of the parking area near the main entrance to the NSA campus. Site 3, the Mapes Tract, is located on Fort Meade outside of and adjacent to the NSA campus northwest of the intersection of Mapes Road and Taylor Avenue and is approximately 24 acres. Sites 4 and 5, the northern and southern portions of the 9800 Troop Support Area, are approximately 14 and 15 acres, respectively.

Figure 1. CNMF Facility Site Options

Alternative 1. Alternative 1 includes locating the MOF at the site of Building 9899 (Site 1), with associated parking at the proposed West Campus Parking Structure (WCPS; Site 2). Building 9899 and the East Campus development laydown area would be demolished and removed, and United States Army Corps of Engineers personnel currently located in Building 9899 would be relocated to trailer office space elsewhere on the Fort Meade campus.

The proposed MOF would be located largely in the center of the Site 1 parcel, which is adjacent to the East Campus development. The MOF would front a future eastern extension of Sigaba Way being constructed under a separate project and a future greenspace. Service access, potable water tank, and reclaimed water tanks would be installed on the north side of the building off Venona Road. Bioretention infrastructure would be constructed on the south and west edges. New alignments for Venona Road and Sigaba Way are planned as part of construction of East Campus Buildings (ECBs) 3 and 5, and would provide access to the proposed MOF within the NSA fence line upon completion (USACE 2022, 2023a).

The proposed WCPS would be constructed in the northeastern corner of Site 2. WCPS would have a capacity of 3,125 vehicles, which would accommodate 90 percent of the MOF's occupancy and the additional 875 displaced parking spaces from construction of the parking structure. The height of the WCPS would be up to 10 stories and not be greater than that of the existing structures in the area. Demolition on site would consist of existing pavement, curbs and gutters, and existing utilities. The proposed structure footprint, and construction parking, offices, and laydown would temporarily displace the existing 1,800 parking spaces on Site 2 (USACE 2023b).

Alternative 2. Alternative 2 includes locating the MOF at Building 9899 (Site 1), as discussed under Alternative 1, with associated parking at East Campus Parking Structures (ECPSs) 3 and 4, which are currently under or separately proposed for construction and were addressed in previous NEPA documentation (NSA 2010, 2017).

ECPS3 is currently under construction, and ECPS4 is planned for construction in the future as part of the East Campus development. ECPS3 is planned to accommodate approximately 3,200 spaces with a potential expansion capacity of approximately 750 parking spaces. The expansion would be constructed on the east side of the planned structure. ECPS4 is planned to accommodate approximately 2,100 parking spaces in support of ECB5 with a potential expansion capacity of approximately 1,700 parking spaces. The expansion would be constructed on the south side of the planned structure. With the potential expansion capacities, ECPS3 and ECPS4 would be able to accommodate 90 percent of the MOF's occupancy (USACE 2023a).

Alternative 3. Alternative 3 would include locating the MOF and associated parking on the Mapes Tract (Site 3) on Fort Meade outside of and adjacent to the NSA campus. The Mapes Tract is currently partially forested with some remnant utilities infrastructure and asphalt walkways from previous development that would be relocated or removed during construction as required. A new parking structure would be built adjacent to the MOF, similar in size to the WCPS, that would accommodate 90 percent of the MOF's occupancy and the existing parking displaced by the structure.

Alternative 4. Alternative 4 includes locating the MOF at 9800 Area North or South (Site 4 or 5, respectively) and associated parking near ECPS3. This alternative could include the demolition of Building 9801, 9802, 9803, or 9804, or the Eagle Fitness Center and the Four Hats Dining Facility, along with associated ancillary support buildings and other buildings to create space for CNMF facility infrastructure

and landscaping, depending on the selected location within the sites for the MOF itself. A parking structure would be constructed in an undeveloped area of land adjacent to ECPS3 to accommodate 90 percent of the MOF personnel.

2. Action Area

The action area is defined as the CNMF project site options and is presented in **Figure 1**.

Vegetative cover at Fort Meade consists of forested areas, open space, meadows, wetlands, maintained turf, roadside vegetation, and landscaped areas. The proposed sites cover approximately 74 acres of the 5,500-acre Fort Meade property. In 2024, a forest stand delineation (FSD) was conducted to assess trees greater than 30 inches diameter at breast height (25 inches for Virginia pine [*Pinus virginiana*], 28 inches for loblolly pine [*Pinus taeda*]) for the CNMF sites. The FSD delineated two forest stands encompassed within the proposed Site 3 (USACE 2024). Stand 1, located in the western portion of Site 3, was designated as Priority 1 for retention because of its mature successional stage, low invasive-species coverage, and specimen trees. Stand 2, more centrally located within Site 3, was designated as Priority 2 for its specimen trees and mature secessional stage. The main forest cover types identified in the 2024 FSD include tulip poplar (*Liriodendron tulipifera*) and red maple (*Acer rubrum*) within Stand 1, and loblolly pine (*Pinus taeda*) within Stand 2 (USACE 2024). Site 1 has approximately 1.6 acres of forest cover, and none of the other sites have forest stands.

The most commonly identified invasive species in the 2012 Invasive Species Management Plan for Fort Meade include Asiatic bittersweet (*Celastrus orbiculatus*), Japanese honeysuckle (*Lonicera japonica*), Nepalese browntop (*Microstegium vimineum*), and mile-a-minute (*Mikania cordata*) (Fort Meade 2005).

3. Species/Critical Habitat Considered

A search of the USFWS Information, Planning, and Conservation (IPaC) system indicates that Fort Meade is within the geographic range of the federally endangered northern long-eared bat (*Myotis septentrionalis*), the proposed for listing as endangered tricolored bat (*Perimyotis subflavus),* and candidate monarch butterfly (*Danaus plexippus*; USFWS 2024a). Although no ESA Section 7 requirements for consultation exist for the Monarch butterfly, analysis in the EA and planning for this project considers this candidate species and its associated obligate milkweed habitat. Using a combination of the IPaC report, the Fort Meade INRMP, the Maryland list of rare, threatened, and endangered species, and recently completed surveys on Fort Meade, one additional federally listed bat species with the potential to occur in the action area was also identified, the endangered Indiana bat (*Myotis sodalis*). No critical habitat exists on the installation for any of these species (USFWS 2024a, Fort Meade 2007).

Recent surveys conducted on Fort Meade confirmed the presence of the endangered northern long-eared bat; candidate Monarch butterfly; endangered Indiana bat; and tricolored bat (CMI 2018, 2022). Acoustic analysis confirmed the presence of the northern long-eared, Indiana, and tricolored bat species at multiple sites in forested areas on Fort Meade, but the number of calls was low for each group, indicating they are transient and likely use the installation as an overwinter or early migratory stopover and foraging area. The majority of bat calls that were detected for these species occurred at three sites located more than 2 miles east and northeast of the action area (CMI 2018).

Northern long-eared, Indiana, and tricolored bats on Fort Meade were predominantly observed or detected in forested areas (CMI 2018). Other suitable habitats for these species may include built structures such as buildings, barns, utility poles, behind window shutters, and in bat houses. Spring, summer, and fall habitat preferences for these species include forested areas with clusters of live and dead trees or snags (USFWS 2024b, 2024c, 2024d).

Individual trees might be considered suitable habitat when they exhibit characteristics of suitable roost trees and are within 1,000 feet of other forested or wooded habitat. Northern long-eared, Indiana, and tricolored bats use forested areas for roosting and for foraging and commuting between summer and winter habitats (USFWS 2024b, 2024c, 2024d). These species overwinter in caves or mines known as hibernacula. The action area contains a mid-climax hardwood forest dominated by loblolly pine and tulip poplar/ red maple (USACE 2024).

All life stages of the Monarch butterfly have been observed on the installation in open areas, along roadsides, and in wetland areas, with a prevalence of habitats supporting milkweed plants (primarily *Asclepias spp.*), which are obligate plants for the Monarch butterfly life cycle. The 2022 Fort Meade pollinator survey identified two prominent areas within the southeastern quadrant of the Fort Meade installation where milkweed plants occur; these habitat areas were where the majority of butterflies (including the Monarch butterfly) were observed (CMI 2022).

4. Effects Analysis

DoD has determined that construction associated with the CNMF Facility project may affect, but is not likely to adversely affect, the northern long-eared, Indiana, and tricolored bats through the presence of construction noise and removal of potentially suitable roosting trees and foraging habitats within and adjacent to the action area. Based on 2018 survey results, anticipated presence of these three bat species within the action area would be low, because the majority of calls during fall, spring, and winter survey efforts were consistently detected at sites located more than 2 miles from the action area on Fort Meade.

In accordance with existing guidelines for these species, project activities would avoid tree clearing during known roosting periods. The potential exists for roosting and foraging bats, or individuals flying through their home ranges, to be disturbed or displaced by dust, noise, and light associated with demolition, construction, and operation activities. Given the temporary and variable nature of construction activities, these impacts and other behavioral responses to disturbances would be insignificant. There are no known hibernacula on the installation or the immediate vicinity, therefore all demolition and construction activities would occur at least 0.25 mile from known hibernacula. Therefore, no direct effects on hibernating northern long-eared, Indiana, or tricolored bats would occur during winter. Additionally, measures would be implemented to minimize potential construction impacts, such as generation of dust.

Northern long-eared, Indiana, and tricolored bats hunt prey in the air while flying using echolocation. While little information is available in the literature regarding the specific effect of noise on bat species using echolocation in their search for prey, most noise from construction associated with the Proposed Action is expected to occur during the day and would not be expected to disturb foraging activities. Impacts from noise disturbances associated with construction and operation activities are expected to be minimal and temporary and are not expected to permanently affect local bat populations.

Additional safety lighting may be required during construction activities. Many bat species respond in different ways to light disturbance. Some bats are light averse and would avoid lit areas, while others actively forage in lit areas. Additional light might cause avoidance behavior and reduce the availability of foraging areas for the northern long-eared bat. However, higher densities of *Myotis* spp. have been recorded in lit areas as compared to unlit areas due to the large number of insects (particularly moths) attracted to streetlights, particularly low wavelength light (Li and Wilkens 2022). Appropriate safety lighting would be used during construction and operation of the proposed facilities to illuminate the specific work area, or area of safety concern, and would be directed away from adjacent potential feeding and roosting habitat. Because the northern long-eared, Indiana, and tricolored bats prefer habitat located within the forested areas along the eastern boundary of Fort Meade and appear to only occur on the installation as a migratory stopover to their known reproductive and overwintering habitats elsewhere, effects from construction lighting would be minimal and temporary, and would not be expected to significantly affect local bat populations.

While it is possible that physical impacts resulting in injury or death could occur from operation of construction vehicles or felling trees, these impacts would be avoided. All tree cutting and clearing would be conducted in accordance with existing species guidelines and tree cutting activities would not be conducted during the spring and summer active roosting and nesting season (typically between April and August). If there is a need to remove a single or small cluster of trees (less than 1 acre) during the active season, the procedures in the April 24, 2015, Programmatic Informal Consultation and Management Guidelines on the Northern Long-eared Bat (*Myotis septentrionalis*) for Ongoing Operations on Installation Management Command (IMCOM) Installations (Programmatic Guidelines) would be followed (Army 2015). Additionally, construction vehicles within the action area would move slowly, allowing bats and other wildlife to avoid the vehicles, and travel mostly during the daytime when bats are not flying. Therefore, given the slow-moving, daytime, construction vehicle traffic; the species' nocturnal behavior; and the timing of clearing, no collisions between northern long-eared, Indiana, or tricolored bats and construction vehicles are anticipated.

All contractors and others present during construction activity would be informed of the potential to encounter bats and their responsibilities to avoid impacts on bats. If dead or injured bats are encountered, the number of bats and location would be immediately reported to the USFWS Chesapeake Bay Field Office.

Tree removal could also result in the loss of foraging and potentially suitable roost habitat for the northern long-eared, Indiana, and tricolored bats. The action area contains approximately 26 acres of forested land. The total acreage of forested land and vegetation disturbed would depend on the final site selection and design of the MOF and associated parking structure. The likely behavioral response of bats returning in spring to the cleared area would be to disperse to adjacent suitable habitat, but these changes would be minimal, based on the remaining forested habitat within Fort Meade and at the Patuxent Research Refuge (less than 2 miles south of the action area) and the propensity of the species to use alternative roost sites. Any new tree planting would provide returning bats familiar sheltering areas and new foraging habitat while they search for new roost sites, thereby helping to reduce energy demands immediately after migration. Furthermore, the Programmatic Guidelines state that inactive season tree removal effects would be discountable by following similar conservation measures to the Federal Highway

Administration and Federal Railroad Administration's Rangewide Biological Assessment for Transportation Projects for Indiana Bat and Northern Long-eared Bat (Army 2015).

5. Conclusions and Determinations Effect

Implementation of the Proposed Action may affect but is not likely to adversely affect federally listed species, provided all tree cutting and clearing would be avoided during the spring and summer active roosting and nesting season. If it is determined that more than 1 acre of trees would need to be removed during the active season, the USFWS Chesapeake Bay Field Office would be consulted to evaluate potential effects. No other federally proposed or listed endangered or threatened species protected by the ESA are known to exist within the project area. Should project plans change, or if additional information regarding the distribution of listed or proposed species becomes available, this determination may be reevaluated.

Vegetation clearing for the Proposed Action could result in impacts on the Monarch butterfly. Although all life stages of the butterfly have been observed throughout the installation, no milkweed plants or known milkweed habitat occurs within the project area. Therefore, impacts on the obligate reproductive and feeding environment for the various life stages of the Monarch butterfly would not be expected. Further, planning and design for the construction and operation of the proposed roadways and facilities would consider the habitat requirements for the species and would avoid impacts on milkweed plants if identified within the project area at the time of construction.

6. References

Army 2015	United States Army (Army). 2015. Informal Conference and Management Guidelines on the Northern Long-eared Bat (*Myotis septentrionalis*) for Ongoing Operations on Installation Management Command Installations. May 2015. In NSA. 2017. Final Environmental Impact Statement for the East Campus Integration Program Fort Meade, Maryland. March 2017.
CMI 2018	Virginia Tech Conservation Management Institute (CMI). 2018. *Results of the 2017-2018 Bat Survey for Fort George G. Meade.*
CMI 2022	CMI. 2022. *Avian and Pollinator Planning Level Surveys to Support INRMP Implementation at Fort George G. Meade, Maryland.* October 2022.
Fort Meade 2005	Fort Meade. 2005. *Final Integrated Pest Management Plan for Fort George G. Meade, Maryland.* October 1, 2005.
Fort Meade 2007	Fort Meade. 2007. *Draft Integrated Natural Resources Management Plan for U.S. Army Garrison Fort George G. Meade 2008-2012.* Prepared for U.S. Army Garrison Fort George G. Meade, Maryland by Michael Baker Jr., Inc. May 11, 2007.

Li and Wilkins 2022	Li, H. and K.T. Wilkins. 2022. Predator-prey relationship between urban bats and insects impacted by both artificial light at night and spatial clutter. *Biology* (2022): 11, page 829. Available online: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9219930/pdf/biology-11-00829.pdf>. Accessed 24 June 2024.
NSA 2010	NSA. 2010. *Final Environmental Impact Statement Addressing Campus Development at Fort Meade, Maryland.* Prepared for NSA by HDR, Inc. September 2010.
NSA 2017	NSA. 2017. *Final Environmental Impact Statement for the East Campus Integration Program, Fort Meade, Maryland.* Prepared for NSA by HDR, Inc. March 2017.
USACE 2022	USACE. 2022. *Feasibility Study for CNMF Mission Operations Facility and Parking Final Report.* December 16, 2022.
USACE 2023a	USACE. 2023. *Cyber National Mission Force (CNMF) Planning Charrette Kickoff and DD1391.* June 15, 2023.
USACE 2023b	USACE. 2023. *West Campus Parking Structure 2 Planning Charrette and DD 1391 Final Report.* July 31, 2023.
USACE 2024	USACE. 2024. *Forest Stand Delineation for the Cyber National Mission Force Mission Operations Facility at Fort George G. Meade.* March 2024.
USFWS 2023	United States Fish and Wildlife Service (USFWS). 2023. Migratory Bird Treaty Act Protected Species (10.13 List). Effective August 30, 2023. Available online: <https://www.fws.gov/law/migratory-bird-treaty-act-1918>. Accessed April 23, 2024.
USFWS 2024a	USFWS. 2024. Information for Planning and Consultation Species List for Fort Meade. April 1, 2024.
USFWS 2024b	USFWS. 2024. "Northern Long-Eared Bat." Available online: <http://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis>. Accessed 24 June 2024.
USFWS 2024c	USFWS. 2024. "Tricolored bat." Available online: <https://www.fws.gov/species/tricolored-bat-perimyotis-subflavus>. Accessed 24 June 2024.
USFWS 2024d	USFWS. 2024. "Indiana Bat." Available online: <https://www.fws.gov/species/indiana-bat-myotis-sodalis>. Accessed 24 June 2024.

Attachment 2: IPaC Report

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
Phone: (410) 573-4599 Fax: (410) 266-9127

In Reply Refer To: 04/01/2024 18:45:30 UTC
Project Code: 2024-0070851
Project Name: Cyber National Mission Force (CNMF) Facility EA

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service (fws.gov).

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Project code: 2024-0070851 04/01/2024 18:45:30 UTC

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
(410) 573-4599

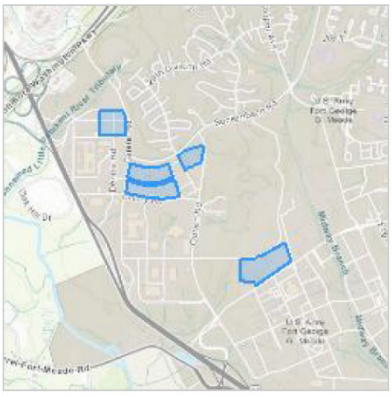
Project code: 2024-0070851 04/01/2024 18:45:30 UTC

PROJECT SUMMARY

Project Code: 2024-0070851
Project Name: Cyber National Mission Force (CNMF) Facility EA
Project Type: New Constr - Above Ground
Project Description: The DoD proposes to construct a new 750,000-square foot Cyber National Mission Force (CNMF) mission operations facility, 700,000-square foot mission operations support facility, and associated infrastructure to consolidate CNMF personnel and operations on the NSA campus and optimize NSA, U.S. Cyber Command (USCYBERCOM), and CNMF mission and collaboration. There are three alternatives that include varying combinations of four sites.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@39.10602885,-76.7646706820148,14z



Counties: Anne Arundel County, Maryland

Project code: 2024-0070851 04/01/2024 18:45:30 UTC

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Project code: 2024-0070851 04/01/2024 18:45:30 UTC

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

Project code: 2024-0070851 04/01/2024 18:45:30 UTC

IPAC USER CONTACT INFORMATION

Agency: Army
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LEAD AGENCY CONTACT INFORMATION

Lead Agency: Army

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B

Air Quality Analysis Supporting Documentation

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Appendix B: Air Quality Analysis Supporting Documentation

B.1 Emissions Estimations Methodology

The U.S. Department of Defense (DoD) has considered net emissions generated from all sources of air emissions that may be associated with the Proposed Action. More specifically, project-related direct emissions would result from the following:

- **Site preparation, demolition, and construction activities:** use of heavy construction equipment, worker vehicles traveling to and from the project area, construction, hauling of debris and materials, use of paints and architectural coatings, paving off-gases, and fugitive dust from ground disturbance
- **Operational activities:** use of boilers, emergency generators, and new personnel vehicles traveling to and from new facilities

Emissions factors are representative values that attempt to relate the quantity of a pollutant released with the activity associated with the release of that pollutant. These factors are usually expressed as the weight of pollutant emitted per unit weight, volume, distance, or duration of the pollutant-emitting activity. In most cases, these factors are simply an average of all available data of acceptable quality and are generally assumed to be representative of long-term averages for all emitters in the source category. The emission factors presented in this appendix are generally from the *Compilation of Air Pollutant Emission Factors* (AP-42) and *WebFIRE* (the United States Environmental Protection Agency's [USEPA's] online emissions factor database).

The Proposed Action includes construction and operation of a new 750,000-square-foot (ft^2) Cyber National Mission Force (CNMF) Missions Operations Facility (MOF) and associated infrastructure. Three alternatives involving use of four sites have been identified:

- Site 1, containing existing Building 9899, which is currently the construction office for the East Campus development, is located southwest of the intersection of Rockenbach and O'Brien Roads, and is on a parcel of approximately 8 acres.

- Site 2, which is approximately 13 acres, is east of Site 1 in the northeastern corner of the parking area near the main entrance to the National Security Agency (NSA) campus.

- Site 3, the Mapes Tract, is located on Fort George G. Meade (Fort Meade) outside of and adjacent to the NSA campus northwest of the intersection of Mapes Road and Taylor Avenue and is approximately 24 acres.

- Sites 4 and 5, the northern and southern portions of the 9800 Troop Support Area, are approximately 14 and 15 acres, respectively.

Alternative 1 includes locating the MOF at the site of Building 9899 (Site 1), with associated parking at the proposed West Campus Parking Structure (WCPS; Site 2). Alternative 2 includes locating the MOF at Building 9899 (Site 1), with associated parking at East Campus Parking Structures (ECPSs) 3 and 4, which are currently under or separately proposed for construction. Alternative 3 would include locating the MOF and associated parking on the Mapes Tract (Site

3) on Fort Meade outside of and adjacent to the NSA campus. Alternative 4 includes locating the MOF at 9800 Area North or South (Site 4 or 5) and associated parking near ECPS3.

The analysis assumes that construction for each alternative would begin in fiscal year 2027 and continue for 2 years (i.e., October 2026 through September 2028). Facility operations would be expected to start within 2 years of construction completion. For the purposes of this analysis, operations were assumed to begin in January 2029.

All direct and indirect emissions associated with the Proposed Action were estimated. Construction emissions were estimated using predicted equipment use for demolition, site grading, trenching/excavation, construction, architectural coatings, and paving. Operational emissions were estimated using predicted equipment use for facility operations. Operational equipment considered include boilers and diesel life safety generators. The operations analysis also considered vehicle use (mobile emissions) from new personnel commuting to and from the new facility.

The construction period 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.

The following on-road vehicle type abbreviations and their definitions are used throughout this appendix.

LDGV: light-duty gasoline vehicle (passenger cars)
LDGT: light-duty gasoline truck (0–8,500 pounds gross vehicle weight rating [GVWR])
HDGV: heavy-duty gasoline vehicle (8,501 to > 60,000 pounds GVWR)
LDDV: light-duty diesel vehicle (passenger cars)
LDDT: light-duty diesel truck (0–8,500 pounds GVWR)
HDDV: heavy-duty diesel vehicle (8,501 to > 60,000 pounds GVWR)
MC: motorcycles (gasoline)

1.1 Construction: Demolition Phase

1.1.1 Assumptions

Average days worked per week: 5

Construction Exhaust

Equipment Name	Number Of Equipment	Hours per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	8

Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20

Average Hauling Truck Round Trip Commute (mile): 20

Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

Worker Trips

Average Worker Round Trip Commute (mile): 20

Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

1.1.2 Emission Factors

Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour)

Concrete/Industrial Saws Composite [HP: 33] [LF: 0.73]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.41257	0.00743	3.52633	4.31513	0.08509	0.07828
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.35280	0.00491	3.22260	2.72624	0.14205	0.13069
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

Construction Exhaust Greenhouse Gases Emission Factors (g/hp-hour)

Concrete/Industrial Saws Composite [HP: 33] [LF: 0.73]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02330	0.00466	574.35707	576.32812
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02160	0.00432	532.54993	534.37751
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02149	0.00430	529.70686	531.52468

Vehicle Exhaust and Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	NH_3
LDGV	0.23178	0.00170	0.11354	3.36886	0.00438	0.00388	0.04983
LDGT	0.20188	0.00212	0.14279	2.95377	0.00514	0.00454	0.04212
HDGV	0.72041	0.00483	0.55983	9.45531	0.02022	0.01788	0.09166
LDDV	0.10591	0.00125	0.14861	5.37736	0.00359	0.00330	0.01657
LDDT	0.16762	0.00142	0.42135	4.71306	0.00573	0.00527	0.01713
HDDV	0.12121	0.00416	2.37720	1.49206	0.04439	0.04084	0.06554
MC	2.55356	0.00203	0.66568	11.98587	0.02183	0.01931	0.05383

Vehicle Exhaust and Worker Trips Greenhouse Gases Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01360	0.00481	322.27008	324.04016
LDGT	0.01330	0.00697	400.07923	402.48823
HDGV	0.05034	0.02692	912.22659	921.49875
LDDV	0.05367	0.00068	369.74928	371.29323
LDDT	0.04181	0.00102	419.16493	420.51269
HDDV	0.02977	0.16141	1239.27095	1288.11386
MC	0.11761	0.00305	394.74424	398.59390

1.1.3 Formulas

Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (0.00042 * BA * BH) / 2000

$PM10_{FD}$: Fugitive Dust PM_{10} Emissions (tons)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000

CEE_{POL}: Construction Exhaust Emissions (tons)
NE: Number of Equipment
WD: Number of Total Workdays (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (lb/hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

Vehicle Exhaust Emissions per Phase

VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolished (ft^2)
BH: Height of Building being demolished (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (tons)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

Worker Trips Emissions per Phase

VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Workdays (days)
WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Workers

NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (tons)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

1.2 Construction: Site Grading Phase

1.2.1 Assumptions

Average days worked per week: 5

Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	3	8

Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20
Average Hauling Truck Round Trip Commute (mile): 20

Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

Worker Trips

Average Worker Round Trip Commute (mile): 20

Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

1.2.2 Emission Factors

Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour)

Excavators Composite [HP: 36] [LF: 0.38]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.39317	0.00542	3.40690	4.22083	0.09860	0.09071
Graders Composite [HP: 148] [LF: 0.41]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.31292	0.00490	2.52757	3.39734	0.14041	0.12918
Other Construction Equipment Composite [HP: 82] [LF: 0.42]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.28160	0.00487	2.73375	3.50416	0.15811	0.14546
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]						

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.35280	0.00491	3.22260	2.72624	0.14205	0.13069
Scrapers Composite [HP: 84] [LF: 0.37]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

Construction Exhaust Greenhouse Gases Emission Factors (g/hp-hour)

Excavators Composite [HP: 36] [LF: 0.38]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02381	0.00476	587.02896	589.04350
Graders Composite [HP: 148] [LF: 0.41]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02153	0.00431	530.81500	532.63663
Other Construction Equipment Composite [HP: 82] [LF: 0.42]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02140	0.00428	527.54121	529.35159
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02160	0.00432	532.54993	534.37751
Scrapers Composite [HP: 84] [LF: 0.37]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02149	0.00430	529.70686	531.52468

Vehicle Exhaust and Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	NH_3
LDGV	0.23178	0.00170	0.11354	3.36886	0.00438	0.00388	0.04983
LDGT	0.20188	0.00212	0.14279	2.95377	0.00514	0.00454	0.04212
HDGV	0.72041	0.00483	0.55983	9.45531	0.02022	0.01788	0.09166
LDDV	0.10591	0.00125	0.14861	5.37736	0.00359	0.00330	0.01657
LDDT	0.16762	0.00142	0.42135	4.71306	0.00573	0.00527	0.01713
HDDV	0.12121	0.00416	2.37720	1.49206	0.04439	0.04084	0.06554
MC	2.55356	0.00203	0.66568	11.98587	0.02183	0.01931	0.05383

Vehicle Exhaust and Worker Trips Greenhouse Gases Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01360	0.00481	322.27008	324.04016
LDGT	0.01330	0.00697	400.07923	402.48823
HDGV	0.05034	0.02692	912.22659	921.49875
LDDV	0.05367	0.00068	369.74928	371.29323
LDDT	0.04181	0.00102	419.16493	420.51269
HDDV	0.02977	0.16141	1239.27095	1288.11386
MC	0.11761	0.00305	394.74424	398.59390

1.2.3 Formulas

Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM_{10} Emissions (tons)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Workdays (days)
2000: Conversion Factor pounds to tons

Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (tons)

NE: Number of Equipment
WD: Number of Total Workdays (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (tons)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Workdays (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (tons)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

1.3 Construction: Trenching/Excavating Phase

1.3.1 Assumptions

Average Days worked per week: 5

Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20
Average Hauling Truck Round Trip Commute (mile): 20

Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

Worker Trips

Average Worker Round Trip Commute (mile): 20

Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

1.3.2 Emission Factors

Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour)

Excavators Composite [HP: 36] [LF: 0.38]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.37809	0.00542	3.36699	4.21640	0.08879	0.08169
Other Construction Equipment Composite [HP: 35] [LF: 0.34]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.43579	0.00542	3.52468	4.59651	0.09918	0.09125
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.17717	0.00489	1.80740	3.48712	0.05440	0.05005

Construction Exhaust Greenhouse Gases Emission Factors (g/hp-hour)

Excavators Composite [HP: 36] [LF: 0.38]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02383	0.00477	587.39431	589.41010
Other Construction Equipment Composite [HP: 35] [LF: 0.34]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02385	0.00477	587.92708	589.94470
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02148	0.00430	529.61807	531.43559

Vehicle Exhaust and Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	NH_3
LDGV	0.23178	0.00170	0.11354	3.36886	0.00438	0.00388	0.04983
LDGT	0.20188	0.00212	0.14279	2.95377	0.00514	0.00454	0.04212
HDGV	0.72041	0.00483	0.55983	9.45531	0.02022	0.01788	0.09166
LDDV	0.10591	0.00125	0.14861	5.37736	0.00359	0.00330	0.01657
LDDT	0.16762	0.00142	0.42135	4.71306	0.00573	0.00527	0.01713
HDDV	0.12121	0.00416	2.37720	1.49206	0.04439	0.04084	0.06554
MC	2.55356	0.00203	0.66568	11.98587	0.02183	0.01931	0.05383

Vehicle Exhaust and Worker Trips Greenhouse Gases Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01360	0.00481	322.27008	324.04016
LDGT	0.01330	0.00697	400.07923	402.48823
HDGV	0.05034	0.02692	912.22659	921.49875
LDDV	0.05367	0.00068	369.74928	371.29323
LDDT	0.04181	0.00102	419.16493	420.51269
HDDV	0.02977	0.16141	1239.27095	1288.11386
MC	0.11761	0.00305	394.74424	398.59390

1.3.3 Formulas

Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM_{10} Emissions (tons)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Workdays (days)
2000: Conversion Factor pounds to tons

Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL}* 0.002205) / 2000

CEE_{POL}: Construction Exhaust Emissions (tons)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

Vehicle Exhaust Emissions per Phase

VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (tons)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

Worker Trips Emissions per Phase

VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Workdays (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (tons)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

1.4 Construction: Building Construction Phase

1.4.1 Assumptions

Average Days worked per week: 5

Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	7
Forklifts Composite	3	8
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	3	7
Welders Composite	1	8

Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20

Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

Worker Trips

Average Worker Round Trip Commute (mile): 20

Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

Vendor Trips

Average Vendor Round Trip Commute (mile): 40

Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

1.4.2 Emission Factors

Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour)

Cranes Composite [HP: 367] [LF: 0.29]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.19464	0.00487	1.74774	1.62852	0.07179	0.06605
Forklifts Composite [HP: 82] [LF: 0.2]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.22849	0.00487	2.15229	3.56761	0.09240	0.08501
Generator Sets Composite [HP: 14] [LF: 0.74]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.53730	0.00793	4.30480	2.85227	0.17170	0.15796
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.17717	0.00489	1.80740	3.48712	0.05440	0.05005
Welders Composite [HP: 46] [LF: 0.45]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.43501	0.00735	3.46616	4.46084	0.07894	0.07263

Construction Exhaust Greenhouse Gases Emission Factors (g/hp-hour)

Cranes Composite [HP: 367] [LF: 0.29]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02140	0.00428	527.45492	529.26501
Forklifts Composite [HP: 82] [LF: 0.2]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02138	0.00428	527.06992	528.87869
Generator Sets Composite [HP: 14] [LF: 0.74]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02305	0.00461	568.30624	570.25652
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02148	0.00430	529.61807	531.43559
Welders Composite [HP: 46] [LF: 0.45]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02305	0.00461	568.29664	570.24689

Vehicle Exhaust and Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	NH_3
LDGV	0.23178	0.00170	0.11354	3.36886	0.00438	0.00388	0.04983
LDGT	0.20188	0.00212	0.14279	2.95377	0.00514	0.00454	0.04212
HDGV	0.72041	0.00483	0.55983	9.45531	0.02022	0.01788	0.09166
LDDV	0.10591	0.00125	0.14861	5.37736	0.00359	0.00330	0.01657
LDDT	0.16762	0.00142	0.42135	4.71306	0.00573	0.00527	0.01713
HDDV	0.12121	0.00416	2.37720	1.49206	0.04439	0.04084	0.06554
MC	2.55356	0.00203	0.66568	11.98587	0.02183	0.01931	0.05383

Vehicle Exhaust and Worker Trips Greenhouse Gases Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01360	0.00481	322.27008	324.04016
LDGT	0.01330	0.00697	400.07923	402.48823
HDGV	0.05034	0.02692	912.22659	921.49875
LDDV	0.05367	0.00068	369.74928	371.29323
LDDT	0.04181	0.00102	419.16493	420.51269
HDDV	0.02977	0.16141	1239.27095	1288.11386
MC	002.457	000.003	000.660	012.092

1.4.3 Formulas

Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL}* 0.002205) / 2000

CEE_{POL}: Construction Exhaust Emissions (tons)
NE: Number of Equipment
WD: Number of Total Workdays (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

Vehicle Exhaust Emissions per Phase

VMT_{VE} = BA * BH * (0.42 / 1000) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (tons)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

Worker Trips Emissions per Phase

VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Workdays (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (tons)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

Vendor Trips Emissions per Phase

VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vendor Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)

BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$
V_{POL}: Vehicle Emissions (tons)
VMT_{VT}: Vendor Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

1.5 Construction: Architectural Coatings Phase

1.5.1 Assumptions

Average Days worked per week: 5

Worker Trips

Average Worker Round Trip Commute (mile): 20

Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

1.5.1 Emission Factors

Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	NH_3
LDGV	0.23178	0.00170	0.11354	3.36886	0.00438	0.00388	0.04983
LDGT	0.20188	0.00212	0.14279	2.95377	0.00514	0.00454	0.04212
HDGV	0.72041	0.00483	0.55983	9.45531	0.02022	0.01788	0.09166
LDDV	0.10591	0.00125	0.14861	5.37736	0.00359	0.00330	0.01657
LDDT	0.16762	0.00142	0.42135	4.71306	0.00573	0.00527	0.01713
HDDV	0.12121	0.00416	2.37720	1.49206	0.04439	0.04084	0.06554
MC	2.55356	0.00203	0.66568	11.98587	0.02183	0.01931	0.05383

Worker Trips Greenhouse Gases Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01360	0.00481	322.27008	324.04016
LDGT	0.01330	0.00697	400.07923	402.48823
HDGV	0.05034	0.02692	912.22659	921.49875
LDDV	0.05367	0.00068	369.74928	371.29323
LDDT	0.04181	0.00102	419.16493	420.51269
HDDV	0.02977	0.16141	1239.27095	1288.11386
MC	0.11761	0.00305	394.74424	398.59390

1.5.1 Formulas

Worker Trips Emissions per Phase

$VMT_{WT} = (1 * WT * PA) / 800$
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)

WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000
V_{POL}: Vehicle Emissions (tons)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

Off-Gassing Emissions per Phase

VOC_{AC} = (AB * 2.0 * 0.0116) / 2000
VOC_{AC}: Architectural Coating VOC Emissions (tons)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

1.6 Construction: Paving Phase

1.6.1 Assumptions

Average Days worked per week: 5

Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	1	8
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20

Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

Worker Trips

Average Worker Round Trip Commute (mile): 20

Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

1.6.2 Emission Factors

Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour)

Cement and Mortar Mixers Composite [HP: 10] [LF: 0.56]

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.55275	0.00855	4.19697	3.25556	0.16292	0.14989
Pavers Composite [HP: 81] [LF: 0.42]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.21588	0.00486	2.33827	3.43520	0.10542	0.09699
Paving Equipment Composite [HP: 89] [LF: 0.36]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.16337	0.00488	1.88314	3.37709	0.05778	0.05316
Rollers Composite [HP: 36] [LF: 0.38]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.50057	0.00542	3.50905	4.08429	0.13206	0.12150
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
Emission Factors	0.17299	0.00489	1.74942	3.49553	0.04787	0.04404

Construction Exhaust Greenhouse Gases Emission Factors (g/hp-hour)

Cement and Mortar Mixers Composite [HP: 10] [LF: 0.56]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02314	0.00463	570.33256	572.28980
Pavers Composite [HP: 81] [LF: 0.42]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02133	0.00427	525.89644	527.70118
Paving Equipment Composite [HP: 89] [LF: 0.36]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02141	0.00428	527.90982	529.72147
Rollers Composite [HP: 36] [LF: 0.38]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02382	0.00476	587.11688	589.13172
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02148	0.00430	529.56544	531.38277

Vehicle Exhaust and Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	NH_3
LDGV	0.23178	0.00170	0.11354	3.36886	0.00438	0.00388	0.04983
LDGT	0.20188	0.00212	0.14279	2.95377	0.00514	0.00454	0.04212
HDGV	0.72041	0.00483	0.55983	9.45531	0.02022	0.01788	0.09166
LDDV	0.10591	0.00125	0.14861	5.37736	0.00359	0.00330	0.01657
LDDT	0.16762	0.00142	0.42135	4.71306	0.00573	0.00527	0.01713
HDDV	0.12121	0.00416	2.37720	1.49206	0.04439	0.04084	0.06554
MC	2.55356	0.00203	0.66568	11.98587	0.02183	0.01931	0.05383

Vehicle Exhaust and Worker Trips Greenhouse Gases Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01360	0.00481	322.27008	324.04016
LDGT	0.01330	0.00697	400.07923	402.48823
HDGV	0.05034	0.02692	912.22659	921.49875
LDDV	0.05367	0.00068	369.74928	371.29323
LDDT	0.04181	0.00102	419.16493	420.51269
HDDV	0.02977	0.16141	1239.27095	1288.11386
MC	0.11761	0.00305	394.74424	398.59390

1.6.3 Formulas

Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (tons)

NE: Number of Equipment

WD: Number of Total Workdays (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (tons)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Workdays (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (tons)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

Off-Gassing Emissions per Phase

$VOC_P = (2.62 * PA) / 43560 / 2000$

VOC_P: Paving VOC Emissions (tons)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)

43560: Conversion Factor square feet to acre (43560 ft^2 / $acre)^2$ / acre)
2000: Conversion Factor pounds to tons

1.7 Operations: Heating

1.7.1 Assumptions

Heating Calculation Type: Heat Energy Requirement Method

Heating Criteria Pollutant Emission Factors (lb/1000000 scf)

VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	Pb	NH_3
5.5	0.6	100	84	7.6	7.6	0	0

Heating Greenhouse Gases Emission Factors (lb/1000000 scf)

CH_4	N_2O	CO_2	CO_2e
2.26	2.26	120019	120143

1.7.2 Formulas

Heating Fuel Consumption ft^3 per Year

FC_{HER}= HA * EI / HV / 1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method

HA: Area of floorspace to be heated (ft^2)

EI: Energy Intensity Requirement (MMBtu/ft^2)

HV: Heat Value (MMBTU/ft^3)

1000000: Conversion Factor

Heating Emissions per Year

HE_{POL}= FC * EF_{POL} / 2000

HE_{POL}: Heating Emission Emissions (tons)

FC: Fuel Consumption

EF_{POL}: Emission Factor for Pollutant

2000: Conversion Factor pounds to tons

1.8 Operations: Emergency Generator

1.8.1 Assumptions

Type of Fuel used in Emergency Generator: Diesel

Emergency Generators Criteria Pollutant Emission Factors (lb/hp-hr)

VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	Pb	NH_3
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251	0	0

Emergency Generators Greenhouse Gases Emission Factors (lb/hp-hr)

CH_4	N_2O	CO_2	CO_2e
0.000046297	0.000009259	1.15	1.33

1.8.2 Formulas

Emergency Generator Emissions per Year

$$AE_{POL} = (NGEN * HP * OT * EF_{POL}) / 2000$$

AE_{POL}: Activity Emissions (tons per Year)

NGEN: Number of Emergency Generators

HP: Emergency Generator's Horsepower (hp)

OT: Average Operating Hours Per Year (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

1.9 Operations: Personnel

1.9.1 Assumptions

Average Personnel Round Trip Commute (mile): 20
Personnel Work Schedule: 5 Days Per Week

Personnel On Road Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

Personnel Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$	NH_3
LDGV	0.20949	0.00163	0.08274	2.98137	0.00422	0.00374	0.04575
LDGT	0.17781	0.00203	0.09171	2.53112	0.00485	0.00429	0.03739
HDGV	0.60909	0.00484	0.43342	7.66550	0.01908	0.01688	0.08625
LDDV	0.10193	0.00123	0.14453	5.95374	0.00428	0.00393	0.01669
LDDT	0.07150	0.00129	0.09154	3.14365	0.00379	0.00349	0.01799
HDDV	0.09285	0.00396	1.80616	1.37713	0.02607	0.02399	0.06688
MC	2.46063	0.00203	0.66088	11.62082	0.02182	0.01931	0.05481

Personnel Greenhouse Gases Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01184	0.00445	309.02265	310.64216
LDGT	0.01134	0.00614	384.58369	386.69577
HDGV	0.04287	0.02433	913.74204	922.05557
LDDV	0.05278	0.00067	364.19946	365.72007
LDDT	0.04369	0.00101	385.49821	386.89160
HDDV	0.02934	0.16431	1181.67954	1231.37826
MC	0.11350	0.00304	395.03049	398.77512

1.9.2 Formulas

Personnel Vehicle Miles Travel for Work Days per Year

$VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year)

NP: Number of Personnel

WD: Work Days per Year

AC: Average Commute (miles)

Total Vehicle Miles Travel per Year

$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)

VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)

VMT_C: Civilian Personnel Vehicle Miles Travel (miles)

VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)

VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)

VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

Vehicles Emissions per Year

$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (tons)

VMT_{Total}: Total Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Personnel On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

2 Alternative 1 Air Emissions Analysis

Action Location

State: Maryland
County: Anne Arundel
Regulatory Areas: Anne Arundel County and Baltimore County, MD; Baltimore, MD

2.1 Alternative 1: MOF Construction

Construction Period

Start: October 2026
End: September 2028

2.1.1 Description

It was assumed the MOF would be constructed over a 2-year period from October 2026 through September 2028. Under Alternative 1, the MOF would be constructed at Site 1.

Demolition on Site 1 would be required for Building 9899 (approximately 20,500 ft^2) and temporary Buildings 98991 (4,000 ft^2), 98992 (approximately 4,200 ft^2), 98993 (approximately 4,800 ft^2), and 98994 (approximately 4,800 ft^2). Demolition would also be required for buildings within the East Campus development laydown area, west of Site 1, which include Buildings 9827 (approximately 22,200 ft^2) and 9801 (approximately 30,300 ft^2). The total square footage of buildings to be demolished was calculated at 90,800 ft^2. The average height of all buildings to be demolished was assumed to be 30 feet. Demolition would begin in October 2026 and last approximately 2 months.

Site grading would occur across the entirety of Site 1 (approximately 8 acres; 348,480 ft^2) to ensure required elevation is met. Site grading would begin in December 2026 and last approximately 1 month. Approximately 25,000 cubic yards of demolition debris and fill would be hauled off-site.

Excavation would be required for removal of pavements, estimated at 181,000 ft^2. Excavation would also be required for the MOF's below grade basement, which would cover 91,000 ft^2. Trenching would be required for rerouting, installation, and removal of utilities, estimated at 6,000 linear feet. An average of 3 feet was assumed for all utility trenching, resulting in a total trenched area of 18,000 ft^2. The total area to be excavated or trenched was estimated at 290,000 ft^2. Trenching would begin in January 2027 and last approximately 1 month. Approximately 33,000 cubic yards of fill from excavation of the below grade basement and an estimated 20,000 cubic yards of demolished pavement and fill from trenching (53,000 cubic yards total) would be hauled off-site.

Construction would include the 750,000 ft^2 MOF, with a height of 122 feet above grade, or 142.5 feet high including the below grade basement. Construction would begin in February 2027 and last approximately 18 months.

Architectural coatings would be applied to the MOF for a total of 750,000 ft^2. Architectural coating application would begin in August 2028 and last approximately 1 month.

Paving would be required for the new access road, loading dock area, and sidewalks, a total of approximately 40,000 ft^2. Paving would begin in September 2028 and last approximately 1 month.

2.1.2 Assumptions

Demolition Phase

Start: October 2026
Phase duration: 2 months
Area of building to be demolished (ft^2): 90800
Height of building to be demolished (ft): 30

Site Grading Phase

Start: December 2026
Phase duration: 1 month
Area of site to be graded (ft^2): 348480
Amount of material to be hauled offsite (yd^3): 25000

Trenching/Excavating Phase

Start: January 2027
Phase duration: 1 month
Area of site to be trenched/excavated (ft^2): 290000
Amount of material to be hauled on or offsite (yd^3): 53000

Building Construction Phase

Start: February 2027
Phase duration: 18 months
Area of building (ft^2): 750000
Height of building (ft): 142.5

Architectural Coatings Phase

Start: August 2028
Phase duration: 1 month
Total square footage (ft^2): 750000

Paving Phase

Start: September 2028
Phase duration: 1 month
Paving area (ft^2): 40000

2.1.3 Emissions Summary

MOF Construction: Estimated Criteria Pollutant Emissions (tons)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	9.186036	6.576507	6.245393	0.013696	7.080367	0.144185	0.000000	0.137104

MOF Construction: Estimated Greenhouse Gas Emissions (tons)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.082697	0.330038	3021.778819	3122.198013

2.2 Alternative 1: MOF Heating

Operations Period

Start: January 2029
End: Indefinite

2.2.1 Description

Heating for the MOF (750,000 ft^2) would be required following construction. Heating was assumed to begin in January 2029, and would continue indefinitely.

2.2.2 Assumptions

Heat Energy Requirement Method

Area of floorspace to be heated (ft^2): 750000
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3-9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.1278

Boiler/Furnace Usage

Operating time per year (hours): 900

2.2.3 Emissions Summary

MOF Heating: Estimated Criteria Pollutant Emissions (tons per year)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	0.251036	4.564286	3.834000	0.027386	0.346886	0.346886	0.000000	0.000000

MOF Heating: Estimated Greenhouse Gas Emissions (tons per year)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.103153	0.103153	5478.010071	5483.669786

2.3 Alternative 1: MOF Generator

Operations Period

Start: January 2029
End: Indefinite

2.3.1 Description

Operation of the diesel life safety generator for the MOF was assumed to begin in January 2029, and would continue indefinitely. It was assumed the generator would operate an average of 30 hours per year.

2.3.2 Assumptions

Emergency Generator

Type of fuel used in emergency generator: Diesel
Number of emergency generators: 1
Emergency generator's horsepower: 600
Average operating hours per year (hours): 30

2.3.3 Emissions Summary

MOF Generator: Estimated Criteria Pollutant Emissions (tons per year)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	0.025110	0.103500	0.069120	0.021150	0.022590	0.022590	0.000000	0.000000

MOF Generator: Estimated Greenhouse Gas Emissions (tons per year)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.000417	0.000083	10.350000	11.970000

2.4 Alternative 1: Remove Heating for Demolished Facilities

Operations Period

Start: January 2029
End: Indefinite

2.4.1 Description

Heating for demolished buildings (Buildings 9899, 9827, and 9801 and temporary Buildings 98991, 98992, 98993, and 98994; 90,800 ft^2 total) would no longer be required following demolition. For the purposes of this analysis, it was assumed heating would be removed by January 2029.

2.4.2 Assumptions

Heat Energy Requirement Method

Area of floorspace to be heated (ft^2): 90800
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3-9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0743

Boiler/Furnace Usage

Operating time per year (hours): 900

2.4.3 Emissions Summary

Remove Heating for Demolished Facilities: Estimated Criteria Pollutant Emissions (tons per year)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	-0.017669	-0.321259	-0.269858	-0.001928	-0.024416	-0.0244416	0.000000	0.000000

Remove Heating for Demolished Facilities: Estimated Greenhouse Gas Emissions (tons per year)

	CH_4	N_2O	CO_2	CO_2e
Emissions	-0.007260	-0.007260	-385.571896	-385.970258

2.5 Alternative 1: WCPS Construction

Construction Period

Start: October 2026
End: September 2028

2.5.1 Description

It was assumed the WCPS would be constructed over a 2-year period from October 2026 through September 2028. Construction of the WCPS would occur on approximately 4.05 acres

within the 13 acres of Site 2. The construction laydown area would cover approximately 6.54 acres; however, no construction activities would occur in this area.

No existing buildings are located on Site 2; however, demolition of pavement, curbs and gutters, and existing utilities would be required. A section of Ralph W. Adams Road and the entirety of Dennis Road. Demolition of pavements was estimated at 500,000 ft^2. Depth of demolition was assumed to be an average of 2 feet. Demolition would begin in October 2026 and last approximately 2 months.

Site grading would occur across the WCPS footprint (approximately 4.05 acres; 176,418 ft^2) and the pavement demolition area (approximately 500,000 ft^2), for a total of 676,418 ft^2. Site grading would begin in December 2026 and last approximately 1 month. Approximately 105,000 cubic yards of fill from grading and 10,000 cubic yards of demolition debris from pavement demolition (115,000 cubic yards total) would be hauled off-site.

Trenching would be required for rerouting, installation, and removal of utilities and excavation for bioretention areas, estimated at 27,000 square feet total. Trenching would begin in January 2027 and last approximately 1 month. An estimated 15,000 cubic yards of fill would be hauled off-site.

Construction would include the 1,626,949 ft^2 WCPS, with a height of 120 feet above grade. Construction would begin in February 2027 and last approximately 18 months.

Architectural coatings would be applied to the WCPS for a total of 1,626,949 ft^2. Architectural coating application would begin in August 2028 and last approximately 1 month.

Paving would be required for new access roads, surface parking areas, sidewalks, and resurfacing areas, estimated at 460,000 ft^2. Paving would begin in September 2028 and last approximately 1 month.

2.5.2 Assumptions

Demolition Phase

Start: October 2026
Phase duration: 2 months
Area of building to be demolished (ft^2): 500000
Height of building to be demolished (ft): 2

Site Grading Phase

Start: December 2026
Phase duration: 1 month
Area of site to be graded (ft^2): 676418
Amount of material to be hauled offsite (yd^3): 115000

Trenching/Excavating Phase

Start: January 2027
Phase duration: 1 month
Area of site to be trenched/excavated (ft^2): 27000

Amount of material to be hauled on or offsite (yd^3): 15000

Building Construction Phase

Start: February 2027
Phase duration: 18 months
Area of building (ft^2): 1626949
Height of building (ft): 120

Architectural Coatings Phase

Start: August 2028
Phase duration: 1 month
Total square footage (ft^2): 1626949

Paving Phase

Start: September 2028
Phase duration: 1 month
Paving area (ft^2): 460000

2.5.3 Emissions Summary

WCPS Construction: Estimated Criteria Pollutant Emissions (tons)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	19.597276	10.519249	8.911705	0.021029	7.44803	0.218216	0.000000	0.243012

WCPS Construction: Estimated Greenhouse Gas Emissions (tons)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.133673	0.591190	5063.368649	5242.556864

2.6 Alternative 1: Additional Personnel

Operations Period

Start: January 2029
End: Indefinite

2.6.1 Description

The Proposed Action includes 800 personnel at the CNMF coming from off-site facilities and future growth. For the purposes of this analysis, it was assumed the 800 personnel would be relocated to the CNMF by January 2029.

2.6.2 Assumptions

Number of Personnel

Civilian Personnel: 800

Personnel Work Schedule

Civilian Personnel: 5 days per week

2.6.3 Emissions Summary

Additional Personnel: Estimated Criteria Pollutant Emissions (tons per year)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	1.067916	0.454840	13.186565	0.008614	0.022627	0.020029	0.000000	0.187195

Additional Personnel: Estimated Greenhouse Gas Emissions (tons per year)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.062427	0.024925	1634.614619	1643.588019

2.7 Alternative 1 Emissions Summary

Alternative 1: Total Estimated Criteria Pollutant Emissions by Year (tons per year)

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
2026	0.139	1.47	1.408	0.003	11.028	0.047	0	0.014
2027	0.645	9.572	8.382	0.02	3.363	0.192	0	0.226
2028	28	6.054	5.367	0.012	0.134	0.123	0	0.141
2029 (steady state)	1.326	4.801	16.82	0.055	0.368	0.365	0	0.187

Alternative 1: Total Estimated Greenhouse Gas Emissions by Year (metric tons per year)

Year	CO_2	CH_4	N_2O	CO_2e[a]
2026	407	0.01290151	0.02976824	416.1935
2027	4254	0.11243876	0.49629006	4404.705
2028	2674	0.07094741	0.30966605	2768.054
2029 (steady state)	6112	0.14373085	0.10967958	6148.278

[a] To calculate the total CO_2e, all GHGs are multiplied by their global warming potential and the results are added together. The global warming potentials used to calculate CO_2e are as follows: CO_2 = 1; CH_4 = 25; N_2O = 298.

3 Alternative 2 Air Emissions Analysis

Action Location

State: Maryland
County: Anne Arundel
Regulatory Areas: Anne Arundel County and Baltimore County, MD; Baltimore, MD

3.1 Alternative 2: MOF Construction

Construction Period

Start: October 2026
End: September 2028

3.1.1 Description

It was assumed the MOF would be constructed over a 2-year period from October 2026 through September 2028. Under Alternative 2, the MOF would be constructed at Site 1 and MOF personnel would use existing or planned parking at ECPS3 and ECPS4; therefore, no new parking would be constructed.

Demolition on Site 1 would be required for Building 9899 (approximately 20,500 ft^2) and temporary Buildings 98991 (4,000 ft^2), 98992 (approximately 4,200 ft^2), 98993 (approximately 4,800 ft^2), and 98994 (approximately 4,800 ft^2). Demolition would also be required for buildings within the East Campus development laydown area, west of Site 1, which include Buildings 9827 approximately 22,200 ft^2) and 9801 (approximately 30,300 ft^2). The total square footage of buildings to be demolished was calculated at 90,800 ft^2. The average height of all buildings to

be demolished was assumed to be 30 feet. Demolition would begin in October 2026 and last approximately 2 months.

Site grading would occur across the entirety of Site 1 (approximately 8 acres; 348,480 ft^2) to ensure required elevation is met. Site grading would begin in December 2026 and last approximately 1 month. Approximately 25,000 cubic yards of demolition debris and fill would be hauled off-site.

Excavation would be required for removal of pavements, estimated at 181,000 ft^2. Excavation would also be required for the MOF's below grade basement, which would cover 91,000 ft^2. Trenching would be required for rerouting, installation, and removal of utilities, estimated at 6,000 linear feet. An average of 3 feet was assumed for all utility trenching, resulting in a total trenched area of 18,000 ft^2. The total area to be excavated or trenched was estimated at 290,000 ft^2. Trenching would begin in January 2027 and last approximately 1 month. Approximately 33,000 cubic yards of fill from excavation of the below grade basement and an estimated 20,000 cubic yards of demolished pavement and fill from trenching (53,000 cubic yards total) would be hauled off-site.

Construction would include the 750,000 ft^2 MOF, with a height of 122 feet above grade, or 142.5 feet high including the below grade basement. Construction would begin in February 2027 and last approximately 18 months.

Architectural coatings would be applied to the MOF for a total of 750,000 ft^2. Architectural coating application would begin in August 2028 and last approximately 1 month.

Paving would be required for the new access road, loading dock area, and sidewalks, a total of approximately 40,000 ft^2. Paving would begin in September 2028 and last approximately 1 month.

3.1.2 Assumptions

Demolition Phase

Start: October 2026
Phase duration: 2 months
Area of building to be demolished (ft^2): 90800
Height of building to be demolished (ft): 30

Site Grading Phase

Start: December 2026
Phase duration: 1 month
Area of site to be graded (ft^2): 348480
Amount of material to be hauled offsite (yd^3): 25000

Trenching/Excavating Phase

Start: January 2027
Phase duration: 1 month
Area of site to be trenched/excavated (ft^2): 290000
Amount of material to be hauled on or offsite (yd^3): 53000

Building Construction Phase

Start: February 2027
Phase duration: 18 months
Area of building (ft^2): 750000
Height of building (ft): 142.5

Architectural Coatings Phase

Start: August 2028
Phase duration: 1 month
Total square footage (ft^2): 750000

Paving Phase

Start: September 2028
Phase duration: 1 month
Paving area (ft^2): 40000

3.1.3 Emissions Summary

MOF Construction: Estimated Criteria Pollutant Emissions (tons)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	9.186036	6.576507	6.245393	0.013696	7.080367	0.144185	0.000000	0.137104

MOF Construction: Estimated Greenhouse Gas Emissions (tons)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.082697	0.330038	3021.778819	3122.198013

3.2 Alternative 2: MOF Heating

Operations Period

Start: January 2029
End: Indefinite

3.2.1 Description

Heating for the MOF (750,000 ft^2) would be required following construction. Heating was assumed to begin in January 2029, and would continue indefinitely.

3.2.2 Assumptions

Heat Energy Requirement Method

Area of floorspace to be heated (ft^2): 750000
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3-9.9 MMBtu/hr)
Heat Value ($MMBtu/ft^3$): 0.00105
Energy Intensity ($MMBtu/ft^2$): 0.1278

Boiler/Furnace Usage

Operating time per year (hours): 900

3.2.3 Emissions Summary

MOF Heating: Estimated Criteria Pollutant Emissions (tons per year)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	0.251036	4.564286	3.834000	0.027386	0.346886	0.346886	0.000000	0.000000

MOF Heating: Estimated Greenhouse Gas Emissions (tons per year)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.103153	0.103153	5478.010071	5483.669786

3.3 Alternative 2: MOF Generator

Operations Period

Start: January 2029
End: Indefinite

3.3.1 Description

Operation of the diesel life safety generator for the MOF was assumed to begin in January 2029, and would continue indefinitely. It was assumed the generator would operate an average of 30 hours per year.

3.3.2 Assumptions

Emergency Generator

Type of fuel used in emergency generator: Diesel
Number of emergency generators: 1
Emergency generator's horsepower: 600
Average operating hours per year (hours): 30

3.3.3 Emissions Summary

MOF Generator: Estimated Criteria Pollutant Emissions (tons per year)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	0.025110	0.103500	0.069120	0.021150	0.022590	0.022590	0.000000	0.000000

MOF Generator: Estimated Greenhouse Gas Emissions (tons per year)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.000417	0.000083	10.350000	11.970000

3.4 Alternative 2: Remove Heating for Demolished Facilities

Operations Period

Start: January 2029
End: Indefinite

3.4.1 Description

Heating for demolished buildings (Buildings 9899, 9827, and 9801 and temporary Buildings 98991, 98992, 98993, and 98994; 90,800 ft^2 total) would no longer be required following demolition. For the purposes of this analysis, it was assumed heating would be removed by January 2029.

3.4.2 Assumptions

Heat Energy Requirement Method

Area of floorspace to be heated (ft^2): 90800
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3-9.9 MMBtu/hr)
Heat Value ($MMBtu/ft^3$): 0.00105
Energy Intensity ($MMBtu/ft^2$): 0.0743

Boiler/Furnace Usage

Operating time per year (hours): 900

3.4.3 Emissions Summary

Remove Heating for Demolished Facilities: Estimated Criteria Pollutant Emissions (tons per year)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	-0.017669	-0.321259	-0.269858	-0.001928	-0.024416	-0.0244416	0.000000	0.000000

Remove Heating for Demolished Facilities: Estimated Greenhouse Gas Emissions (tons per year)

	CH_4	N_2O	CO_2	CO_2e
Emissions	-0.007260	-0.007260	-385.571896	-385.970258

3.5 Alternative 2: Additional Personnel

Operations Period

Start: January 2029
End: Indefinite

3.5.1 Description

The Proposed Action includes 800 personnel at the CNMF coming from off-site facilities and future growth. For the purposes of this analysis, it was assumed the 800 personnel would be relocated to the CNMF by January 2029.

3.5.2 Assumptions

Number of Personnel

Civilian Personnel: 800

Personnel Work Schedule

Civilian Personnel: 5 days per week

3.5.3 Emissions Summary

Additional Personnel: Estimated Criteria Pollutant Emissions (tons per year)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	1.067916	0.454840	13.186565	0.008614	0.022627	0.020029	0.000000	0.187195

Additional Personnel: Estimated Greenhouse Gas Emissions (tons per year)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.062427	0.024925	1634.614619	1643.588019

3.6 Alternative 2 Emissions Summary

Alternative 2: Total Estimated Criteria Pollutant Emissions by Year (tons per year)

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
2026	0.039	0.413	0.464	0.001	4.053	0.013	0	0.004
2027	0.272	3.796	3.533	0.008	2.972	0.08	0	0.083
2028	8.875	2.368	2.248	0.005	0.056	0.051	0	0.05
2029 (steady state)	1.326	4.801	16.82	0.055	0.368	0.365	0	0.187

Alternative 2: Total Estimated Greenhouse Gas Emissions by Year (metric tons per year)

Year	CO_2	CH_4	N_2O	CO_2e[a]
2026	117	0.00370769	0.00857634	119.6484
2027	1624	0.0439973	0.18100002	1679.038
2028	1000	0.0273163	0.10982888	1033.412
2029 (steady state)	6,112	0.14373085	0.10967958	6148.278

[a] To calculate the total CO_2e, all GHGs are multiplied by their global warming potential and the results are added together. The global warming potentials used to calculate CO_2e are as follows: CO_2 = 1; CH_4 = 25; N_2O = 298.

4 Alternative 3 Air Emissions Analysis

Action Location

State: Maryland
County: Anne Arundel
Regulatory Areas: Anne Arundel County and Baltimore County, MD; Baltimore, MD

4.1 Alternative 3: MOF Construction

Construction Period

Start: October 2026
End: September 2028

4.1.1 Description

It was assumed the MOF would be constructed over a 2-year period from October 2026 through September 2028. Under Alternative 3, both the MOF and the WCPS would be constructed at Site 3.

No existing buildings are located on Site 3; however, demolition of pavement would be required. Demolition was estimated at 20,000 ft^2. Depth of demolition was assumed to be an average of 1 foot. Demolition would begin in October 2026 and last approximately 2 months.

Site grading for the MOF , including removal of vegetation, was assumed to occur on approximately 8 acres (348,480 ft^2) to ensure required elevation is met. Site grading would begin in December 2026 and last approximately 1 month. Approximately 50,000 cubic yards of demolition debris, fill, and removed vegetation would be hauled off-site.

Excavation would be required for the MOF's below grade basement, which would cover 91,000 ft^2. Trenching would be required for rerouting, installation, and removal of utilities, estimated at 6,000 linear feet. An average of 3 feet was assumed for all utility trenching, resulting in a total trenched area of 18,000 ft^2. The total area to be excavated or trenched was estimated at 109,000 ft^2. Trenching would begin in January 2027 and last approximately 1 month.

Approximately 33,000 cubic yards of fill from excavation of the below grade basement and an estimated 500 cubic yards of fill from trenching (33,500 cubic yards total) would be hauled off-site.

Construction would include the 750,000 ft^2 MOF, with a height of 122 feet above grade, or 142.5 feet high including the below grade basement. Construction would begin in February 2027 and last approximately 18 months.

Architectural coatings would be applied to the MOF for a total of 750,000 ft^2. Architectural coating application would begin in August 2028 and last approximately 1 month.

Paving would be required for the new access road, loading dock area, and sidewalks, a total of approximately 40,000 ft^2. Paving would begin in September 2028 and last approximately 1 month.

4.1.2 Assumptions

Demolition Phase

Start: October 2026
Phase duration: 2 months
Area of building to be demolished (ft^2): 20000
Height of building to be demolished (ft): 30

Site Grading Phase

Start: December 2026
Phase duration: 1 month
Area of site to be graded (ft^2): 348480
Amount of material to be hauled offsite (yd^3): 50000

Trenching/Excavating Phase

Start: January 2027
Phase duration: 1 month
Area of site to be trenched/excavated (ft^2): 109000
Amount of material to be hauled on or offsite (yd^3): 33500

Building Construction Phase

Start: February 2027
Phase duration: 18 months
Area of building (ft^2): 750000
Height of building (ft): 142.5

Architectural Coatings Phase

Start: August 2028
Phase duration: 1 month
Total square footage (ft^2): 750000

Paving Phase

Start: September 2028

Phase duration: 1 month
Paving area (ft^2): 40000

4.1.3 Emissions Summary

MOF Construction: Estimated Criteria Pollutant Emissions (tons)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	9.182581	6.518457	6.193572	0.013579	4.710751	0.143087	0.000000	0.135681

MOF Construction: Estimated Greenhouse Gas Emissions (tons)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.81932	0.326511	2992.388084	3091.737106

4.2 Alternative 3: MOF Heating

Operations Period

Start: January 2029
End: Indefinite

4.2.1 Description

Heating for the MOF (750,000 ft^2) would be required following construction. Heating was assumed to begin in January 2029, and would continue indefinitely.

4.2.2 Assumptions

Heat Energy Requirement Method

Area of floorspace to be heated (ft^2): 750000
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3-9.9 MMBtu/hr)
Heat Value ($MMBtu/ft^3$): 0.00105
Energy Intensity ($MMBtu/ft^2$): 0.1278

Boiler/Furnace Usage

Operating time per year (hours): 900

4.2.3 Emissions Summary

MOF Heating: Estimated Criteria Pollutant Emissions (tons per year)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	0.251036	4.564286	3.834000	0.027386	0.346886	0.346886	0.000000	0.000000

MOF Heating: Estimated Greenhouse Gas Emissions (tons per year)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.103153	0.103153	5478.010071	5483.669786

4.3 Alternative 3: MOF Generator

Operations Period

Start: January 2029
End: Indefinite

4.3.1 Description

Operation of the diesel life safety generator for the MOF was assumed to begin in January 2029, and would continue indefinitely. It was assumed the generator would operate an average of 30 hours per year.

4.3.2 Assumptions

Emergency Generator

Type of fuel used in emergency generator: Diesel
Number of emergency generators: 1
Emergency generator's horsepower: 600
Average operating hours per year (hours): 30

4.3.3. Emissions Summary

MOF Generator: Estimated Criteria Pollutant Emissions (tons per year)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	0.025110	0.103500	0.069120	0.021150	0.022590	0.022590	0.000000	0.000000

MOF Generator: Estimated Greenhouse Gas Emissions (tons per year)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.000417	0.000083	10.350000	11.970000

4.4 Alternative 3: WCPS Construction

Construction Period

Start: October 2026
End: September 2028

4.4.1 Description

It was assumed the WCPS would be constructed over a 2-year period from October 2026 through September 2028. Construction of the WCPS would occur on the remaining area of Site 3 (i.e., 16 acres). It was assumed site preparation for the WCPS included clearing of vegetation to establish the construction laydown area for both the MOF and WCPS.

Site grading for the WCPS, including removal of vegetation, would occur on approximately 16 acres (696,960 ft^2). Site grading would begin in October 2026 and last approximately 2 months. Approximately 175,000 cubic yards of fill and removed vegetation would be hauled off-site.

Trenching would be required for rerouting, installation, and removal of utilities and excavation for bioretention areas, estimated at 27,000 square feet total. Trenching would begin in December 2026 and last approximately 2 months. An estimated 15,000 cubic yards of fill would be hauled off-site.

Construction would include the 1,626,949 ft^2 WCPS, with a height of 120 feet above grade. Construction would begin in February 2027 and last approximately 18 months.

Architectural coatings would be applied to the WCPS for a total of 1,626,949 ft^2. Architectural coating application would begin in August 2028 and last approximately 1 month.

Paving would be required for new access roads, surface parking areas, and sidewalks, estimated at 250,000 ft^2. Paving would begin in September 2028 and last approximately 1 month.

4.4.2 Assumptions

Site Grading Phase

Start: December 2026
Phase duration: 2 months
Area of site to be graded (ft^2): 696960
Amount of material to be hauled offsite (yd^3): 175000

Trenching/Excavating Phase

Start: December 2026
Phase duration: 2 months
Area of site to be trenched/excavated (ft^2): 27000
Amount of material to be hauled on or offsite (yd^3): 15000

Building Construction Phase

Start: February 2027
Phase duration: 18 months
Area of building (ft^2): 1626949
Height of building (ft): 120

Architectural Coatings Phase

Start: August 2028
Phase duration: 1 month
Total square footage (ft^2): 1626949

Paving Phase

Start: September 2028
Phase duration: 1 month
Paving area (ft^2): 250000

4.4.3 Emissions Summary

WCPS Construction: Estimated Criteria Pollutant Emissions (tons)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	19.591609	10.589779	9.011365	0.021398	14.640728	0.217889	0.000000	0.246612

WCPS Construction: Estimated Greenhouse Gas Emissions (tons)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.135919	0.599984	5146.293709	5328.48827

4.5 Alternative 3: Additional Personnel

Operations Period

Start: January 2029
End: Indefinite

4.5.1 Description

The Proposed Action includes 800 personnel at the CNMF coming from off-site facilities and future growth. For the purposes of this analysis, it was assumed the 800 personnel would be relocated to the CNMF by January 2029.

4.5.2 Assumptions

Number of Personnel

Civilian Personnel: 800

Personnel Work Schedule

Civilian Personnel: 5 days per week

4.5.3 Emissions Summary

Additional Personnel: Estimated Criteria Pollutant Emissions (tons per year)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	1.067916	0.454840	13.186565	0.008614	0.022627	0.020029	0.000000	0.187195

Additional Personnel: Estimated Greenhouse Gas Emissions (tons per year)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.062427	0.024925	1634.614619	1643.588019

4.6 Alternative 3 Emissions Summary

Alternative 3: Total Estimated Criteria Pollutant Emissions by Year (tons per year)

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
2026	0.139	1.549	1.502	0.003	17.656	0.046	0	0.018
2027	0.642	9.51	8.339	0.019	1.561	0.192	0	0.224
2028	27.993	6.049	5.364	0.012	0.134	0.123	0	0.141
2029 (steady state)	1.344	5.123	17.09	0.057	0.392	0.39	0	0.187

Alternative 3: Total Estimated Greenhouse Gas Emissions by Year (metric tons per year)

Year	CO_2	CH_4	N_2O	CO_2e[a]
2026	490	0.01509875	0.03926265	502.0777
2027	4222	0.11164256	0.49189188	4371.375
2028	2671	0.07089009	0.30934767	2764.958
2029 (steady state)	6,462	0.15031742	0.11626615	6500.405

[a] To calculate the total CO_2e, all GHGs are multiplied by their global warming potential and the results are added together. The global warming potentials used to calculate CO_2e are as follows: CO_2 = 1; CH_4 = 25; N_2O = 298.

5 Alternative 4 Air Emissions Analysis

Action Location

State: Maryland
County: Anne Arundel
Regulatory Areas: Anne Arundel County and Baltimore County, MD; Baltimore, MD

5.1 Alternative 4: MOF Construction

Construction Period

Start: October 2026

End: September 2028

5.1.1. Description

It was assumed the MOF would be constructed over a 2-year period from October 2026 through September 2028. Under Alternative 4, the MOF would be constructed at either Site 4 or Site 5. For the purposes of this analysis, a worst case scenario of Site 4 was assumed, as Site 4 would require a greater area of demolition than Site 5.

Demolition on Site 4 would be required for Buildings 9801 (approximately 30,300 ft^2), 9802 (approximately 30,000 ft^2), 9803 (approximately 30,000 ft^2), and 9804 (approximately 30,000 ft^2), and five storage sheds (approximately 1,000 ft^2). The total square footage of buildings to be demolished was calculated at 121,300 ft^2. The average height of all buildings to be demolished was assumed to be 40 feet. Demolition would begin in October 2026 and last approximately 2 months.

Site grading for the MOF and construction laydown area would occur across the entirety of Site 4 minus the WCPS footprint (approximately 9.95 acres; 433,422 ft^2) to ensure required elevation is met. Site grading would begin in December 2026 and last approximately 1 month. Approximately 45,000 cubic yards of demolition debris and fill would be hauled off-site.

Excavation would be required for removal of pavements, estimated at 165,000 ft^2. Excavation would also be required for the MOF's below grade basement, which would cover 91,000 ft^2. Trenching would be required for rerouting, installation, and removal of utilities, estimated at 10,000 linear feet. An average of 3 feet was assumed for all utility trenching, resulting in a total trenched area of 30,000 ft^2. The total area to be excavated or trenched was estimated at 286,000 ft^2. Trenching would begin in January 2027 and last approximately 1 month. Approximately 33,000 cubic yards of fill from excavation of the below grade basement and an estimated 18,500 cubic yards of demolished pavement and fill from trenching (51,500 cubic yards total) would be hauled off-site.

Construction would include the 750,000 ft^2 MOF, with a height of 122 feet above grade, or 142.5 feet high including the below grade basement. Construction would begin in February 2027 and last approximately 18 months.

Architectural coatings would be applied to the MOF for a total of 750,000 ft^2. Architectural coating application would begin in August 2028 and last approximately 1 month.

Paving would be required for the new access road, loading dock area, and sidewalks, a total of approximately 40,000 ft^2. Paving would begin in September 2028 and last approximately 1 month.

5.1.2 Assumptions

Demolition Phase

Start: October 2026
Phase duration: 2 months
Area of building to be demolished (ft^2): 121300

Height of building to be demolished (ft): 40

Site Grading Phase

Start: December 2026
Phase duration: 1 month
Area of site to be graded (ft^2): 433422
Amount of material to be hauled offsite (yd^3): 45000

Trenching/Excavating Phase

Start: January 2027
Phase duration: 1 month
Area of site to be trenched/excavated (ft^2): 286000
Amount of material to be hauled on or offsite (yd^3): 33000

Building Construction Phase

Start: February 2027
Phase duration: 18 months
Area of building (ft^2): 750000
Height of building (ft): 142.5

Architectural Coatings Phase

Start: August 2028
Phase duration: 1 month
Total square footage (ft^2): 750000

Paving Phase

Start: September 2028
Phase duration: 1 month
Paving area (ft^2): 40000

5.1.3 Emissions Summary

MOF Construction: Estimated Criteria Pollutant Emissions (tons)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	9.191370	6.655149	6.323949	0.013848	8.334322	0.145902	0.000000	0.138571

MOF Construction: Estimated Greenhouse Gas Emissions (tons)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.083619	0.333577	3055.883848	3157.380655

5.2 Alternative 4: MOF Heating

Operations Period

Start: January 2029
End: Indefinite

5.2.1 Description

Heating for the MOF (750,000 ft^2) would be required following construction. Heating was assumed to begin in January 2029, and would continue indefinitely.

5.2.2 Assumptions

Heat Energy Requirement Method

Area of floorspace to be heated (ft^2): 750000
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3-9.9 MMBtu/hr)
Heat Value ($MMBtu/ft^3$): 0.00105
Energy Intensity ($MMBtu/ft^2$): 0.1278

Boiler/Furnace Usage

Operating time per year (hours): 900

5.2.3 Emissions Summary

MOF Heating: Estimated Criteria Pollutant Emissions (tons per year)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	0.251036	4.564286	3.834000	0.027386	0.346886	0.346886	0.000000	0.000000

MOF Heating: Estimated Greenhouse Gas Emissions (tons per year)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.103153	0.103153	5478.010071	5483.669786

5.3 Alternative 4: MOF Generator

Operations Period

Start: January 2029
End: Indefinite

5.3.1 Description

Operation of the diesel life safety generator for the MOF was assumed to begin in January 2029, and would continue indefinitely. It was assumed the generator would operate an average of 30 hours per year.

5.3.2 Assumptions

Emergency Generator

Type of fuel used in emergency generator: Diesel
Number of emergency generators: 1
Emergency generator's horsepower: 600
Average operating hours per year (hours): 30

5.3.3 Emissions Summary

MOF Generator: Estimated Criteria Pollutant Emissions (tons per year)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	0.025110	0.103500	0.069120	0.021150	0.022590	0.022590	0.000000	0.000000

MOF Generator: Estimated Greenhouse Gas Emissions (tons per year)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.000417	0.000083	10.350000	11.970000

5.4 Alternative 4: Remove Heating for Demolished Facilities

Operations Period

Start: January 2029
End: Indefinite

5.4.1 Description

Heating for demolished buildings (Buildings 9801, 9802, 9803, and 9804; 120,300 ft^2 total) would no longer be required following demolition. For the purposes of this analysis, it was assumed heating would be removed by January 2029.

5.4.2 Assumptions

Heat Energy Requirement Method

Area of floorspace to be heated (ft^2): 120300
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3-9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.1079

Boiler/Furnace Usage

Operating time per year (hours): 900

5.4.3 Emissions Summary

Remove Heating for Demolished Facilities: Estimated Criteria Pollutant Emissions (tons per year)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	-0.033996	-0.618113	-0.519215	-0.003709	-0.046977	-0.046977	0.000000	0.000000

Remove Heating for Demolished Facilities: Estimated Greenhouse Gas Emissions (tons per year)

	CH_4	N_2O	CO_2	CO_2e
Emissions	-0.013969	-0.013969	-741.852870	-742.619330

5.5 Alternative 4: WCPS Construction

Construction Period

Start: October 2026
End: September 2028

5.5.1 Description

It was assumed the WCPS would be constructed over a 2-year period from October 2026 through September 2028. Construction of the WCPS would occur on undeveloped land adjacent to ECPS3.

Site grading, including removal of vegetation, would occur across the WCPS footprint (approximately 4.05 acres; 176,418 ft^2). Site grading would begin in October 2026 and last

approximately 2 months. Approximately 105,000 cubic yards of fill and 5,000 cubic yards of removed vegetation (110,000 cubic yards total) would be hauled off-site.

Trenching would be required for rerouting, installation, and removal of utilities and excavation for bioretention areas, estimated at 27,000 square feet total. Trenching would begin in December 2026 and last approximately 2 months. An estimated 15,000 cubic yards of fill would be hauled off-site.

Construction would include the 1,626,949 ft^2 WCPS, with a height of 120 feet above grade. Construction would begin in February 2027 and last approximately 18 months.

Architectural coatings would be applied to the WCPS for a total of 1,626,949 ft^2. Architectural coating application would begin in August 2028 and last approximately 1 month.

Paving would be required for new access roads, surface parking areas, and sidewalks, estimated at 250,000 ft^2. Paving would begin in September 2028 and last approximately 1 month.

5.5.2 Assumptions

Site Grading Phase

Start: December 2026
Phase duration: 2 months
Area of site to be graded (ft^2): 176418
Amount of material to be hauled offsite (yd^3): 105000

Trenching/Excavating Phase

Start: December 2026
Phase duration: 2 months
Area of site to be trenched/excavated (ft^2): 27000
Amount of material to be hauled on or offsite (yd^3): 15000

Building Construction Phase

Start: February 2027
Phase duration: 18 months
Area of building (ft^2): 1626949
Height of building (ft): 120

Architectural Coatings Phase

Start: August 2028
Phase duration: 1 month
Total square footage (ft^2): 1626949

Paving Phase

Start: September 2028
Phase duration: 1 month
Paving area (ft^2): 250000

5.5.3 Emissions Summary

WCPS Construction: Estimated Criteria Pollutant Emissions (tons)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	19.546001	10.089759	8.568479	0.020210	4.268620	0.203683	0.000000	0.241335

WCPS Construction: Estimated Greenhouse Gas Emissions (tons)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.129785	0.586745	4955.912690	5134.008771

5.6 Alternative 4: Remove Emergency Generators from Demolished Facilities

Operations Period

Start: January 2029
End: Indefinite

5.6.1 Description

The emergency generators at Buildings 9801 and 9802 (4 total) within Site 4 would be removed following demolition. For the purposes of this analysis, it was assumed the generators would be removed by January 2029.

5.6.2 Assumptions

Emergency Generator

Type of fuel used in emergency generator: Diesel
Number of emergency generators: 4
Emergency generator's horsepower: 600
Average operating hours per year (hours): 30

5.6.3 Emissions Summary

Remove Emergency Generators from Demolished Facilities: Estimated Criteria Pollutant Emissions (tons per year)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	-0.100440	-0.414000	-0.276480	-0.084600	-0.090360	-0.090360	0.000000	0.000000

Remove Emergency Generators from Demolished Facilities: Estimated Greenhouse Gas Emissions (tons per year)

	CH_4	N_2O	CO_2	CO_2e
Emissions	-0.001667	-0.000333	-41.400000	-47.880000

5.7 Alternative 4: Additional Personnel

Operations Period

Start: January 2029
End: Indefinite

5.7.1 Description

The Proposed Action includes 800 personnel at the CNMF coming from off-site facilities and future growth. For the purposes of this analysis, it was assumed the 800 personnel would be relocated to the CNMF by January 2029.

5.7.2 Assumptions

Number of Personnel

Civilian Personnel: 800

Personnel Work Schedule

Civilian Personnel: 5 days per week

5.7.3 Emissions Summary

Additional Personnel: Estimated Criteria Pollutant Emissions (tons per year)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
Emissions	1.067916	0.454840	13.186565	0.008614	0.022627	0.020029	0.000000	0.187195

Additional Personnel: Estimated Greenhouse Gas Emissions (tons per year)

	CH_4	N_2O	CO_2	CO_2e
Emissions	0.062427	0.024925	1634.614619	1643.588019

5.8 Alternative 4 Emissions Summary

Alternative 4: Total Estimated Criteria Pollutant Emissions by Year (tons per year)

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	Pb	NH_3
2026	0.102	1.187	1.19	0.002	9.147	0.035	0	0.015
2027	0.642	9.509	8.339	0.019	3.322	0.192	0	0.224
2028	27.993	6.049	5.364	0.012	0.134	0.123	0	0.141
2029 (steady state)	1.21	4.091	16.294	-0.031	0.255	0.252	0	0.187

Alternative 4: Total Estimated Greenhouse Gas Emissions by Year (metric tons per year)

Year	CO_2	CH_4	N_2O	CO_2e[a]
2026	376	0.01107889	0.0337435	386.3325
2027	4221	0.11162777	0.49181059	4370.35
2028	2671	0.07089009	0.30934767	2764.958
2029 (steady state)	5,751	0.13613264	0.10329098	5785.184

[a] To calculate the total CO_2e, all GHGs are multiplied by their global warming potential and the results are added together. The global warming potentials used to calculate CO_2e are as follows: CO_2 = 1; CH_4 = 25; N_2O = 298.

B.2 Social Cost of Greenhouse Gases Calculations

The social cost of greenhouse gases (GHGs) was calculated for each alternative. The "social cost of GHGs" is an estimate of the monetized damages associated with incremental increases in GHG emissions, such as reduced agricultural productivity, human health effects, property damage from increased flood risk, and the value of ecosystem services. The interim social cost of the three primary GHGs (i.e., carbon dioxide [CO_2], methane [CH_4], and nitrous oxide [N_2O]) established by the Interagency Working Group for the years in which the Proposed Action would occur are shown in **Table 1**. Estimated annual GHG emissions for the Proposed Action alternatives are shown in **Table 2**.

Table 1. Social Cost of GHGs (in 2020 dollars)

Year	Social Cost of CO_2 (per metric ton of CO_2)	Social Cost of CH_4 (per metric ton of CH_4)	Social Cost of N_2O (per metric ton of N_2O)

2026	$57	$1,800	$21,000
2027	$59	$1,800	$21,000
2028	$60	$1,900	$22,000
2029	$61	$1,900	$22,000

Note: Social cost shown uses a 3 percent average discount rate in 2020 dollars
Source: IWG-SCGHG 2021

Table 2. Estimated GHG Emissions from the Proposed Action

Year	CO_2 (tpy)	CO_2 (metric tpy)	CH_4 (tpy)	CH_4 (metric tpy)	N_2O (tpy)	N_2O (metric tpy)	CO_2e (tpy)[a]	CO_2e (metric tpy)
Alternative 1								
2026	4,48.6406	407.0	0.014221476	0.01290151	0.032814	0.02976824	458.774644	416.1935
2027	4,689.231	4,254.0	0.123942482	0.11243876	0.547066	0.49629006	4,855.35522	4,404.705
2028	2,947.58	2,674.0	0.07820611	0.07094741	0.341348	0.30966605	3,051.25656	2,768.054
2029	6,737.325	6,112.0	0.158436097	0.14373085	0.120901	0.10967958	6,777.31423	6,148.278
Alternative 2								
2026	128.9704	117.0	0.004087027	0.00370769	0.009454	0.00857634	131.889793	119.6484
2027	1,790.153	1,624.0	0.048498708	0.0439973	0.199518	0.18100002	1,850.82199	1,679.038
2028	1,102.311	1,000.0	0.030111058	0.0273163	0.121066	0.10982888	1,139.14132	1,033.412
2029	6,737.325	6,112.0	0.158436097	0.14373085	0.120901	0.10967958	6,777.31423	6,148.278
Alternative 3								
2026	540.1324	490.0	0.016643518	0.01509875	0.04328	0.03926265	553.445814	502.0777
2027	4,653.957	4,222.0	0.123064822	0.11164256	0.542218	0.49189188	4,818.61458	4,371.375
2028	2,944.273	2,671.0	0.078142926	0.07089009	0.340997	0.30934767	3,047.84346	2,764.958
2029	7,123.134	6,462.0	0.165696546	0.15031742	0.128161	0.11626615	7,165.46821	6,500.405
Alternative 4								
2026	414.4689	376.0	0.012212382	0.01107889	0.037196	0.0337435	425.858603	386.3325
2027	4,652.855	4,221.0	0.123048519	0.11162777	0.542128	0.49181059	4,817.48515	4,370.35
2028	2,944.273	2,671.0	0.078142926	0.07089009	0.340997	0.30934767	3,047.84346	2,764.958
2029	6,339.391	5,751.0	0.150060507	0.13613264	0.113859	0.10329098	6,377.07199	5,785.184

Note: One US ton is equal to 0.907184 metric tons.
[a] To calculate the total CO_2e, all GHGs are multiplied by their global warming potential and the results are added together. The global warming potentials used to calculate CO_2e are as follows: CO_2 = 1; CH_4 = 25; N_2O = 298.

CO_2e is a representation of GHG emissions relative to a reference gas, CO_2. It is calculated by adding GHGs which have been multiplied by their global warming potential (GWP). CO_2 has a GWP equal to 1, while the GWP of CH_4 is 25 and the GWP of N_2O is 298. Using the social costs of GHGs listed in Table 1 and the GHG emissions listed in Table 2, the following equation was used to calculate the social cost of GHGs.

Social Cost = $SCCO_2(CO_2) + SCCH_4(CH_4) + SCN_2O(N_2O)$

Social Cost = social cost of GHGs ($)
$SCCO_2$ = social cost of CO_2 for the given year ($ per metric ton)
CO_2 = emissions of CO_2 for the given year (metric tons)
$SCCH_4$ = social cost of CH_4 for the given year ($ per metric ton)
CH_4 = emissions of CH_4 for the given year (metric tons)
SCN_2O = social cost of N_2O for the given year ($ per metric ton)
N_2O = emissions of N_2O for the given year (metric tons)

Table 3 shows the social cost of GHGs that were calculated for each alternative under the Proposed Action. **Table 4** shows the social cost of GHGs that were calculated for the reference areas of Anne Arundel County, Maryland, and the U.S.

Table 3. Theoretical Social Costs of GHGs from Proposed Action

Year	Social Cost GHGs (in 2020 dollars)
Alternative 1	
2026 (construction)	$23,847.36
2027 (construction)	$261,610.48
2028 (construction)	$167,387.45
2029 (operations)	$375,518.04
Alternative 2	
2026 (construction)	$6,855.78
2027 (construction)	$99,696.20
2028 (construction)	$62,468.14
2029 (operations)	$375,518.04
Alternative 3	
2026 (construction)	$28,781.69
2027 (construction)	$259,628.69
2028 (construction)	$167,200.34
2029 (operations)	$397,025.46
Alternative 4	
2026 (construction)	$22,160.56
2027 (construction)	$259,567.95
2028 (construction)	$167,200.34
2029 (operations)	$353,342.05

Note: All values shown in tons per year. One US ton is equal to 0.907184 metric tons.
[a] To calculate the total CO2e, all GHGs are multiplied by their global warming potential and the results are added together. The global warming potentials used to calculate CO_2e are as follows: CO_2 = 1; CH_4 = 25; N_2O = 298.
Source: IWG-SCGHG 2021

Table 4. Theoretical Social Costs of GHGs for the Reference Areas

Year	CO_2 (metric tpy)	CH_4 (metric tpy)	N_2O (metric tpy)	Social Cost GHGs (in 2020 dollars)
Anne Arundel County				
2026	4,329,840.493	3,987.074	87.090	$255,806,523.78
2027	4,329,840.493	3,987.074	87.090	$264,466,204.76
2028	4,329,840.493	3,987.074	87.090	$269,281,842.29
2029	4,329,840.493	3,987.074	87.090	$273,611,682.79
Maryland				
2026	44,121,641.764	47,519.206	568.804	$2,612,413,042.33
2027	44,121,641.764	47,519.206	568.804	$2,700,656,325.86
2028	44,121,641.764	47,519.206	568.804	$2,750,098,692.55
2029	44,121,641.764	47,519.206	568.804	$2,794,220,334.31
U.S.				
2026	2,476,019,904.000	7,403,212.600	64,266.393	$155,808,511,452.97
2027	2,476,019,904.000	7,403,212.600	64,266.393	$160,760,551,260.97
2028	2,476,019,904.000	7,403,212.600	64,266.393	$164,041,158,817.58
2029	2,476,019,904.000	7,403,212.600	64,266.393	$166,517,178,721.58

Note: Table based on the assumption that Anne Arundel County and Maryland annual GHG emissions are consistent with 2020 reported GHG emissions and that U.S. annual GHG emissions are consistent with 2022 reported GHG emissions.
Sources: USEPA 2023a, USEPA 2023b

References

Interagency Working Group on Social Cost of Greenhouse Gases, United States Government (IWG-SCGHG). 2021. *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990*. February 26, 2021.

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USEPA. 2023b. *Greenhouse Gas Reporting Program (GHGRP) Emissions by GHG*. October 5, 2023. Available online: <*https://www.epa.gov/ghgreporting/ghgrp-emissions-ghg*>. Accessed March 27, 2024.

Record of Non-Applicability (RONA)
to the General Conformity Rule
for Cyber National Mission Force Facility
Fort Meade, Maryland

Month Day, Year

Air emissions were estimated for the construction and operation of a new 750,000-square foot Cyber National Mission Force (CNMF) mission operations facility and associated infrastructure to consolidate CNMF personnel and operations on the NSA campus at Fort Meade, Maryland. Four action alternatives were considered. The CNMF facility would be constructed from Fiscal Year 2027 through Fiscal Year 2028, with operation beginning following construction. Emissions from demolition, site grading, excavation, building construction, architectural coatings, and paving were assessed. Operational emissions from boilers, emergency generators, and additional personnel 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 *de minimis* threshold levels for nonattainment pollutants of Anne Arundel County are 50 tpy for VOCs, and 100 tpy for NO_x and SO_x. The highest total net annual emissions for each nonattainment criteria pollutant from implementation of any alternative for the project have been estimated at 29.6 tons per year (tpy) NO_x, 28.0 tpy VOCs, and 0.1 tpy SO_x, which would be below the *de minimis* threshold levels.

Supporting documentation and emissions estimates appear in the NEPA documentation.

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National Security Agency

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