Final

Environmental Impact Statement

for the

O'Brien Road Access Modernization
Fort George G. Meade, Maryland

Volume I - Impact Analyses

February 2024

US Army Corps
of Engineers
Baltimore District

ACRONYMS AND ABBREVIATIONS

ACF	Access Control Facility
ACM	asbestos-containing material
ADP	Area Development Plan
American Water	American Water Operations and Maintenance, Incorporated
AOI	area of interest
APE	Area of Potential Effect
AQRC	Air Quality Control Region
AR	Army Regulation
AST	aboveground storage tank
BGE	Baltimore Gas and Electric Company
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
BP	before present
BRAC	Base Realignment and Closure
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CNMF	Cyber National Mission Force
CO	carbon monoxide
CO_2	carbon dioxide
CO_{2e}	carbon dioxide equivalent
COMAR	Code of Maryland Regulations
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Program
dB	decibel(s)
dBA	A-weighted decibel(s)
DERP	Defense Environmental Restoration Program
DNL	Day-Night Average Sound Level
DoD	Department of Defense
DPW	Directorate of Public Works
ECB	East Campus Building
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EO	Executive Order
EPACT	Energy Policy Act
EPH	ephemeral
ESA	Endangered Species Act
ESCP	erosion and sediment-control plan
ESD	Environmental Site Design
FCA	Forest Conservation Act
Fort Meade	Fort George G. Meade
FONPA	Finding of No Practicable Alternative
FPPA	Farmland Protection Policy Act
FR	*Federal Register*
FRP	Facility Response Plan
FSD	Forest Stand Delineation
FY	fiscal year
GHG	greenhouse gas
HUD	Department of Housing and Urban Development
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resource Management Plan
INT	intermittent
IPaC	Information for Planning and Consulting
IRP	Installation Restoration Program
ISCP	Installation Spill Contingency Plan
LBP	lead-based paint
LEED	Leadership in Energy and Environmental Design
LRC	Logistics Readiness Center
MBTA	Migratory Bird Treaty Act
MD	Maryland State Route
MDE	Maryland Department of the Environment
MDNR	Maryland Department of Natural Resources
MDOT SHA	Maryland Department of Transportation State Highway Administration

mgd	million gallons per day
MHT	Maryland Historic Trust
MMRP	Military Munitions Response Program
MOU	Memorandum of Understanding
MRS	Mortar Range Munitions Response Site
MS4	Municipal Separate Storm Sewer System
MSF	Mail Screening Facility
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NSA	National Security Agency
NSAW	National Security Agency Washington
O_3	ozone
ORAM	O'Brien Road Access Modernization
OU	Operable Unit
PA	preliminary assessment
PAF	Publishing and Archives Facility
PCB	polychlorinated biphenyl
pCi/L	picoCuries per liter
PEM	palustrine emergent
PER	perennial
percent g	percentage of the force of gravity
PFO	palustrine forested wetlands
PM_{10}	particulate matter measured less than or equal to 10 microns in diameter
$PM_{2.5}$	particulate matter measured less than or equal to 2.5 microns in diameter
POV	privately owned vehicle
POW	palustrine open water
ppb	parts per billion
ppm	parts per million
PSD	Prevention of Significant Deterioration
PSS	palustrine scrub-shrub
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
SI	site inspection
SO_2	sulfur dioxide
SO_X	sulfur oxides
SPCC	Spill Prevention, Control and Countermeasure
SWPPP	Stormwater Pollution and Prevention Plan
TMDL	total maximum daily load
tpy	ton(s) per year
UFC	Unified Facilities Criteria
$\mu g/m^3$	microgram(s) per cubic meter
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGBC	U.S. Green Building Council
UST	underground storage tank
VCIF	Vehicle Cargo Inspection Facility
VCP5	Vehicle Control Point 5
VOC	volatile organic compound
WOTUS	waters of the United States
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

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FINAL

ENVIRONMENTAL IMPACT STATEMENT
FOR THE
O'BRIEN ROAD ACCESS MODERNIZATION
FORT MEADE, MARYLAND

PROPONENT:

AMANDA GDOWIK — DATE
Chief, Master Planning
National Security Agency

RECOMMEND APPROVAL:

JEFFREY WILLIAMS — DATE
Sr. Environmental Engineer, Occupational Health and Well-Being
National Security Agency

SARAH BOWLEY — DATE
Architect, Master Planning
National Security Agency

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Final

ENVIRONMENTAL IMPACT STATEMENT

FOR THE

O'BRIEN ROAD ACCESS MODERNIZATION
FORT MEADE, MARYLAND

NATIONAL SECURITY AGENCY
FORT GEORGE G. MEADE, MARYLAND

FEBRUARY 2024

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Cover Sheet

Final Environmental Impact Statement Addressing O'Brien Road Access Modernization at Fort Meade, Maryland

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

Affected Location: Fort George G. Meade (Fort Meade), Maryland

Report Designation: Final Environmental Impact Statement (EIS)

Proposed Action: The DoD proposes to renovate and upgrade installation access and inspection facilities for the NSA campus and Fort Meade Garrison. The project is collectively known as the O'Brien Road Access Modernization (ORAM) project. The project area for the facilities and roadway improvements is at the intersection of Mapes and O'Brien Roads on Fort Meade.

Abstract: The DoD has proposed implementation of the ORAM project at Fort Meade. The ORAM project consists of the renovation and upgrade of vehicle inspection and access facilities for the NSA campus and Fort Meade Garrison. The Proposed Action consists of construction of a new Vehicle Control Point 5 (VCP5) along O'Brien Road; construction of a new Vehicle Cargo Inspection Facility (VCIF) with adjacent Visitor Control Center; construction of a new Mail Screening Facility (MSF) adjacent to the VCIF; reconfiguration of the Mapes Road Access Control Facility (ACF) on Fort Meade Garrison; improvements of the roadway to provide enhanced routing and separation of traffic between NSA and Fort Meade; demolition of the existing VCP5, VCIF, MSF, and Mapes Road ACF; and construction of associated infrastructure, including walkways, inspection canopies, surface parking areas, stormwater management facilities, and utilities.

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

For additional information, contact Mr. Jeffrey Williams, Office of Occupational Health and Well Being, by mail to 9800 Savage Road, Suite 6218, Fort Meade, Maryland 20755; telephone at 301-688-2970; or email to *jdwill2@nsa.gov*.

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Executive Summary

Introduction

This Environmental Impact Statement (EIS) has been prepared to address the proposal by the Department of Defense (DoD) for implementation of the O'Brien Road Access Modernization (ORAM) project, which consists of the renovation and upgrade of the inspection and access facilities for both the National Security Agency (NSA) campus and Fort George G. Meade (Fort Meade) Garrison, Maryland.

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

Purpose and Need

The purpose of the proposed project is to construct facilities and infrastructure to allow for increased capacity for required security processing of traffic and deliveries entering Fort Meade and the NSA campus. The need for the proposed project is to address inefficiencies with current infrastructure and capacity issues. Mission growth at both NSA and Fort Meade along with major construction projects have generated changes in Fort Meade traffic distribution, resulting in extensive delays for inspection and access. The configuration and requirements for entry to the existing Vehicle Cargo Inspection Facility (VCIF), Vehicle Control Point 5 (VCP5), and associated security infrastructure can create extensive vehicle queues during peak hours, which can further cause security concerns if a vehicle is rejected and must be escorted by security through the existing traffic lanes. The existing configuration does not meet current security standards.

Scope of the Environmental Impact Statement

The scope of the analysis in this EIS includes evaluation of the Proposed Action and the range of alternatives and impacts in accordance with NEPA. The purpose of the EIS is to inform decisionmakers and the public of the likely environmental consequences of the Proposed Action and alternatives.

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 are encouraged to participate in the public involvement process.

DoD initiated the public scoping process for the EIS with the publication of the Notice of Intent to prepare an EIS (87 *Federal Register* 41116) on July 11, 2022. A letter was also distributed at this time to approximately 100 potentially interested federal, state, and local agencies; Native

American tribes; and other stakeholder groups or individuals. Announcements were also published in the *Baltimore Sun* and the *Washington Post* on July 11, 2022, notifying the public of the intent to prepare an EIS, identifying the location of public scoping materials, and requesting scoping comments on the Proposed Action. A narrated presentation providing an overview of the proposed project and scoping process was made available for public viewing on the project website from August 3 through 4, 2022. Scoping comments were officially accepted through August 25, 2022. All scoping comments were considered during the preparation of the Draft EIS. Substantive concerns identified during scoping included consideration of potential impacts on a known archeological site and the Fort Meade Water Treatment Plant, which is a potentially eligible historic resource.

DoD provided a 45-day public review for the Draft EIS, which was initiated through publication of a Notice of Availability (88 *Federal Register* 37869) on June 9, 2023. Methods similar to those from the scoping period were used to notify the public and agencies of the public review period for the Draft EIS, including a mailing of a letter with a link to the document to potentially interested parties. A virtual public meeting was held on July 19, 2023, which consisted of a live presentation and opportunity for public comment.

Description of the Proposed Action

DoD 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 on Fort Meade. The ORAM project area includes the locations being considered for VCP5 and the Mapes Road Access Control Facility (ACF).

The Proposed Action would consist of:

- Construction of a new VCP5 along O'Brien Road
- Construction of a new VCIF with adjacent Visitor Control Center
- Construction of a new Mail Screening Facility (MSF) adjacent to the VCIF
- Reconfiguration of the Mapes Road ACF
- Improvement of the roadway to provide enhanced routing and separation of traffic between the NSA and Fort Meade entering from Maryland State Routes (MDs) 32 and 198
- Demolition of the existing VCP5, VCIF, MSF, and Mapes Road ACF
- Associated infrastructure, including sidewalks, inspection canopies, dog kennels, surface parking areas, stormwater management facilities, and utilities

Construction is expected to begin in fiscal year (FY) 2027 and occur for 2 years, with expected completion in FY29. Construction would be scheduled in phases to avoid impacts to daily operations for either the NSA or Fort Meade.

Alternatives Analysis

This EIS considers two alternatives to the ORAM configuration in addition to the No Action Alternative. Details regarding the alternatives carried forward for further detailed analysis in this EIS are provided in the following subsections.

ORAM Configuration Alternatives

Alternative 1 (Preferred Alternative)

Alternative 1 would use an overpass for vehicle movement, sited shortly after vehicles enter the installation from the existing entry way roundabout that is part of the MD 32/MD 198 interchange. The VCIF would be moved east of O'Brien Road and expanded to include four checkpoint lanes. Operating all four lanes would reduce queue length spillback during morning VCIF truck queuing. VCP5 would be relocated to the area of the existing VCIF. The length of the Mapes Road ACF inbound lane would be increased, and the new ACF would be relocated to the south, adjacent to the existing ACF. This design would include preservation of several existing buildings and features in the project area that are unrelated to the Proposed Action, including historic resources. Under this alternative, a direct connection to MD 32 would also be included and coordinated with the Maryland Department of Transportation State Highway Administration. To maintain sightlines from VCP5 to the final denial barriers, forest clearing would likely be required. Wetland impacts are also anticipated as a result of the relocation of facilities and roadway expansion. Impacts on wetlands and forests would be minimized to the greatest extent practicable.

To enter both Fort Meade Garrison and the NSA campus from MD 32, privately owned vehicle (POV) and truck traffic would approach Fort Meade via Mapes Road. Under Alternative 1, Fort Meade Garrison-bound POV traffic would exit the existing roundabout and queue through the Mapes Road ACF for entry into Fort Meade. NSA-bound POV traffic would exit the existing roundabout via the overpass and veer left to the VCP5 inbound lane for entry or rejection. Rejected POVs would be turned around via the VCP5 rejection lane to merge onto the outbound lane that would lead them off Fort Meade back onto MD 32 along with egress traffic. Similar to NSA-bound POV traffic, NSA- and Fort Meade-bound trucks would exit the existing roundabout via the overpass, then veer right into the VCIF entry lane for inspection; upon clearance, they would exit north to the NSA campus or south to merge onto Mapes Road going east onto Fort Meade. Upon rejection, trucks would be escorted off Fort Meade via the VCIF rejection lane, which would merge onto Mapes Road, traveling west toward MD 32.

Alternative 2

Alternative 2 would be largely the same as Alternative 1, except that in lieu of an overpass, an additional double-lane roundabout would be constructed and used for inbound vehicle entry. Construction of the additional double-lane roundabout under Alternative 2 would have a lower cost than construction of the overpass bridge under Alternative 1.

No Action Alternative

Council on Environmental Quality (CEQ) regulations specify the inclusion of the No Action Alternative in the alternatives analysis of an EIS (40 Code of Federal Regulations [CFR] 1502.14). Because DoD has identified a need for the Proposed Action (i.e., to meet mission requirements of the NSA and 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, the NSA would not make any changes to the existing access inspection facilities. Fort Meade would separately complete plans for Mapes Road, on its own timeline. VCIF access would remain separate from the VCP5 queue, but the following existing concerns would remain in effect:

- Increased traffic congestion and delays at peak hours on site
- Unsafe congestion on MD 32 due to a backlog of traffic entering the NSA campus
- Increased safety risk of POV and truck traffic within the same access corridors
- Continued lack of full compliance with Unified Facilities Criteria security requirements
- Projected NSA traffic in the future would continue to be a burden to the Fort Meade Mapes Road corridor
- The double gate inconvenience (entry through Mapes Road ACF and VCP5) is a barrier to the workforce, especially as employee density shifts eastward on campus
- VCIF operation is currently over capacity

Therefore, the No Action Alternative would not meet DoD mission requirements.

Summary of Environmental Impacts

The EIS focuses on those resources potentially subject to impacts from the Proposed Action or alternatives, including the No Action Alternative. The environmental resources analyzed within this EIS are land use and visual resources, transportation, noise, air quality, geological resources, water resources, biological resources and wetlands, cultural resources, infrastructure, sustainability, hazardous materials and wastes, and socioeconomics and environmental justice. **Table ES-1** summarizes the impacts on each of these environmental resources and cumulative impacts under each alternative. This tabular summary of potential environmental impacts focuses on those impacts that are considered to be more adverse and limits discussions of short term, minor to moderate, adverse impacts that would be expected from construction. Generally, construction and demolition would result in ground disturbance with short-term and/or temporary, minor to moderate, adverse impacts. Additional details for short-term impacts are further discussed in the EIS.

Best Management Practices and Mitigation Measures

The Proposed Action has the potential to result in adverse environmental impacts. The Proposed Action includes best management practices (BMPs), mitigation measures, and design concepts to avoid adverse impacts to the extent practicable (see **Table ES-2**). Unavoidable

impacts would be minimized or compensated for to the extent practicable. In accordance with CEQ NEPA regulations, mitigation measures are considered for adverse environmental impacts. If a particular impact associated with a Proposed Action is considered significant, then mitigation measures are developed where it is feasible to do so.

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

Resource Area	Alternative 1	Alternative 2	No Action Alternative
Land Use and Visual Resources	Long-term, moderate, beneficial impacts on land use would be expected from improved traffic flow and installation access for the NSA and Fort Meade Garrison associated with the relocation of the VCIF, facility upgrades, and roadway reconfiguration. Long-term, minor to moderate, adverse impacts on visual quality would be expected from conversion of forested area to developed land.	Impacts on land use under Alternative 2 would be similar to those described for Alternative 1.	No impacts anticipated.
Transportation	Short-term, minor to moderate, adverse and long-term, major, beneficial impacts on transportation would be expected from temporary access limitations or restrictions during construction and permanent improvement in traffic flow and access.	Impacts on transportation under Alternative 2 would be similar to those described for Alternative 1. The roundabout under Alternative 2 would not provide as much free flow for incoming traffic as an overpass as proposed under Alternative 1.	Short- and long-term, moderate to major, adverse impacts on access facilities would be expected. Ongoing NSA campus and Fort Meade Garrison expansion is expected to increase traffic through the ORAM project area. Without additional lanes and upgraded facilities, queue length and wait times are expected to increase, resulting in a continued decrease in operational efficiency at the intersection of Mapes and O'Brien Roads. Additionally, daily traffic backups on MD 32 would continue to increase.
Noise	Long-term, negligible to minor, adverse impacts on the noise environment would be anticipated from the introduction of noise from vehicle traffic in a previously forested area.	Impacts on the noise environment under Alternative 2 would be similar to those described for Alternative 1.	No impacts anticipated.
Air Quality	Long-term (i.e., 2028 and beyond), negligible, beneficial impacts would occur from increased operational efficiency of the access facilities resulting in decreased vehicle idling times and reduction of mobile air emissions. Long-term, minor, adverse impacts would be expected from permanent forest stand removal and associated carbon sequestration loss.	Impacts on air quality under Alternative 2 would be similar to those described for Alternative 1.	Continued operational inefficiency of the current access facilities, combined with further changes in Fort Meade traffic distribution, would lead to increased vehicle queueing and heavy truck idling times, resulting in long-term, minor, adverse impacts on air quality from vehicle emissions.

Resource Area	Alternative 1	Alternative 2	No Action Alternative
Geological Resources	Long-term, negligible, adverse impacts would be expected on topography from grading associated with the Proposed Action under Alternative 1. Long-term, minor to moderate, adverse impacts on soil and geology would be expected from disturbance to soils and increased sedimentation and erosion associated with stormwater runoff.	Impacts on geological resources from Alternative 2 would be similar to those described for Alternative 1.	No impacts anticipated.
Water Resources	Long-term, negligible to minor, adverse impacts on water resources resulting from sediment and erosion runoff from the addition of impervious surfaces are anticipated. Long-term, moderate to major, adverse impacts on coastal zone resources would be expected due to tree removal and conversion of land within forested areas, disturbance and development of open fields at various locations, and potential disturbance or permanent fill of wetlands and waters of the United States (WOTUS). Impacts would be minimized to the greatest extent possible with the incorporation of Environmental Site Design (ESD) practices, implementation of proper stormwater management controls (e.g., stormwater BMPs), and mitigation of major impacts would be coordinated with USACE and MDE.	Impacts on water resources from Alternative 2 would be similar to those described for Alternative 1.	No impacts anticipated

Resource Area	Alternative 1	Alternative 2	No Action Alternative
Biological Resources	Development associated with the Proposed Action would be permanent and have long-term, moderate, direct, adverse impacts due to tree removal and conversion of land within forest as well as disturbance and development of open fields at various locations within the project area. Long-term, major, adverse impacts on wetlands would result from the disturbance and permanent fill of wetlands required to support construction and operation of the proposed VCP5, VCIF, ACF, and overpass components of the Proposed Action under Alternative 1. Short-term, minor, direct adverse impacts on wildlife would occur as a result of temporary noise disturbances associated with construction and demolition activities, which include heavy equipment use. Long-term, minor, direct, adverse impacts could occur from the mortality of small, less-mobile, terrestrial species (e.g., reptiles, rodents, small mammals) as a result of collision with construction equipment. Construction associated with the ORAM 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 project area. Vegetation clearing for the Proposed Action could result in adverse impacts on the Monarch butterfly. Clearing of the project area for the Proposed Action could result in adverse impacts on migratory birds due to direct loss of forests, which provides nesting habitat for migratory birds. Adverse impacts on wildlife and habitat connectivity would be minimized through reforestation, preservation of lands equal to 20 percent of the total developed area, appropriate sizing of culverts, and additional elements incorporated into the final design.	Impacts on biological resources under Alternative 2 would be similar to those described for Alternative 1. Under Alternative 2, development and operation of the double-lane roundabout connecting the NSA campus to MD 32 would result in permanent tree removal from the forested area and added ground-level developed land. Alternative 2 would implement the same measures to avoid or minimize effects on these resources and protected species within the project area as described under Alternative 1.	No impacts anticipated.
Cultural Resources	Although the Proposed Action would occur within the viewshed of Building 8688, the view to or from the building does not contribute to the building's significance; therefore, the Proposed Action would have no adverse effect on historic properties. The National Register of Historic Places-eligible archaeological site 18AN1240 is in the project area vicinity but would be avoided and preserved in place with the installation of protective fencing with a 20-foot buffer, to the greatest extent possible, around the entirety of the site to protect it from inadvertent impacts during staging and construction.	Impacts on cultural resources under Alternative 2 would be similar to those described for Alternative 1.	No impacts anticipated.

Resource Area	Alternative 1	Alternative 2	No Action Alternative
Infrastructure	Alternative 1 would result in long-term, negligible to minor, adverse impacts during the operational phase for the new proposed facilities from increased demand. Long-term, negligible, adverse impacts would occur from increased stormwater runoff rates during demolition and construction and from an increase in impervious surfaces associated with Alternative 1.	Impacts on infrastructure under Alternative 2 would be similar to those described for Alternative 1.	No impacts anticipated.
Sustainability	Long-term, minor to moderate, beneficial effects on sustainability would occur due to the use of sustainable strategies, including strategic planning for water efficiency and energy conservation. The VCP5, VCIF, MSF, and Mapes Road ACF would include sustainability features that could be cost-effectively integrated to meet the intent of the NSA and Fort Meade Garrison sustainability standards and current federal Executive Orders.	Impacts on sustainability under Alternative 2 would be similar to those described for Alternative 1.	No impacts anticipated.
Hazardous Materials and Wastes	No long-term impacts on hazardous materials and wastes would be expected under Alternative 1.	Impacts on hazardous materials and wastes under Alternative 2 would be similar to those described for Alternative 1.	No impacts anticipated.
Socioeconomics and Environmental Justice	Impacts on socioeconomics would be short-term, minor, and adverse due to potential delays in emergency response from increased construction traffic and lane closures, and negligible, beneficial as a result of economic stimulation from the Proposed Action. No impacts on environmental justice would be expected because Alternative 1 would occur within the installation boundaries within an already developed area, no long-term change in the amount of traffic entering or exiting the installation would occur as a result of the Proposed Action, and impacts associated with construction and operations would not affect neighboring populations.	Impacts on socioeconomics and environmental justice under Alternative 2 would be similar to those described for Alternative 1. Construction of the additional double-lane roundabout under Alternative 2 would have a lower cost than construction of the overpass bridge under Alternative 1.	No impacts anticipated.

Table ES-2. Proposed BMPs, Mitigation, and Environmental Protection Measures

Resource Area	Proposed Measures
Land Use	• Phased construction would be implemented to minimize impacts on existing ingress and egress flow during construction of new facilities. • To reduce effects on roadway and facility access, the project footprint would incorporate existing roadways to the extent possible. • A natural buffer of native vegetation would remain in place between MD 32 and the proposed construction activity, which would maintain the off-installation visual aesthetic of the southern boundary of Fort Meade. • Native vegetation reseeding along roadways and throughout areas of disturbed soil to the extent possible would return the vegetation visual resource to preconstruction conditions.
Transportation	• Signage, traffic lane design and queuing distance would be used to minimize security risks and traffic congestion. • Phased construction would be implemented to minimize impacts on existing ingress and egress flow during construction of new facilities. • To reduce effects on roadway and facility access, the project footprint would incorporate existing roadways to the extent possible.
Noise	• Heavy equipment use, including pile driving, would primarily occur during normal weekday business hours (i.e., Monday through Friday, 7 a.m. to 5 p.m.) in accordance with COMAR 26.02.03. • Heavy equipment would include noise abatement components such as mufflers, engine enclosures, engine vibration isolators, or other sound dampening supplements, which would be properly maintained and in good working order. • Personnel, particularly equipment operators, would wear adequate personal hearing protection to limit exposure and ensure compliance with federal health and safety regulations.
Air Quality	• Use of electricity from the installation would be used preferentially over the use of generators. All generator use would be pre-approved by the installation Air Quality Manager and adhere to applicable operating procedures. • All non-road diesel equipment would comply with the federal Clean Air Nonroad Diesel Rule, which regulates emissions from nonroad diesel engines and sulfur content in nonroad diesel fuel. • Dust suppression techniques would be used during construction to reduce air pollution. Recommended methods include application of water, soil stabilizers, or vegetation; use of wind break enclosures; use of covers on soil stockpiles and dump truck loads; use of silt fences; and suspension of earth-movement activities during high-wind conditions (i.e., gusts exceeding 25 miles per hour). • To the greatest extent feasible, measures to reduce diesel emissions would be implemented. These measures could include switching to cleaner fuels, retrofitting current equipment with emission reduction technologies, repowering older equipment with modern engines, replacing older vehicles, and reducing idling through operator training and contracting policies. • Construction activities would be conducted in compliance with Maryland regulatory requirements, through the use of compliant practices or products. These requirements appear in COMAR Title 26, Subtitle 11, Air Quality, and include the following: *Particulate Matter from Materials Handling and Construction* (COMAR 26.11.06.03.D); *Visible Emissions* (COMAR 23.22.06.02); *Control of Emissions of Volatile Organic Compounds from Architectural Coatings* (COMAR 26.11.35); and *Control of Emissions of Volatile Organic Compounds from Consumer Products* (COMAR 26.11.32).
Geological Resources	• An erosion-and-sediment-control plan would be developed and implemented for the Proposed Action. • Stormwater control measures would be used that favor re-infiltration, which would aid in minimizing the potential for erosion and sediment production as a result of storms. • Disturbed areas would be reseeded and revegetated, as appropriate. • BMPs would be implemented during construction, such as installing silt fencing and sediment traps, applying water to disturbed soil, and revegetating disturbed areas as soon as possible after disturbance in accordance with MDE requirements and associated permits. • Site specific soils surveys should be conducted prior to implementation of the Proposed Action to determine the breadth and severity of any engineering limitations.

Resource Area	Proposed Measures
Water Resources	• The General Performance Standards for Stormwater Management in Maryland, outlined in the *Maryland Stormwater Design Manual* and Supplement No. 1, which apply to any construction activity disturbing 5,000 square feet or more of earth and consist of development of ESD and any necessary BMPs to meet these performance standards, would be adhered to. • The predevelopment hydrology of the property would be maintained or restored to the maximum extent technically feasible. • Nonstructural storm water management techniques (e.g., filter strips, buffers, and disconnection of rooftops) would be implemented per State of Maryland regulations and NSA design standards. ESD and structural measures (e.g., bioretention areas) would be used to promote natural and sustainable water management, as appropriate. • An erosion-and-sediment-control plan would be required for the Proposed Action per *Erosion and Sediment Control Regulations* (COMAR 26.17.01) and *Stormwater Management Regulations* (COMAR 26.17.02). 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. • BMPs outlined in the Spill Prevention, Control, and Countermeasure (SPCC) Plan would be implemented and would comply with the SPCC Rule (40 CFR 112) and existing groundwater protection protocols as required under the Safe Drinking Water Act. • A project-specific SWPPP would be developed and implemented to ensure that soils disturbed during construction and demolition activities do not pollute nearby waterbodies. • All construction equipment would be maintained according to the manufacturer's specifications, and all fuels and other potentially hazardous materials would be contained and stored appropriately. • In the event of a spill during construction or operation, procedures outlined in NSA's SPCC Plan and Facility Response Plan as well as Fort Meade's SPCC Plan/Installation Spill Contingency Plan would be followed to quickly contain and clean up a spill. • Federal and state permit requirements would be followed to protect coastal and marine resources and wetland areas relating to the Coastal Zone Management Program.

Resource Area	Proposed Measures
Biological Resources	• A forest management and reforestation plan would be developed, in keeping with Fort Meade's forest conservation program, in accordance with the 2013 Memorandum of Understanding between the State of Maryland and the DoD, and Tree Management Policy to preserve or reforest acreage equal to 20 percent of the total disturbed project area. • BMPs to minimize soil disturbance as well as control erosion and sedimentation during demolition, construction, and clearing activities would also be implemented to minimize potential impacts on adjacent downgradient forested areas, water quality, and wetlands. • Wetlands or associated wetland buffers within the project area would be impacted; therefore, consultation with the USACE Baltimore District Regulatory Division and MDE would be required throughout design and construction. Impacts on wetlands would be minimized through the use of buffers during construction as well as culverts incorporated into project design and construction. Wetlands and WOTUS impacts that cannot be avoided would require permitting under Section 404 of the CWA, which would identify mitigation required to address impacts. Mitigation options include wetland restoration, enhancement, or creation on or off site; banking; and credits. • The mitigation strategy for the Proposed Action would be determined by the final design and level of wetland impacts. Depending on permit requirements and opportunities, on-site mitigation at Fort Meade would be desirable, but off-site or purchased mitigation credits would also be considered. The final mitigation determination would be made during the design process, as impacts become more defined, and during the permitting process. All mitigation measures would follow the hierarchy outlined in the 2008 USACE Compensatory Mitigation Rule. A Nontidal Wetlands Protection Program permit would also be obtained from MDE. • Trees would not be cleared during the active season for northern long-eared, Indiana, and tri-colored bats (typically April–August). If more than 1 acre of trees must be removed during the active season, the U.S. Fish and Wildlife Service Chesapeake Bay Field Office should be consulted to evaluate potential effects. • 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 bat feeding and roosting habitat. • Clearing trees during the bird nesting season (typically spring months) would be avoided. • If tree clearing cannot be avoided during the nesting season, pre-construction surveys would be conducted to identify and avoid active nests. • Construction workers would be trained to identify and avoid active nests. • Construction equipment would be inspected and cleaned to remove soil, plants, and seeds. • All fill should be as free of nonnative plant propagules as practicable. • Per Executive Order 13112, *Invasive Species*, invasive species would be removed from the project area during construction, and no invasive species would be allowed during revegetation efforts. • Disturbed areas would be revegetated with native plant species.
Cultural Resources	• The NRHP eligible archaeological Site 18AN1240 would be avoided and preserved in place, and protective fencing would be installed, to the greatest extent possible, with a 20-foot buffer around the entirety of the site to protect it from inadvertent impacts during staging and construction.
Infrastructure	• Follow federal and state environmental planning and permit requirements for the duration of the Proposed Action. • Stormwater would be sized and designed to comply with state and federal regulations and guidelines. • Sustainable designs would be implemented to minimize impacts on stormwater drainage systems. • Any permits required for excavation and trenching would be obtained prior to the commencement of construction activities. • Construction contractors would be informed of utility locations prior to any ground-disturbing activities that could result in unintended utility disruptions or human safety hazards. • All solid waste would be recycled to the maximum extent feasible in accordance with NSA and Fort Meade's solid waste management programs.

Resource Area	Proposed Measures
Sustainability	• Stormwater facilities would be designed to comply with the appropriate State of Maryland regulations, DoD's Sustainable Building Policy, NSA's design standards, the 2019 *National Security Agency Washington Master Plan*, and the 2020 *Fort Meade Area Development Plan* to the maximum extent feasible. ESD strategies could be used to improve the quality of stormwater runoff entering the wetland areas by using sustainability techniques, including preservation of naturally vegetated areas and soil types that slow runoff rates, filter out pollutants, and promote infiltration; directing stormwater runoff into or across vegetated areas to encourage recharge and improve filtration; and using runoff catchments such as rain barrels, vegetated buffers, and vegetated roofs to lessen the severity of stormwater runoff. Another water efficiency strategy could include the use of vegetated swales as a low-impact stormwater management technique through bioretention. Vegetated swales would include a system of natural materials (sand beds, organic layers, plants, plant medium) that naturally filter runoff while in retention. • Reducing building energy use through techniques such as efficient lighting and heating/cooling could significantly reduce energy costs. • Proposed new facilities would be designed to accommodate recycling programs for paper, cardboard, glass, plastics, and metals. Proposed new facilities should also be built with materials with as highly recycled content as possible, including steel, ceiling panels, gypsum wallboard, and glass.
Hazardous Materials and Wastes	• All hazardous materials, petroleum products, and hazardous wastes associated with the Proposed Action would be managed in accordance with applicable NSA, Fort Meade, and appropriate U.S. Army regulations. • All hazardous materials storage locations are/would be equipped with emergency response procedures and site-specific contingency plans established by NSA and Fort Meade. All construction equipment would be maintained according to the manufacturer's specifications, and all fuels and other potentially hazardous materials would be contained and stored appropriately. In the event of a spill, procedures outlined in NSA's SPCC Plan and Facility Response Plan as well as Fort Meade's SPCC Plan/Installation Spill Contingency Plan would be followed. If the spill were to overflow secondary containment, it would be quickly contained and cleaned up. • A health and safety plan would be prepared prior to commencement of construction and demolition. • Should any ordnance be encountered, or soil or groundwater that is believed to be contaminated be discovered, during work activities associated with the Proposed Action, the contractor would be required to immediately stop work, report the discovery to the installation, and implement appropriate safety measures. All ordnance would be collected and disposed in accordance with federal and U.S. Army regulations by trained and certified personnel. Commencement of field activities would not continue in that area until the issue was resolved.
Socioeconomics and Environmental Justice	• No environmental protection measures have been identified for socioeconomic resources and environmental justice.

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1. Purpose of and Need for the Action

1.1 Introduction

This Environmental Impact Statement (EIS) has been prepared to address the Department of Defense's (DoD) proposal for implementation of the O'Brien Road Access Modernization (ORAM) project, which consists of the renovation and upgrade of the inspection and access facilities for both the National Security Agency (NSA) campus and Fort George G. Meade (Fort Meade) Garrison, Maryland. **Figure 1-1** shows the location of Fort Meade. This EIS 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) 2020 *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 Code of Federal Regulations [CFR] Parts 1500–1508), as amended; *Environmental Analysis of Army Actions* (32 CFR Part 651); and DoD Instruction 4715.9 (*Environmental Planning and Analysis*); and NSA's *National Environmental Policy Act Procedures*.

The NSA is a cryptologic intelligence agency administered as part of DoD and the Office of the Director of National Intelligence. It is responsible for the collection and analysis of foreign communications and foreign signals intelligence. The NSA is a tenant DoD agency on Fort Meade, occupying approximately 840 acres of the 5,100-acre installation. Renovation and upgrade of inspection and access facilities for the NSA campus and Fort Meade Garrison are required to meet increased mission and security capacity.

The existing Vehicle Cargo Inspection Facility (VCIF) and Vehicle Control Point 5 (VCP5) represent two significant entry points for access to the NSA campus. Both facilities require replacement due to process inefficiencies and insufficient capacity to meet current and future demand. Original sizing of the VCIF provided for inspection facilities only for NSA deliveries and traffic. Post 9/11, a decision was made that the NSA would inspect both Fort Meade and NSA deliveries. Additionally, major construction activities on Fort Meade have generated increases in traffic access and inspection throughout the installation. These conditions have resulted in extensive delays at the VCIF and traffic backups onto Maryland State Route (MD) 32. The design of VCP5 on O'Brien Road is also outdated and provides insufficient access capacity between the NSA campus and Fort Meade. Relocation of the Fort Meade Access Control Facility (ACF) on Mapes Road is included to facilitate the design and construction of the overall access gate infrastructure and roadway system, as well as minimize environmental impacts.

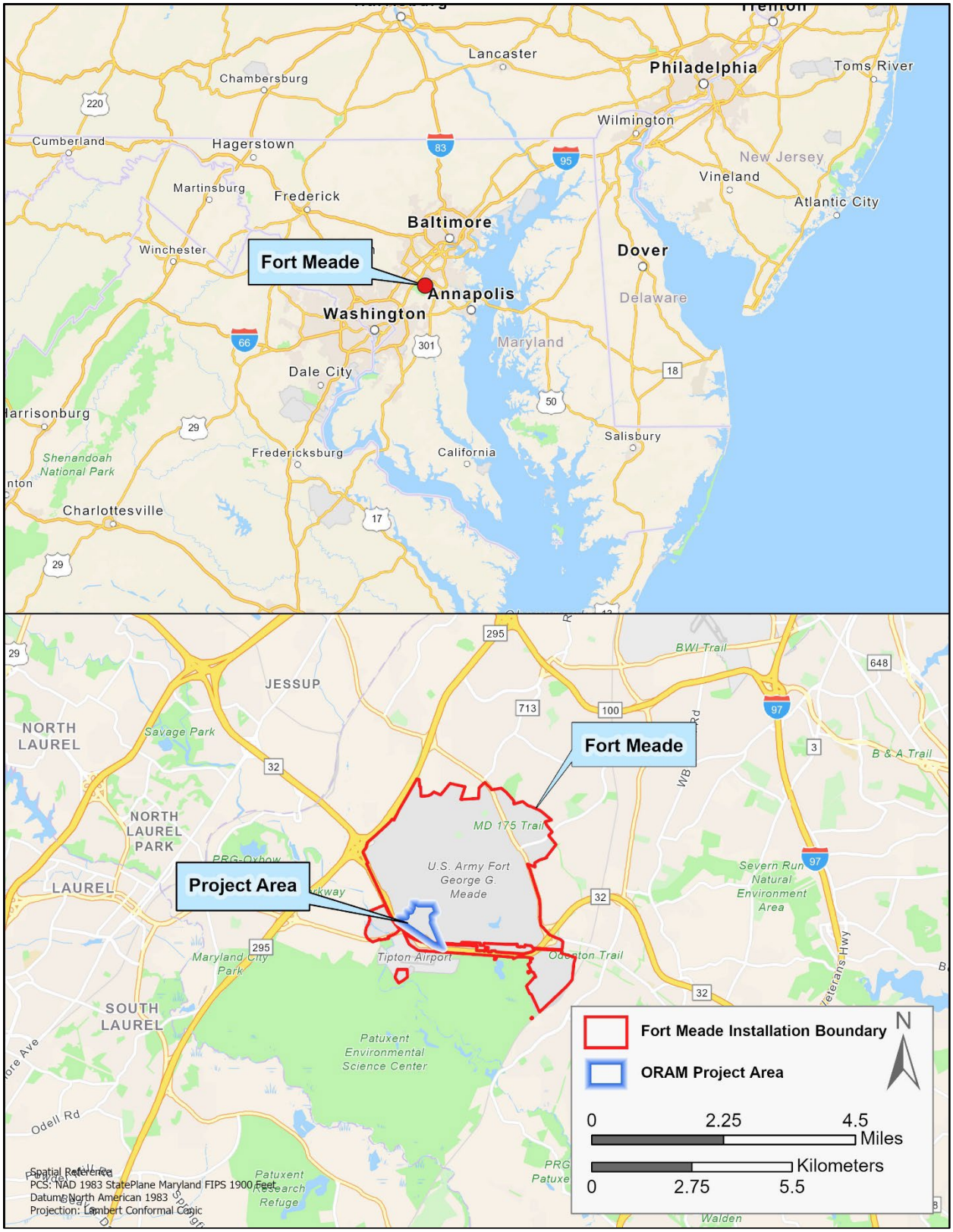


Figure 1-1. Location of Fort Meade

This EIS is organized into five chapters and five 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** describes the existing conditions of the potentially affected environment; identifies the environmental impacts of implementing all reasonable alternatives; and identifies cumulative impacts associated with past, present, and reasonably foreseeable future actions when combined with the Proposed Action and alternatives. **Chapter 4** lists the references used to support the analysis. **Chapter 5** provides the names of those persons who prepared the EIS. **Appendix A** includes the draft Finding of No Practicable Alternative (FONPA) statement for the Proposed Action. **Appendix B** includes the Scoping Report documenting the public scoping process for the project. **Appendix C** includes calculations performed for the analysis of potential impacts on air quality. **Appendices D** and **E** contain Endangered Species Act (ESA) Section 7 and National Historic Preservation Act (NHPA) Section 106 consultation materials, respectively. **Appendix F** includes all Draft EIS public involvement materials, including the Notice of Availability (NOA) and other public outreach tools used, and all substantive comments on the Draft EIS received during the 45-day public review period.

1.2 Purpose and Need

The purpose of the proposed project is to construct facilities and infrastructure to allow for increased capacity for required security processing of traffic and deliveries entering Fort Meade and the NSA campus. The need for the proposed project is to address inefficiencies with current infrastructure and capacity issues. Mission growth at both NSA and Fort Meade along with major construction projects have generated changes in Fort Meade traffic distribution, resulting in extensive delays for inspection and access. The configuration and requirements for entry for the existing VCIF, VCP5, and associated security infrastructure can create extensive vehicle queues during peak hours, which can further cause security concerns if a vehicle is rejected and must be escorted by security through the existing traffic lanes. The existing configuration does not meet current security standards (USACE 2019).

1.3 Scope of the Environmental Impact Statement

The scope of analysis in this EIS consists of evaluation of the Proposed Action and the range of alternatives and their impacts in accordance with NEPA. The purpose of this EIS is to inform decisionmakers and the public of the likely environmental consequences of the Proposed Action and alternatives.

Chapter 2 presents, in detail, the scope of the Proposed Action and the range of alternatives to be considered. In accordance with CEQ NEPA regulations, the No Action Alternative provides the baseline against which the environmental impacts of implementing the range of alternatives addressed can be compared. This EIS identifies appropriate mitigation measures not already included in the Proposed Action or alternatives in order to avoid, minimize, reduce, or compensate for adverse environmental impacts.

1.3.1 Environmental Laws, Regulations, and Executive Orders

To comply with NEPA, the planning and decisionmaking process 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 EIS examines the environmental impacts of the Proposed Action and reasonable alternatives on the following resource areas: 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. 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 in **Chapter 3** considers environmental impacts and cumulative impacts, respectively, for each resource under each alternative. The execution of the Proposed Action, or an alternative, would likely involve "construction" in a wetland as defined in EO 11990, *Protection of Wetlands*; therefore, a FONPA statement is included in **Appendix A**.

As required in 40 CFR Part 1502.24(b), the EIS contains a list of all federal permits, licenses, and coordination that might be necessary in implementing the Proposed Action or reasonable alternatives (see **Table 1-1**).

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

Agency	Permit/Approval/Coordination
U.S. Fish and Wildlife Service	• ESA Section 7 coordination • Migratory Bird Treaty Act coordination • Bald and Golden Eagle Protection Act coordination
U.S. Army Corps of Engineers	• CWA Section 404 Permit
Maryland Department of the Environment, Water Management Administration	• CWA Section 401 State Water Quality Certification • CWA National Pollutant Discharge Elimination System permit
Maryland Department of the Environment, Air and Radiation Management Administration	• CAA Minor New Source Review construction permit • CAA Title V minor permit modification • Soil Remediation permit (if soil contamination is encountered)
Maryland Department of Natural Resources Forest Service	• Forest Conservation Plan coordination
Federally Recognized Native American Tribes	• Consultation regarding potential impacts on cultural resources
Maryland Historical Trust	• National Historic Preservation Act Section 106 consultation

Key: CWA = Clean Water Act; CAA = Clean Air Act

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). The 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. Some aspects and details of the Proposed Action could be classified. This EIS, 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 project proponent and regulatory agencies, the public, and potential stakeholders. All persons and organizations having a potential interest in the proposed project are encouraged to participate in the public involvement process.

1.4.1 Scoping Process

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

The DoD initiated the public scoping process for this EIS with the publication of the Notice of Intent to prepare an EIS (87 *Federal Register* [FR] 41116) on July 11, 2022. A letter was also distributed at this time to approximately 100 potentially interested federal, state, and local agencies; Native American tribes; and other stakeholder groups or individuals. Announcements were also published in the *Baltimore Sun* and the *Washington Post* on July 11, 2022, notifying the public of the intent to prepare an EIS, identifying the location of public scoping materials, and requesting scoping comments on the Proposed Action. A narrated presentation providing an overview of the proposed project and scoping process was made available for public viewing on the project website from August 3 through 4, 2022. Scoping comments were officially accepted through August 25, 2022. All scoping outreach tools, including the Notice of Intent, text of the newspaper announcements, interested party letter, interested party mailing list, and scoping comments received, are included in the Scoping Report in **Appendix B**. All scoping comments were considered during the preparation of the EIS. Substantive concerns identified during scoping included consideration of potential impacts on a known archeological site and the Fort Meade Water Treatment Plant (WTP), which is a potentially eligible historic resource.

1.4.2 Review of the Draft Environmental Impact Statement

The DoD provided a 45-day public review period for the Draft EIS. The public review period was initiated through publication of an NOA in the FR on June 9, 2023 (88 FR 37869). Methods similar to those used during the scoping period were used to notify the public and agencies of the public review period for the Draft EIS, including a mailing of a letter with a link to the document to 94 potentially interested parties.

The Draft EIS was circulated to 94 federal, state, and local agencies having jurisdiction by law or special subject matter expertise and to any person, organization, stakeholder group, or agency that requested a copy. A virtual public meeting was held on July 19, 2023, which consisted of a live presentation and opportunity for public comment. The Draft EIS public comment period remained open through August 14, 2023. In total, 8 sets of comments were received during the public comment period. All comments on the Draft EIS were considered during the preparation of the Final EIS. **Appendix F** of the EIS includes all materials associated with review of the Draft EIS, including the NOA and other public outreach tools as well as all substantive comments on the Draft EIS received during the review period.

1.4.3 Availability of the Final Environmental Impact Statement

An NOA for the Final EIS will be published in the FR announcing that the Final EIS is available for review. At a minimum, the Final EIS will be circulated to federal and state agencies having jurisdiction by law or special subject matter expertise and any person, organization, stakeholder group, or agency that provided comments on the Draft EIS or requested a copy of the Final EIS. During the 30-day waiting period following the release of the Final EIS, the DoD will take no action nor make any decisions regarding whether to implement the Proposed Action. Comments that are received on the Final EIS during the waiting period will be considered in the decisionmaking process and documented as such in the Record of Decision for the Proposed Action and this EIS.

2. Description of the Proposed Action and Alternatives

2.1 Proposed Action

The DoD 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 on Fort Meade. The ORAM project area, as shown in **Figure 2-1**, includes the locations being considered for VCP5 and the Mapes Road ACF.

The Proposed Action would consist of:

- Construction of a new VCP5 along O'Brien Road
- Construction of a new VCIF with adjacent Visitor Control Center
- Construction of a new Mail Screening Facility (MSF) adjacent to the VCIF
- Reconfiguration of the Mapes Road ACF
- Roadway improvement to provide enhanced routing and separation of traffic between NSA and Fort Meade entering from MDs 32 and 198
- Demolition of the existing VCP5, VCIF, MSF, and Mapes Road ACF
- Associated infrastructure, including sidewalks, inspection canopies, dog kennels, surface parking areas, stormwater management facilities, and utilities

The existing VCIF facility, which is equipped with a shade structure and guard house, has two inspection lanes that enter from Perimeter Road to the south. A limited pull-off area is available for vehicles awaiting driver visitor badges. Once vehicles pass inspection at the VCIF, passenger cars can use the Visitor Control Center parking lot, and commercial vehicles can park in the paved area to the north of the VCIF inspection canopy. In addition to the shade structure and guard house, a police K9 unit kennel is part of the VCIF complex and located north of the parking area. The new VCIF complex would be composed of several small structures and associated infrastructure, including a new covered inspection building with four inspection lanes; shade canopies for 20 police K9 unit vehicles; new police K9 unit kennel with concrete foundation and fenced-in yard for 30 working dogs; and supporting administration, gatehouse, search/inspection office, and overwatch. The new VCIF complex would include sheltered parking and substantially increase processing space (USACE 2019).

After passing through the VCIF, drivers and their passengers are required to go through the Visitor Control Center to acquire a visitor pass. The existing Visitor Control Center is approximately 2,800 square feet and provides a small waiting area, a security desk for checking IDs and issuing visitor passes, a fingerprint area, and restrooms. The administrative areas include counter space and limited supporting office space composed of cubicles and one enclosed staff office. The Visitor Control Center needs to be accessible from both the parking lot and VCIF. The new Visitor Control Center, which would be adjacent to the proposed VCIF, would cover approximately 5,000 square feet. The new parking lot would provide approximately 25 parking spaces and an exit lane, which would provide entry into the NSA campus or egress to Fort Meade Garrison (USACE 2019).

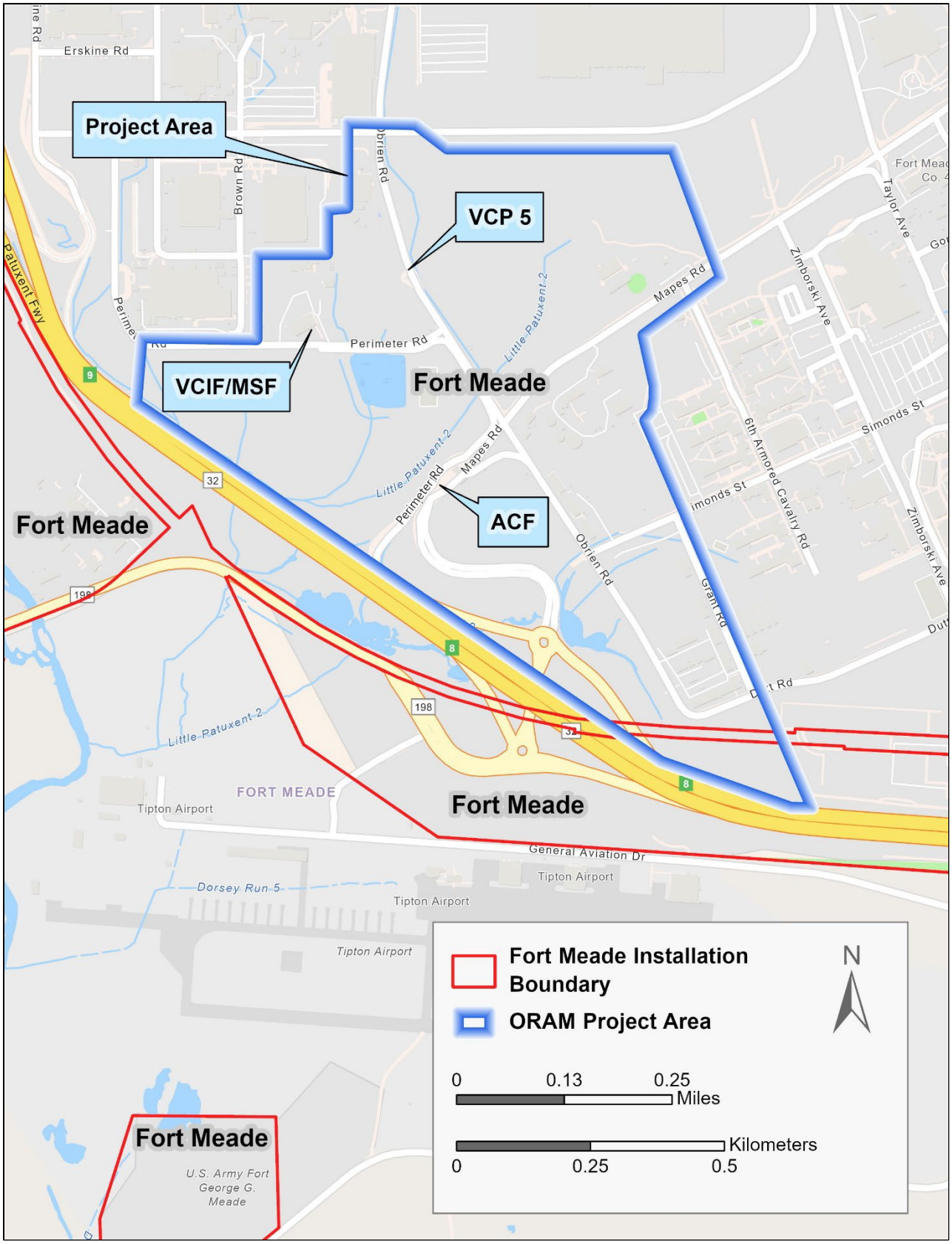


Figure 2-1. ORAM Project Area

The existing VCP5 is located along O'Brien Road and configured with two entry lanes and one exit lane. During peak hours, both entry lanes can be used; however, if a car is stopped, that entry lane is closed and the other is used for continued progress. A rejection turn-around lane is located west of VCP5. VCP5 currently does not allow pedestrian access along O'Brien Road through this facility. The new VCP5 would include four inspection lanes, a rejection lane, four police officer booths, Americans with Disabilities Act-compliant pedestrian sally port and bicycle access, and access control barriers. Two inbound lanes approaching VCP5 would split into four inspection lanes through the inspection booths and merge back into two lanes following inspection (USACE 2019).

In addition to construction of the new VCIF and VCP5, the Proposed Action would include roadway reconfiguration in support of vehicle and personnel processing, including improved routing and separation of NSA traffic from Fort Meade traffic. Privately owned vehicles (POVs) would be able to access VCP5 without having to go through the Mapes Road ACF. The ACF would be relocated and reconfigured for entrance into the Garrison portion of Fort Meade to accommodate the roadway improvements. Construction would also include associated infrastructure, such as sidewalks; parking for building occupants; access roads; and utilities. All roadways and facility construction would incorporate Environmental Site Design (ESD) stormwater management facilities as required by federal and state requirements. Site preparation for the Proposed Action would include demolition and replacement of the existing structures, including VCP5, VCIF, MSF, and Mapes Road ACF, as well as infrastructure in the area, such as utilities and parking areas.

The Proposed Action would separate NSA and Fort Meade traffic to alleviate traffic congestion. Delivery inspections would be relocated to a site to the east of O'Brien Road, farther from primary operation areas to minimize potential security risks. This inspection location would also provide direct access for delivery of approved materials to each campus. Delivery vehicles would still be adjacent to workforce traffic, and congestion would be mitigated through the use of signage, traffic lane design, and queueing distance.

Construction is expected to begin in fiscal year (FY) 2027 and occur for 2 years, with expected completion in FY29. Construction would be scheduled in phases to avoid impacts to daily operations for either the NSA or Fort Meade. All proposed facilities would comply with Unified Facilities Criteria (UFC) 04-010-01, *DoD Minimum Antiterrorism Standards for Buildings*. Accessibility design for people with disabilities would comply with federal and state requirements. VCP5, the VCIF and associated MSF and Visitor Control Center, and the Mapes Road ACF would include sustainability features that could be cost-effectively integrated to meet the intent of NSA sustainability standards and current Executive Orders. Facility and site design would place emphasis on maximizing operating efficiencies of building systems and minimizing the environmental footprint. The facilities would be energy efficient and use sustainable technology, where feasible.

Two alternatives for ORAM configurations are available to DoD and are being carried forward for analysis in this EIS. Both alternatives are joint concepts that were developed with input from the NSA and Fort Meade Garrison to meet the needs of both organizations. The alternatives take advantage of using the existing layout and infrastructure in the project area as well as

proximity to the MD 32/MD 198 interchange, with changes to the locations of the existing VCP5, VCIF, and Mapes Road ACF to alleviate the bottleneck that occurs from multiple separate, single-lane access. These alternatives are discussed further in **Section 2.2.2**.

Because development of the ORAM project is in the planning stages, no detailed engineering nor design work for proposed facilities has yet been accomplished. Therefore, this EIS does not consider various design factors in detail and makes general assumptions about the proposed facility and infrastructure improvements. The exact requirements would not be known until the detailed design process begins. Therefore, the proposed facilities and infrastructure analyzed in the EIS are interchangeable within the ORAM project area.

2.2 Alternatives

2.2.1 Screening Criteria

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

- *Traffic Factors:* The alternatives must allow for improvement in traffic capacity, flow, and safety.
- *Environmental Impacts:* Several streams and freshwater ponds are located throughout the project area. A tributary of the Little Patuxent River is located approximately 100 feet northwest of and parallel to Mapes Road. Adjacent to the stream are wetlands, some steeper topography, and wooded areas. South and east of the Mapes Road ACF are additional wooded and wetland areas (USACE 2019). The Proposed Action and alternatives must avoid or minimize impacts to these wetlands to the greatest extent practicable.
- *Cost Factors:* The alternatives must be feasible for the NSA to implement while considering budgeting constraints.
- *Timeline:* The proposed upgrades are needed within a reasonable timeline, starting by FY27, to meet security and mission efficiencies. Any alternatives must be able to be completed within the 2-year construction period for full operation by FY29.
- *Mission Requirements:* The alternatives must meet mission requirements.

Based on these screening criteria, DoD considered five alternatives to meet the purpose of and need for the Proposed Action, including two new layouts, upgrading the existing layout, relocating the existing VCIF to another site on the installation, and off-site alternatives. **Table 2-1** compares the potential Proposed Action alternatives against the screening criteria.

Table 2-1. Screening Comparison of Alternatives Against Screening Criteria

Screening Criteria	Alternative 1 (Preferred Alternative)	Alternative 2	Upgrade Existing VCP5 and VCIF Layout	Relocate VCIF to 8400 Area	Off-site Alternatives
Traffic Factors	Yes	Yes	No	Yes	No
Environmental Impacts	Yes	Yes	No	No	No
Cost Factors	Yes	Yes	No	No	No
Timeline	Yes	Yes	No	No	No
Mission Requirements	Yes	Yes	No	No	No

-

2.2.2 Alternatives Carried Forward for Analysis

The evaluation of proposed configurations against the screening criteria described in **Section 2.2.1** identified two reasonable new layout alternatives for the Proposed Action, as shown in **Table 2-1**.

Alternative 1 (Preferred Alternative). Alternative 1 would use an overpass for vehicle movement, sited shortly after vehicles enter the installation from the existing entry way roundabout that is part of the MD 32/MD 198 interchange, as shown in **Figure 2-2**. The VCIF would be moved east of O'Brien Road and expanded to include four checkpoint lanes. Operating all four lanes would help reduce queue length spillback during morning VCIF truck queuing. VCP5 would be relocated to the area of the existing VCIF. The length of the Mapes Road ACF inbound lane would be increased, and the new ACF would be relocated to the south, adjacent to the existing ACF. This design would include preservation of several existing buildings and features in the project area that are unrelated to the Proposed Action, including historic resources. Under this alternative, a direct connection to MD 32 would also be included and coordinated with the Maryland Department of Transportation State Highway Administration (MDOT SHA). To maintain sightlines from VCP5 to the final denial barriers, forest clearing would likely be required. Wetland impacts are also anticipated as a result of the relocation of facilities and roadway expansion. Impacts on forests and wetlands would be minimized to the greatest extent practicable.

To enter both Fort Meade Garrison and the NSA campus from MD 32, POV and truck traffic would approach Fort Meade via Mapes Road. Under Alternative 1, Fort Meade Garrison-bound POV traffic would exit the existing roundabout and queue through the Mapes Road ACF for entry into Fort Meade Garrison. NSA-bound POV traffic would exit the existing roundabout via the overpass and veer left to the VCP5 inbound lane for entry or rejection. Rejected POVs would be turned around via the VCP5 rejection lane to merge onto the outbound lane that would

lead them off Fort Meade back onto MD 32 along with egress traffic. Similar to NSA-bound POV traffic, NSA- and Garrison-bound trucks would exit the existing roundabout via the overpass, then veer right into the VCIF entry lane for inspection; upon clearance, they would exit north to the NSA campus or south to merge onto Mapes Road going east onto Fort Meade Garrison. Upon rejection, trucks would be escorted off Fort Meade via the VCIF rejection lane, which would merge onto Mapes Road, going west toward MD 32.

Alternative 2. Alternative 2 would be largely the same as Alternative 1, except that in lieu of an overpass, an additional double-lane roundabout would be constructed and used for inbound vehicle entry, as shown in **Figure 2-3**. Construction of the additional double-lane roundabout under Alternative 2 would have a lower cost than construction of the overpass bridge under Alternative 1.

Traffic flow under Alternative 2 would be largely similar to that of Alternative 1. In lieu of an overpass, Fort Meade Garrison-bound POV traffic would exit the existing roundabout, enter the additional double-lane roundabout, then take the first exit to queue through the Mapes Road ACF for entry onto Fort Meade Garrison or rejection. NSA-bound POV traffic would exit the existing roundabout, enter the additional double-lane roundabout, then take the second exit onto the NSA campus inbound lane and veer left to VCP5. Similar to NSA-bound POV traffic, NSA- and Garrison-bound trucks would exit the existing roundabout, enter the additional double-lane roundabout, then take the second exit onto the NSA campus inbound lane, but veer right onto the VCIF entry lane for inspection.

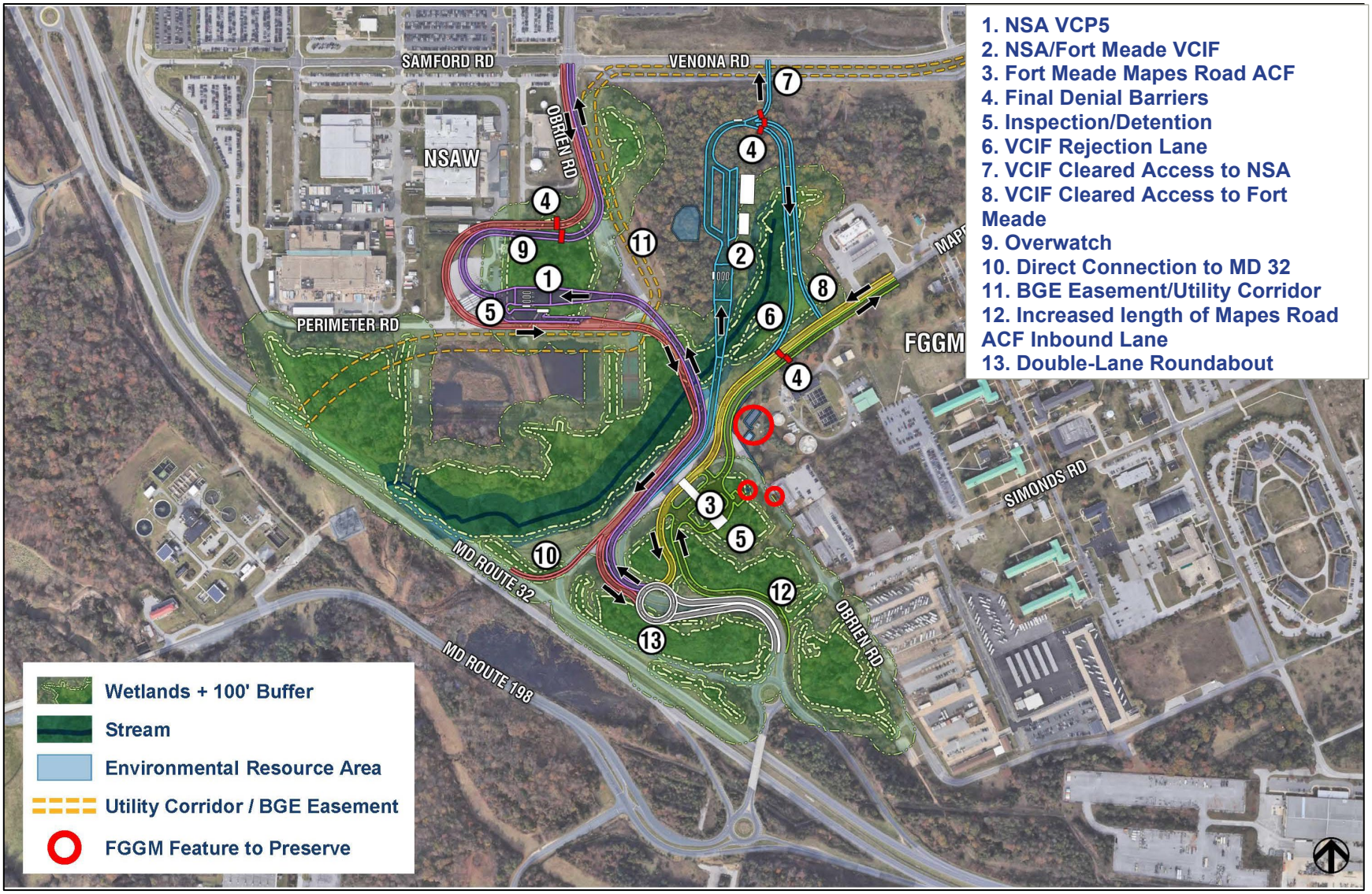
Either alternative would affect existing adjacent forested areas and wetlands, but would minimize impacts to the greatest extent practicable.

2.2.3 Alternatives Considered but Dismissed from Analysis

During the examination of various approaches to improving the vehicle entry and inspection process, a number of on- and off-installation alternatives were evaluated. The alternatives discussed below were determined to not meet one or more of the screening criteria presented in **Section 2.2.1** and were not carried forward for further analysis as shown in **Table 2-1**.

Source: NSAW and Fort Meade 2022
Key: BGE = Baltimore Gas and Electric

Figure 2-2. Alternative 1 General Layout



Source: NSAW and Fort Meade 2022
Key: BGE = Baltimore Gas and Electric

Figure 2-3. Alternative 2 General Layout

Upgrade Existing VCP5 and VCIF Layout. This alternative would maintain the existing general routing and layout, but would upgrade the existing NSA facilities in situ and add shared access lanes between VCP5 and the VCIF. Fort Meade would separately upgrade or renovate Mapes Road on its own timeline. Under this alternative, NSA traffic would continue to be separated from Fort Meade traffic upon entry to the installation, and the VCIF facilities would be upgraded to accommodate inspection peak demands and comply with UFC security requirements. This alternative is not being carried forward for analysis because it does not meet the screening criteria due to the following concerns and design flaws:

- *Traffic Factors:*
    - Inefficient combination of workforce and VCIF queue, and does not allow for segregation of traffic
    - Insufficient capacity allotment
    - Continued traffic and attendant safety concerns
    - Continued queuing backup on MD 32
- *Environmental Impacts:*
    - Significant safety, security, and environmental risks for additional road construction
- *Cost Factors:*
    - Significant costs for additional road construction
- *Timeline:*
    - Construction/operations phasing challenges
- *Mission Requirements:*
    - Does not meet mission requirements

Relocate VCIF to 8400 Area. This alternative would involve relocation of the VCIF to the 8400 Area located at the intersection of O'Brien and Dutt Roads, south of Mapes Road, which would require use of additional land on Fort Meade Garrison. This alternative would involve demolition of existing facilities at this site and construction of a new VCIF, MSF, and Visitor Control Center on the acquired land. It would separate NSA traffic from Fort Meade traffic, separate delivery traffic from agency traffic, minimize impacts to wetlands, provide direct access from the VCIF to the NSA campus and Fort Meade, and allow the VCIF to remain operational while the new VCIF is constructed at a separate location. This alternative is not being carried forward for analysis because it does not meet the screening criteria due to the following concerns and design flaws:

- *Traffic Factors:*
    - Parcel location relative to the NSA campus
    - Requirements for multiple overpass bridges
- *Environmental Impacts:*
    - Potential environmental remediation requirements, which would jeopardize the project timeline for meeting mission requirements
- *Cost Factors:*
    - High cost
- *Timeline:*

  - Requirement for site approval from Fort Meade
- *Mission Requirements:*
  - Does not meet mission requirements

Off-site Alternatives. In addition to alternatives located on Fort Meade, off-site alternatives were considered. These alternatives would partially move high-risk delivery inspection activity farther from primary areas. Construction and food delivery screening would continue to require a facility on the NSA campus. The cost and logistics to construct, manage, and maintain the off-site facility in addition to the on-site facility would be high and complex. Additional security risks would arise due to distance and time between inspection and site arrival. Therefore, off-site alternatives did not meet the screening criteria and were not carried forward for analysis.

2.3 No Action Alternative

CEQ NEPA regulations specify the inclusion of the No Action Alternative in the alternatives analysis (40 CFR Part 1502.14(c)). Because DoD has identified a need for the Proposed Action (i.e., to meet mission requirements of the NSA and 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, DoD would not make any changes to the existing access inspection facilities. Fort Meade would separately complete plans for Mapes Road, on its own timeline. VCIF access would remain separate from the VCP5 queue, but the following existing concerns would remain in effect:

- Increased traffic congestion and delays at peak hours on site
- Unsafe congestion on MD 32 due to a backlog of traffic entering the NSA campus
- Increased safety risk of POV and truck traffic within the same access corridors
- Continued lack of full compliance with UFC security requirements
- Projected NSA traffic in the future would continue to be a burden to the Fort Meade Mapes Road corridor
- The double gate inconvenience (entry through Mapes Road ACF and VCP5) is a barrier to the workforce, especially as employee density shifts eastward on campus
- VCIF operation is currently over capacity

Therefore, the No Action Alternative would not meet DoD mission requirements.

2.4 Identification of the Preferred Alternative

CEQ NEPA regulations instruct EIS preparers to “identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference” (40 CFR Part 1502.14(d)). DoD’s preferred alternative is to implement the Proposed Action under Alternative 1 as described in **Section 2.2.2**.

2.5 Identification of Cumulative Actions

The 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 Part 1508.1(g)(3)). Informed decisionmaking is served by consideration of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future.

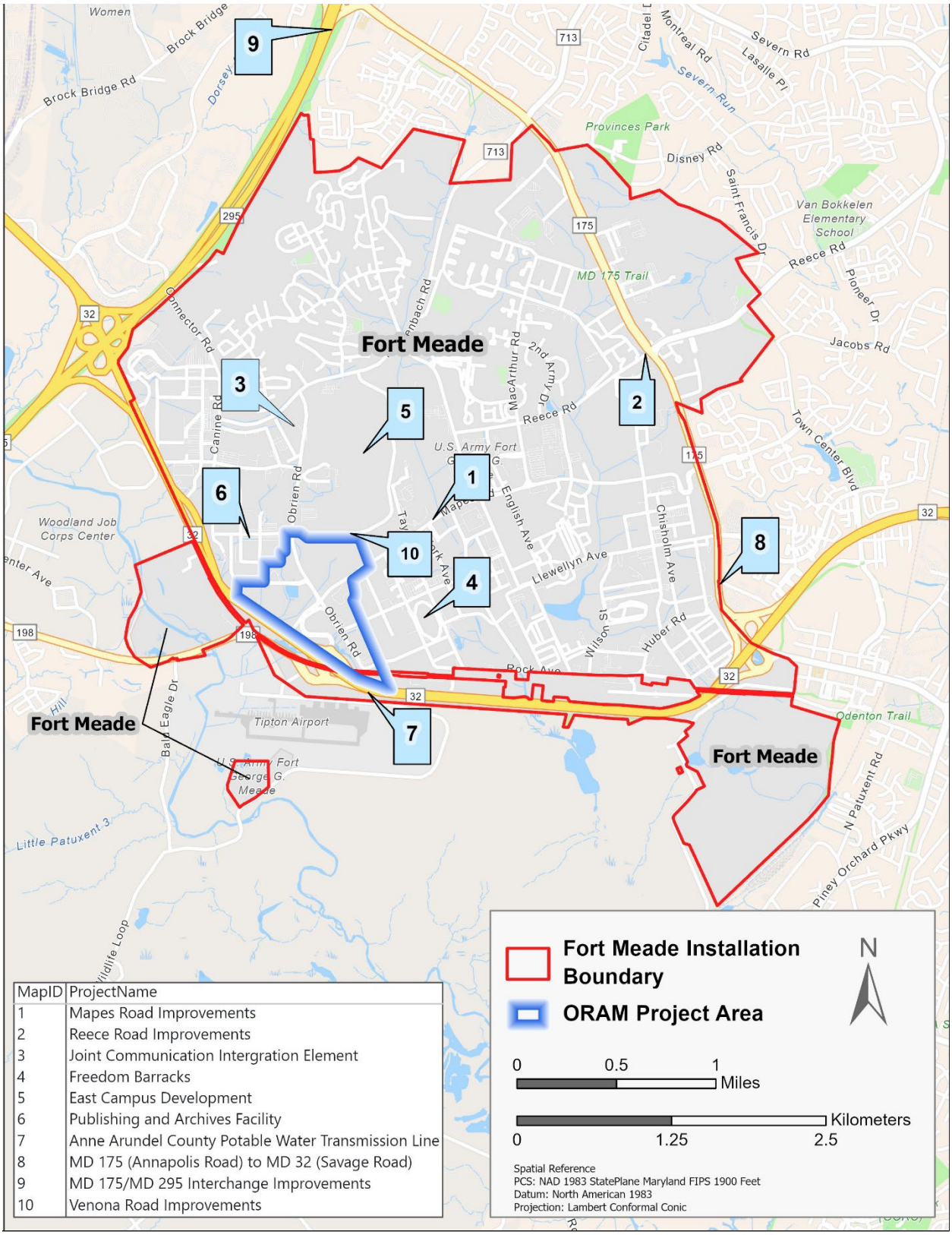
Past actions are those actions, and their associated impacts, that occurred within the geographical extent of cumulative effects that have shaped the current environmental conditions of the project area and, therefore, are now part of the existing environment, in addition to present actions included in the affected environments for each resource area. 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 subsection. The following discussion presents those actions or projects that are temporally or geographically related to the Proposed Action and, as such, have the potential to result in cumulative impacts. The cumulative impacts analysis is presented by resource area in **Chapter 3** of the EIS.

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 2-4**.

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

- ***Mapes Road:*** Fort Meade Garrison 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.
- ***Reece Road:*** The Reece Road gate closed in March 2019 to undergo renovations (Fort Meade 2021). The renovations involve construction of a new ACF as well as widening of Reece Road and MD 175 to accommodate gate traffic. The widening of Reece Road along with additional security lanes and traffic calming measures would reduce traffic backup at MD 175 (U.S. Army 2020). This project is anticipated to be completed in Spring 2024.
- ***Venona Road:*** NSA proposes to widen Venona Road from two to four lanes between 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.



MapID	ProjectName
1	Mapes Road Improvements
2	Reece Road Improvements
3	Joint Communication Intergration Element
4	Freedom Barracks
5	East Campus Development
6	Publishing and Archives Facility
7	Anne Arundel County Potable Water Transmission Line
8	MD 175 (Annapolis Road) to MD 32 (Savage Road)
9	MD 175/MD 295 Interchange Improvements
10	Venona Road Improvements

Figure 2-4. Locations of Other Actions under Consideration for Cumulative Impacts

Cyber National Mission Force (CNMF) Program: The CNMF, a tenant of the NSA campus on Fort Meade, is proposing to construct a new 750,000-square-foot mission operations facility, associated parking structure and roadway modifications, a new 700,000-square-foot mission operations support facility, and associate parking structure and roadway modifications. Existing CNMF personnel would be relocated to the proposed facilities, in addition to approximately 2,050 relocated off-site or new personnel. Construction for the CNMF project is expected to occur between FY28 and FY32.

Freedom Barracks: Fort Meade Garrison proposes 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 (U.S. Army 2020). Construction for the first phase of this project would begin in FY25 and continue for two years, while the other phases are in the initial planning stages and do not yet have known construction timelines.

East Campus Development: The NSA is currently developing 2.9 million square feet in the East Campus. East Campus Building (ECB) 3 would provide 952,000 square feet for the Computer Network Operations mission and include a mixture of support groups. The other projects include ECB 4 and ECB 5, each at 950,000 square feet (NSA 2019a). Construction for ECB 4 is currently ongoing and is expected to continue through FY27, and construction for ECB 5 is anticipated to start in FY24 and continue through FY29.

Publishing and Archives Facility: The 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 complex 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).

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 2-4**).

Anne Arundel County 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 2021a). 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 MDOT SHA 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 2022a).

MD 175 (Annapolis Rd)/MD 295 Interchange Improvements: The purpose of this MDOT SHA project is to widen MD 175 from Sellner Road/Race Road to McCarron Court and reconfigure the ramps at the MD 295 interchange to create signalized left turns at MD 175. The existing four-lane undivided roadway would become a six-lane divided roadway with a median separating eastbound and westbound traffic (MDOT SHA 2022b). Construction for this project began in spring 2022 and is expected to be completed by summer 2025 (MDOT SHA 2022c).

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 Criteria for Analysis

The specific criteria for evaluating the potential environmental impacts of the Proposed Action and alternatives are discussed in this chapter by resource area. The significance of an action is also measured in terms of its context and intensity. The context and intensity of potential environmental effects are described in terms of duration, the magnitude of the impact, and whether they are adverse or beneficial, and are summarized as follows.

Short or long term. In general, short-term impacts are those that would occur only with respect to a particular activity, for a finite period, or only during the time required for construction or installation activities. Long-term impacts are those that are more likely to be persistent or chronic.

Negligible, minor, moderate, or major (significant). These relative terms are used to characterize the magnitude or intensity of an impact. Negligible impacts are generally those that might be perceptible but are at the lower level of detection. A minor impact is slight but detectable. A moderate impact is readily apparent. Major or significant impacts are those that, in their context and due to their magnitude (severity), have the potential to meet thresholds for significance identified for each resource area. Therefore, major (significant) impacts warrant heightened attention and examination for potential means of mitigation or the preparation of an EIS to fulfill the policies set forth in NEPA.

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

Best management practices (BMPs) and environmental protection measures are also discussed in this chapter to describe how the level of impact of a project on a resource area could be minimized. BMPs are actions required by statutes, regulations, or to fulfill permitting requirements that reduce potential impacts. Environmental protection measures are those actions that are used to minimize impacts that are not required as part of statutes, regulations, or to fulfill permitting requirements, but are typically measures taken during design and construction phases of a project to reduce impacts on the environment. With the exception of wetlands, none of the BMPs or environmental protection measures described in this EIS are needed to bring an impact below the threshold or significance.

3.2 Land Use and Visual Resources

3.2.1 Affected Environment

3.2.1.1 Definition of the Resource

The term land use refers to real property classifications that indicate either natural conditions or the type of human activity occurring on a parcel. Land use descriptions are codified in installation master planning and local zoning laws. Land use categories do not follow a nationally recognized convention or uniform terminology. As a result, the meanings of various land use descriptions, labels, and definitions vary among jurisdictions.

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

The two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. Compatibility among land uses fosters the societal interest of obtaining the highest and best use of real property. Tools supporting land use planning include written master plans and zoning regulations. In appropriate cases, the location and extent of a Proposed Action need to be evaluated for their potential effects on a project site and adjacent land uses. The primary 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 type of land uses on adjacent properties and their proximity to a Proposed Action, and the duration and permanence of a proposed activity.

Visual resources are natural and cultural landscape features that people see. Visual resources create the visible impression or character of an area and contribute to the public's appreciative enjoyment of that area. Evaluating the aesthetic qualities of an area is a subjective process because the value that an observer places on a specific feature depends on their perspective. Generally, aesthetic and visual resource impacts are defined in terms of the extent to which a proposed project's physical characteristics and visibility would perceptibly change the character and quality of the landscape in the area. Visually scenic landscapes can be categorized as landforms, water, vegetation, and iconic or culturally significant human-made structures.

3.2.1.2 Existing Conditions

Land Use

Fort Meade. Fort Meade encompasses approximately 5,000 acres in the northwestern corner of Anne Arundel County, Maryland. The installation is approximately 18 miles southwest of Baltimore, Maryland (see **Figure 1-1**). The installation is primarily composed of administration, intelligence operations, instructional institutions, family housing, and support facilities. Fort Meade is bound by the Baltimore-Washington Parkway to the northwest, Annapolis Road (MD 175) to the northeast, and Patuxent Freeway (MD 32) to the south and west. Other significant nearby transportation arteries include U.S. Route 1 and Interstate 95, which run parallel to and

just to the west of the Baltimore-Washington Parkway. Interstate 97, which connects Baltimore and Annapolis, is several miles east of Fort Meade (U.S. Army 2020).

Land use planning and development on the installation is guided by the 2020 *Fort Meade Area Development Plan* (ADP; U.S. Army 2020), which supports maximized use of land and facilities to support mission functions. Land use on the installation is generally divided into seven land use categories, referred to as building envelope standards, which regulate the allowable land uses in each areas as well as the specific criteria to shape the form of the buildings: administrative, community support, housing, industrial, training area, troop housing, and open space. The administrative standard is regulated for non-tactical operations. The housing standard is regulated for on-installation accompanied housing and neighborhoods. The community support standard is regulated for dining facilities, medical, chapel, gymnasiums, emergency medical services, education, recreation, and Army and Air Force Exchange Services. The industrial standard is regulated for production, maintenance, depot, and other storage, as well as activities that generate significant amounts of heavy traffic and pollution. The training area standard is regulated for instructional training and commercial functions. The troop housing standard is regulated for headquarters, commissioned officer facilities, and barracks.

NSA Campus. NSA occupies a highly developed campus, which encompasses approximately 755 acres within the southwestern quadrant of Fort Meade, and is divided into three smaller campuses: West Campus, Central Campus, and East Campus (NSA 2019a). While NSA resides on Fort Meade, it is a standalone installation with its own planning and development framework and land use classifications. Land use on the NSA campus is divided into eight categories: operations, data center, support, community, parking, greenspace, future development, and Fort Meade use. Land uses surrounding the NSA campus within Fort Meade include the on-installation government/institutional uses for Fort Meade Garrison. Off-installation land south of the NSA campus is primarily woodland that is part of the U.S. Fish and Wildlife Service's (USFWS) Patuxent Research Refuge. Maryland state-owned properties and the District of Columbia Children's Center are located west of the installation, and Tipton Airport is to the south.

The *2019 National Security Agency Washington (NSAW) Master Plan* (NSA 2019a) provides the framework for upgrading the NSA campus with secure, resilient, optimized facilities to meet current and future mission needs as well as accessible transportation, pathways, and facilities, providing an enhanced campus environment for the workforce and visitors, and promoting sustainability and stewardship of the land and natural resources. Key developmental goals highlighted in the 2019 NSAW Master Plan include improved mobility to provide access to all campus areas. Roadways should be optimized to support vehicular, bicycle, and pedestrian traffic and connectivity. VCPs connect the campus to external roads and are a critical component of the overall vehicular network.

ORAM Project Area. The existing VCIF and VCP5 are collocated in the southern portion of NSA campus along the western side of O'Brien Road within the support land use category. This area includes support facilities, such as warehouse and storage facilities. The Mapes Road ACF is located in the southwestern portion of the Fort Meade campus along Mapes Road, where

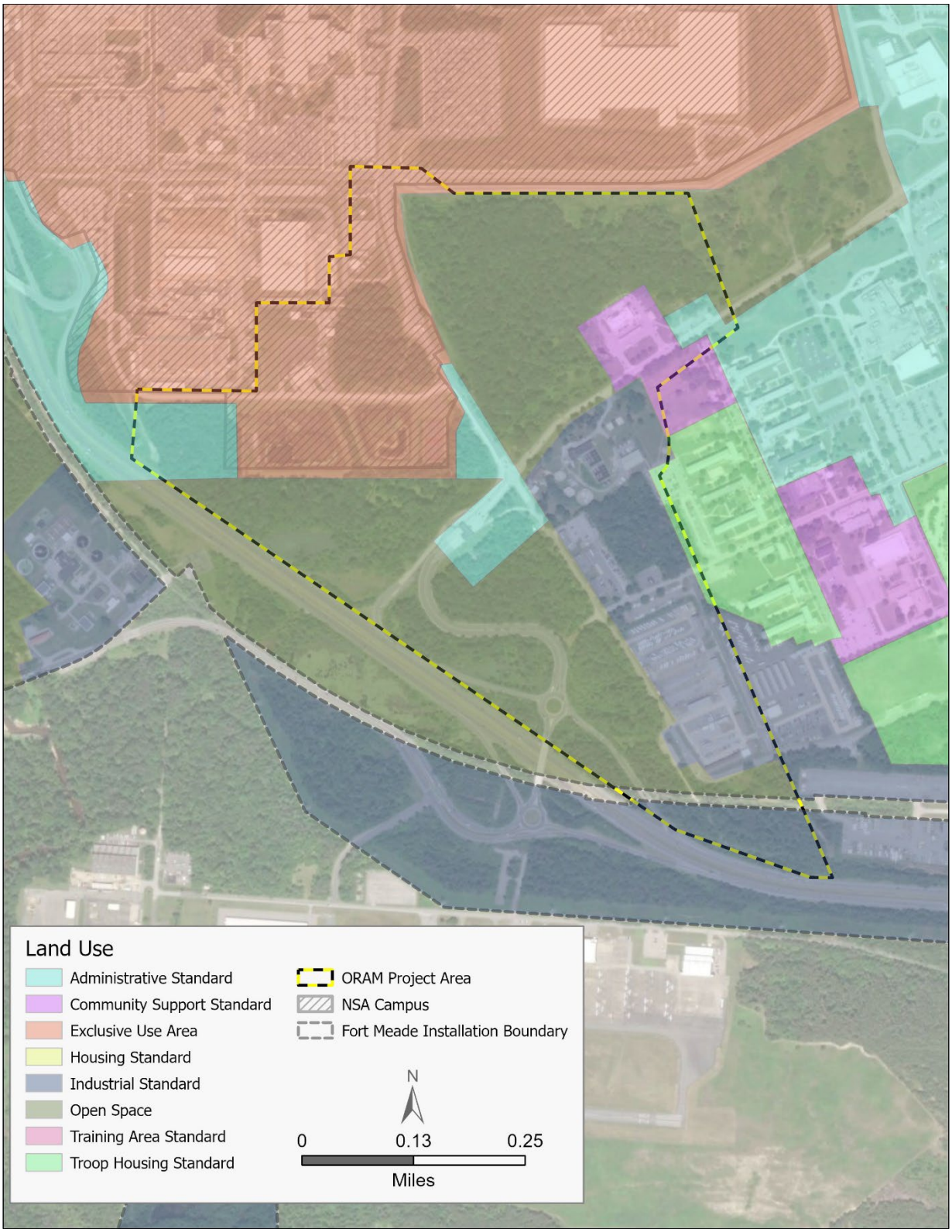
land use is regulated for administrative purposes, but largely surrounded by open space. Land near the Mapes Road ACF is regulated through the industrial, troop housing, and community support standards, which allow for close access to the gate for truck and troop ingress and egress (see **Figure 3-1**). The ORAM project area is along the southwestern boundary of Fort Meade Garrison and extends into the southern portion of the NSA campus.

Outside Fort Meade. Land use surrounding Fort Meade consists primarily of developed property that supports a growing population. Cities near Fort Meade include Odenton to the east, Jessup to the north, and Laurel to the west. Areas north and east of Fort Meade have a range of residential uses, with higher density residential units to the east. Land use northwest of the installation is categorized as residential with some industrial, mixed use, and commercial areas. Land use west of Fort Meade includes a variety of mixed use, industrial, and low- to high-density residential uses with conservation, forested, and open space areas along the Little Patuxent River. Land uses south of Fort Meade include mixed uses; low- to high-density residential; transit (the Tipton Airport); and natural features, including the Patuxent Research Refuge. Odenton Town Center is located southeast of the installation (AAC 2021b).

The Anne Arundel County *General Development Plan: Plan 2040* (AAC 2021b) guides land use and management. The plan integrates land use and transportation policy to support development for critical economic areas, such as Fort Meade. A part of the plan focuses on improving regional corridors to make commutes more reliable. This includes prioritizing eastbound improvement along MD 32 between MDs 295 and 198 as well as westbound improvements between MD 170 and Fort Meade (AAC 2021b). Although federal land is not subject to state or county zoning regulations or land use policies, the 2019 NSAW Master Plan (NSA 2019a) and 2020 Fort Meade ADP (U.S. Army 2020) both consider past iterations of Anne Arundel County's General Development Plan (AAC 2021b) for planning considerations and off-installation land use. **Figure 3-2** depicts Anne Arundel County land use outside Fort Meade.

Visual Resources

Fort Meade, including parts of the NSA campus, is divided into six visual themes (administrative, industrial, troop, residential, community, and campus) based on the architectural character and land use patterns on the installation (Fort Meade 2013). The west-central portion of the ORAM project area encompasses land within the campus visual theme. Most of the eastern half of the project area is within the troop theme, and the southern portion of the project area is within the industrial theme (see **Figure 3-3**) These visual themes consist of administrative facilities associated with installation entry; commercial use, including a gas station and fast-food restaurant; and installation roads for transportation bounded by forested areas. The undeveloped land within the project area includes natural vegetation and forested areas. The 2019 NSAW Master Plan (NSA 2019a) places importance on visually appealing facilities and landscape design.



Source: U.S. Army 2020

Figure 3-1. NSA and Fort Meade Garrison Existing Land Use

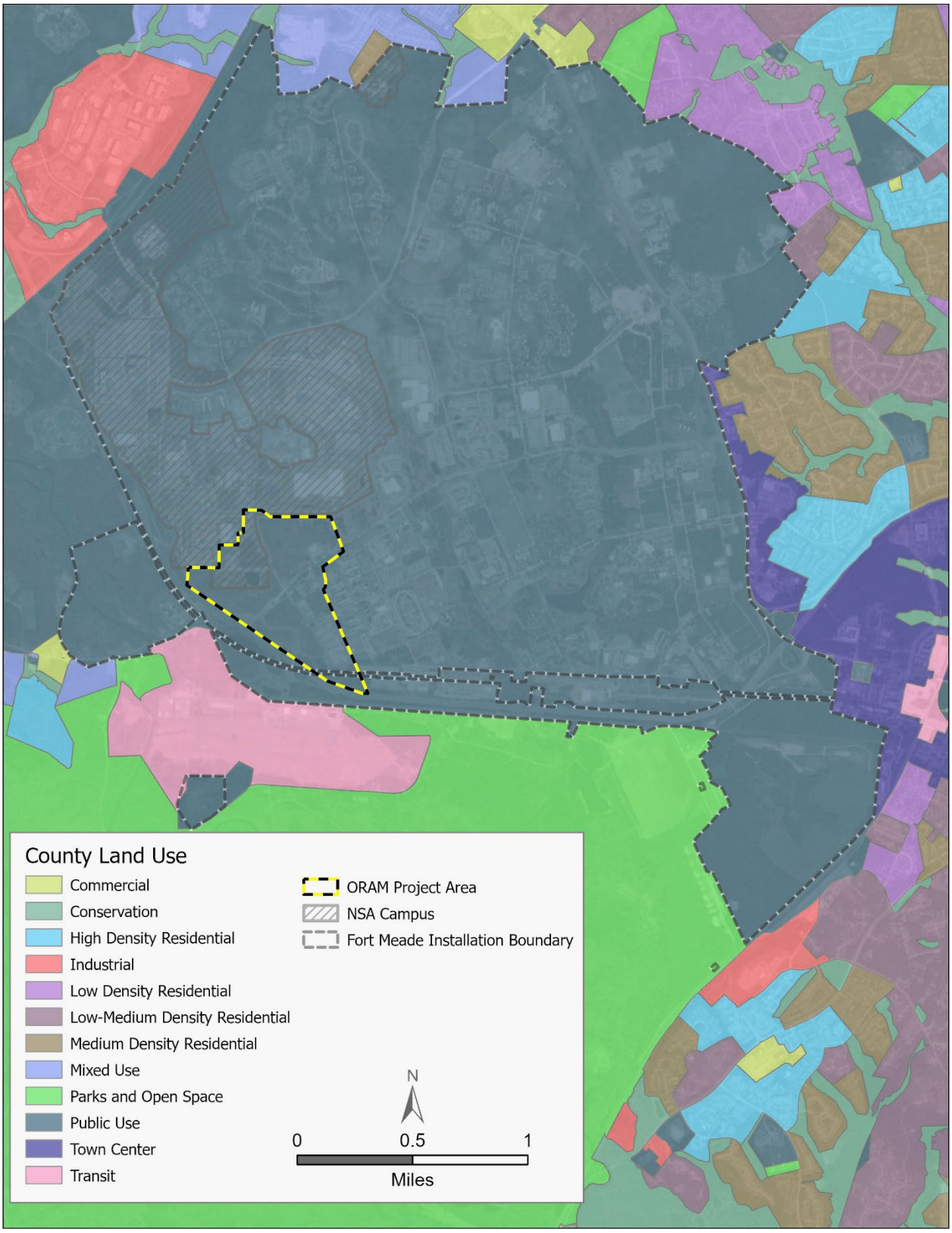


Figure 3-2. Surrounding Land Use in Anne Arundel County

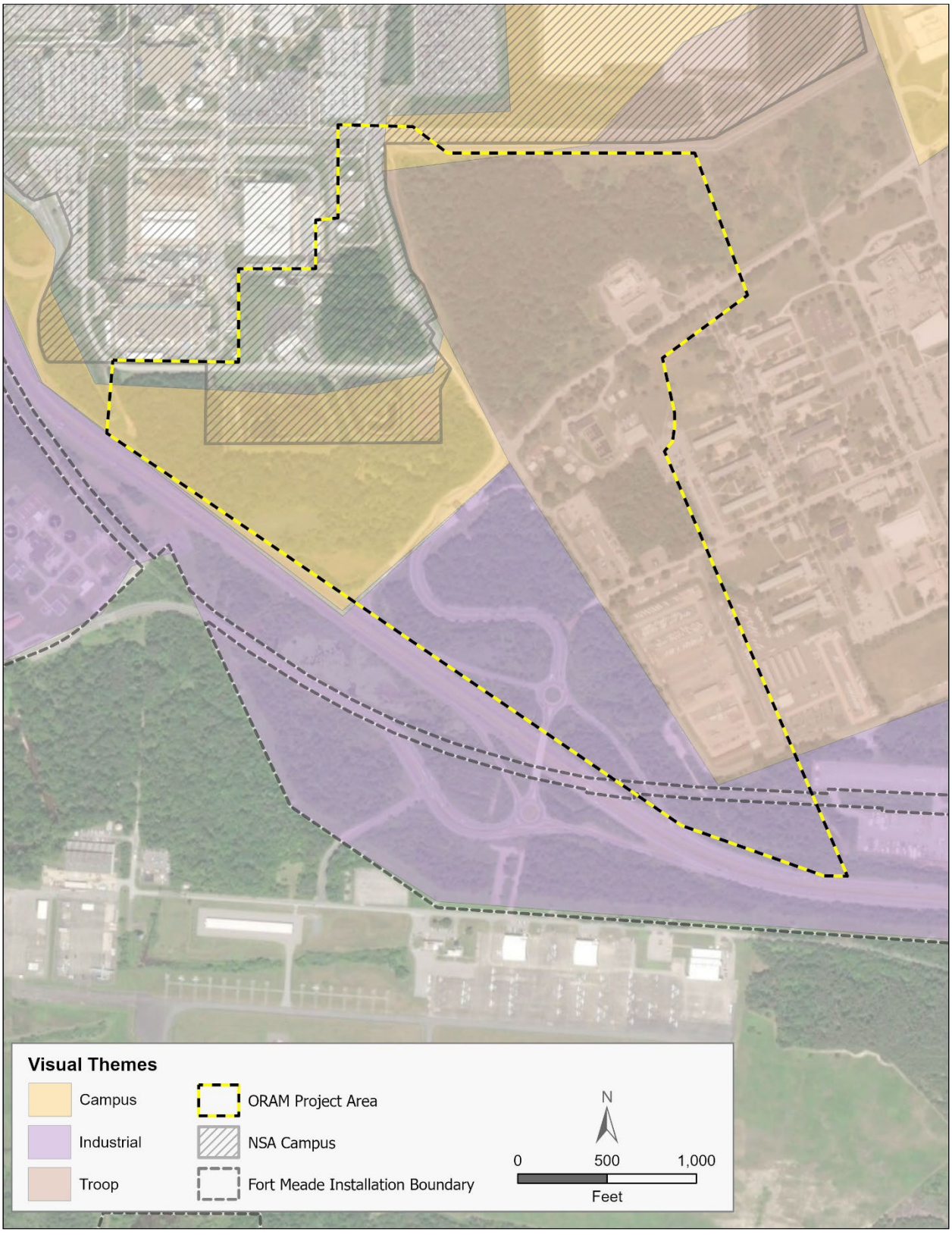


Figure 3-3. Fort Meade Visual Themes

3.2.2 Environmental Consequences

3.2.2.1 Evaluation Criteria

Understanding potential impacts on land use from a Proposed Action requires evaluation criteria based on existing and future land use, development, and management. A project could have a significant impact on land use if it were to prevent the viability of a land use or the continued use or occupation of an area; be incompatible with adjacent land use to the extent that public health or safety is threatened or the installation's mission is compromised; conflict with planning criteria established to ensure the safety and protection of human life and property; or result in noncompliance with laws, regulations, or orders applicable to land use.

A Proposed Action or alternative is considered to have an adverse impact on visual quality if changes to a landscape's visual character or the viewer's experience substantially degrades the collective judgment viewers have of visual quality. Adverse changes to a landscape's visual character could include altering or damaging scenic resources, or otherwise degrading the existing visual character of a Proposed Action area and its surroundings. Adverse changes to the viewers' experiences could include altering or impeding a scenic vista or creating a new source of glare or substantial light that would affect day or nighttime views. A significant or major adverse impact on visual quality would likely occur if the Proposed Action or alternative removed or detrimentally altered an existing desired visual resource or existing view that has been designated as being protected by local, tribal, state, or federal authorities, or has traditionally been considered to be an iconic visual resource or view that is central to a region or community's identity.

3.2.2.2 Alternative 1

Land Use. Short- and long-term, negligible to minor, adverse impacts on functional land uses on the NSA campus and Fort Meade Garrison would be expected. The proposed demolition and construction for replacement of the existing VCIP and VCIF facilities, as well as the proposed roadway improvements and reconfigurations, would result in temporary, minor, adverse impacts on land uses of those campus assets. Presence of construction activities for the proposed facilities and roadways would reduce access to certain areas in the short term due to potential temporary lane closures or changes to entry or exit points. The existing facilities would remain open and functional during the phased construction of the new facilities, and disruptions of NSA's VCP5, VCIF, or ACF services would be minimized. Additional details on traffic and transportation impacts are provided in **Section 3.3**.

Long-term, negligible, adverse impacts on land use would be expected from development of up to 117 acres of currently undeveloped, largely forested land within the 196-acre project area for the proposed facilities as well as additional and reconfigured roadways. To reduce effects on roadway and facility access, the project footprint would incorporate existing road corridors to the extent possible (see **Figure 2-2**, page **2-6**). Long-term, moderate, beneficial impacts on land use would be expected from improved traffic flow and installation access for the NSA and Fort Meade Garrison associated with the relocation of the VCIF, facility upgrades, and roadway

reconfiguration. Construction and operation of the proposed facilities and infrastructure would conform to the land uses in the project area, which largely include open space and administrative support, in accordance with the 2019 NSAW Master Plan and 2020 Fort Meade ADP (NSA 2019a, U.S. Army 2020).

Visual Resources. Short- and long-term, minor to moderate, adverse impacts on visual quality would be expected during site preparation and construction due to the presence of heavy construction equipment, demolition and construction activities, and tree clearing on forested land on Fort Meade. Vegetation disturbance along Mapes Road would include the temporary and permanent removal of trees and other native vegetation bordering the roadway. Construction and operation of the overpass, including support structures and the inbound roadway, connecting to the NSA campus over the outbound lane from Fort Meade Garrison would add road infrastructure to the visual landscape on and outside the installation. A natural buffer of native vegetation would remain in place between the new road infrastructure and MD 32, which would minimize impacts and maintain the off-installation visual aesthetic along the southern boundary of Fort Meade.

On-installation, the Proposed Action under Alternative 1 would conform to the existing visual themes on the installation; therefore, long-term adverse effects on visual resources are not anticipated. Reseeding to the extent possible of native vegetation along roadways and throughout areas of disturbed soil would return the vegetation visual resource to preconstruction conditions.

3.2.2.3 Alternative 2

Land Use. Short- and long-term impacts on land use under Alternative 2 would be similar to those described for Alternative 1. Construction and operation of the proposed facilities and infrastructure would conform to the land uses in the project area, in accordance with the 2019 NSAW Master Plan and 2020 Fort Meade ADP (NSA 2019a, U.S. Army 2020).

Visual Resources. Alternative 2 would result in similar minor to moderate, adverse impacts on visual resources as Alternative 1 due to the presence of construction equipment and demolition and construction activities and vegetation removal. Construction and operation of the double-lane roundabout in lieu of an overpass would maintain new road infrastructure at the ground level, resulting in less obvious changes to the visual landscape on and outside the installation. Alternative 2 would conform to the existing visual themes on the installation; therefore, long-term adverse effects on visual resources are not anticipated.

3.2.2.4 No Action Alternative

Under the No Action Alternative, DoD would not implement the ORAM project, and existing conditions would remain unchanged. Therefore, no impacts on land use or visual resources would be expected.

3.2.3 Cumulative Impacts

Land Use. Short-term, minor to moderate, adverse cumulative impacts on functional land uses would be expected from temporary access restrictions during construction of the Proposed Action when combined with the East Campus development and Mapes Road projects. Presence of construction activities for the proposed facilities and roadways associated with the cumulative projects would reduce access to certain areas due to potential lane closures or temporary changes to entry or exit points. The ongoing East Campus development, Mapes Road, and other cumulative projects, when combined with the ORAM project, would result in a cumulative conversion of undeveloped, forested land to developed land. Resultant, long-term, adverse impacts would be minimized because the proposed facilities' functions would continue to be compatible with surrounding land uses and would not result in changed land use designations for the NSA campus or Fort Meade Garrison. Development would be guided to conform to existing installation development plans so that changes in land use designations or incompatibility with existing land uses would not be expected. Long-term, moderate, beneficial cumulative impacts on land use would be expected from the improved efficiency of operations and traffic flow as a result of the upgraded facilities and infrastructure associated with the Proposed Action as well as the reasonably foreseeable actions identified in **Section 2.5**.

Visual Resources. Short-term, minor to moderate, adverse impacts on visual quality would be expected during site preparation and construction due to the presence of heavy construction equipment, demolition and construction activities, and tree clearing on forested land on Fort Meade. If construction for the Proposed Action were to occur concurrently with any construction for the other reasonably foreseeable actions, cumulative impacts on visual quality would be expected to be slightly greater. Long-term cumulative impacts would not be expected.

3.3 Transportation

3.3.1 Affected Environment

3.3.1.1 Definition of the Resource

Transportation includes roadways, vehicle control points, vehicle cargo inspection facilities, pedestrian access, non-motorized vehicle facilities, transit, and other features with the purposes of providing access and movement of people. These include improvements within Fort Meade and adjacent facilities controlled by MDOT SHA and other agencies.

3.3.1.2 Existing Conditions

This section describes the existing road network and access in the ORAM project vicinity (see **Figure 3-4**), which consists of the proposed renovation and upgrade of the inspection and access facilities for both the NSA campus and Fort Meade Garrison.

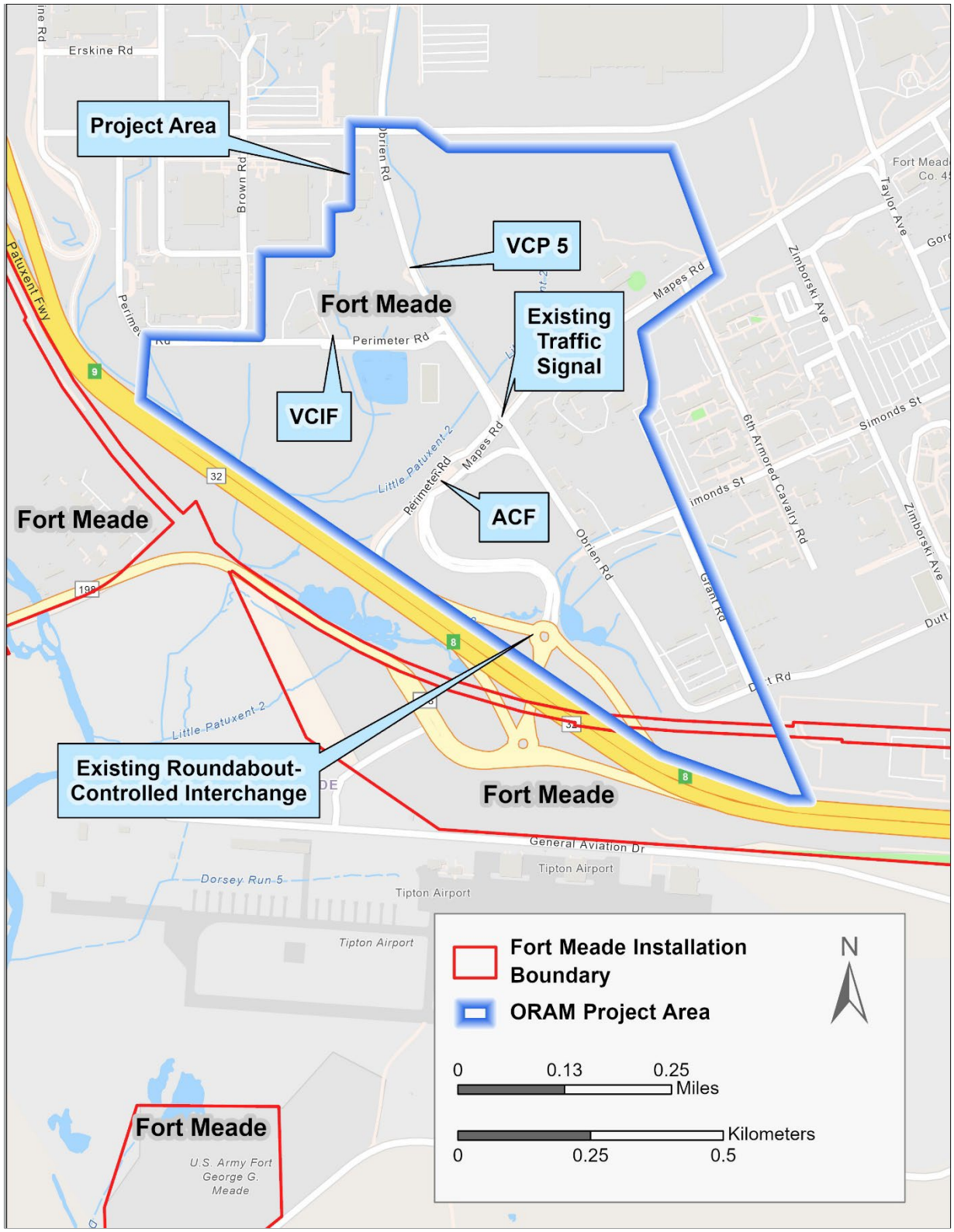


Figure 3-4. Traffic Review Area

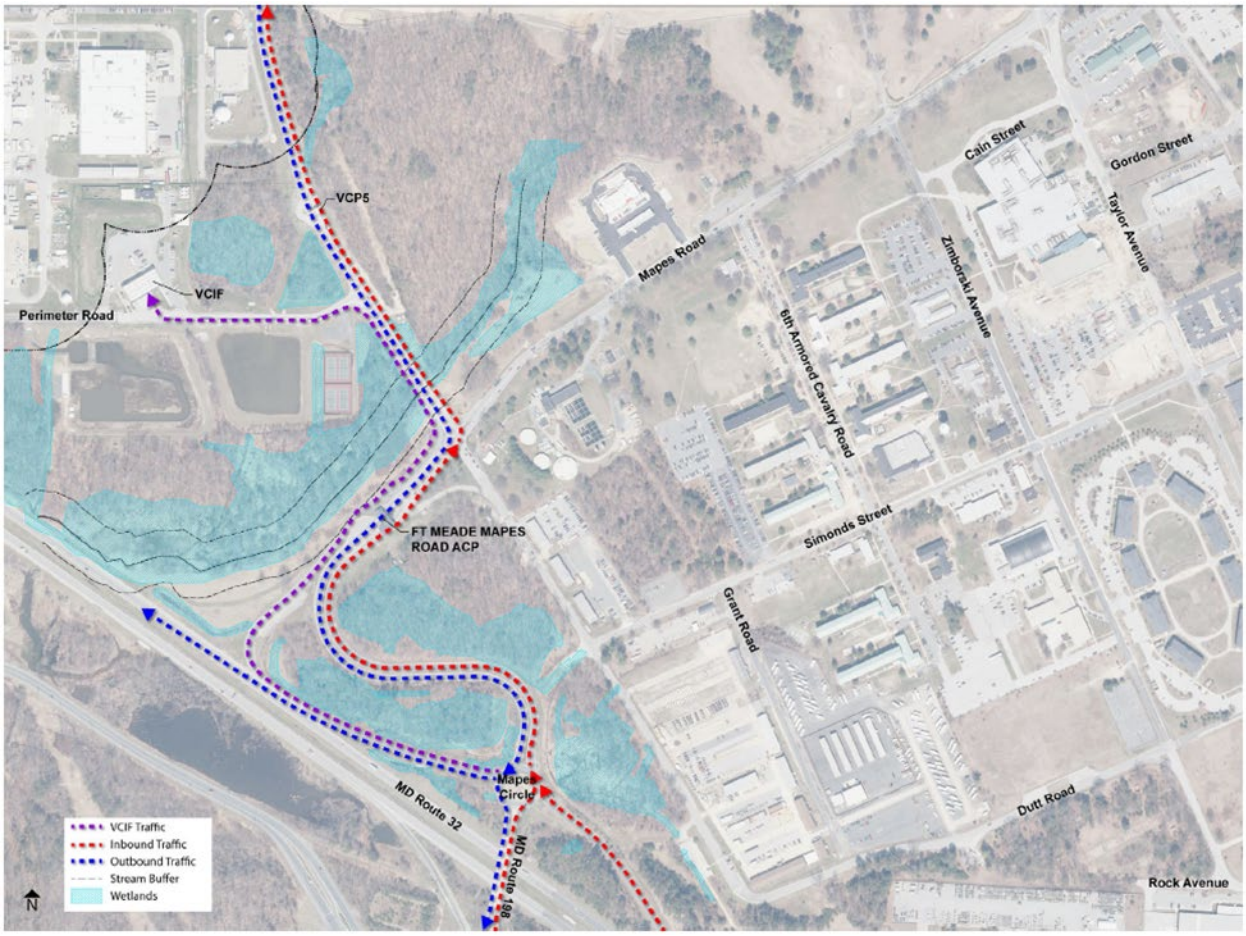
Key traffic and access elements assessed were identified in previous traffic and feasibility studies (WRA 2017, USACE 2019) for the NSA campus and the ORAM project. The findings from these studies were reviewed relative to existing traffic operational analyses and changes in roadway/access connections.

Roads and Access. The VCIF and VCP5 are accessed via separate roadways (see **Figure 3-5**). The VCIF is accessible from the MD 32/MD 198 interchange west entrance ramp. The roadway from the interchange to the VCIF was originally developed as a temporary service road. This temporary road to the VCIF does not meet current state standards for roadway design. It currently parallels Mapes and O'Brien Roads, leading to the VCIF with no connection directly to these parallel roadways. This VCIF access road is separated by a physical concrete barrier and runs counter to normal traffic flow along Mapes and O'Brien Roads. While the road provides access, it is not an intuitive connection. Vehicles rejected or leaving the VCIF must travel through Fort Meade on O'Brien Road, which requires guarded escort back to Mapes Road.

Accessing the NSA campus via VCP5 requires travel through the Fort Meade Mapes Road ACF. Visitors and staff must then travel on to O'Brien Road through the signalized intersection at Mapes and O'Brien Roads. NSA access through this ACF creates added congestion at peak traffic hours.

Existing Traffic Volumes, Background Growth, Trip Generation, and Trip Distribution. All growth, trip generation, and distribution assumptions from previous traffic and feasibility studies (WRA 2017) have been assumed as part of this review and are shown below. The 2025 traffic levels include all planned improvements to be constructed through that time.

Traffic along surrounding non-NSA campus roadways (roadways maintained by others; e.g., MDs 32, 75, and 295, and Mapes Road) is projected to increase 0.5 percent per year. According to population data provided by NSA, which includes development projects to be completed by 2025, there would be an approximate total of 8,800 additional personnel at the NSA campus in new facilities on the East Campus and elsewhere. Approximately 20 percent of NSA campus-inbound traffic currently enters and exits through VCP5 during AM and PM rush hours, and this percentage would increase to as much as 43 percent with completion of the development projects (WRA 2017).



Source: USACE 2019

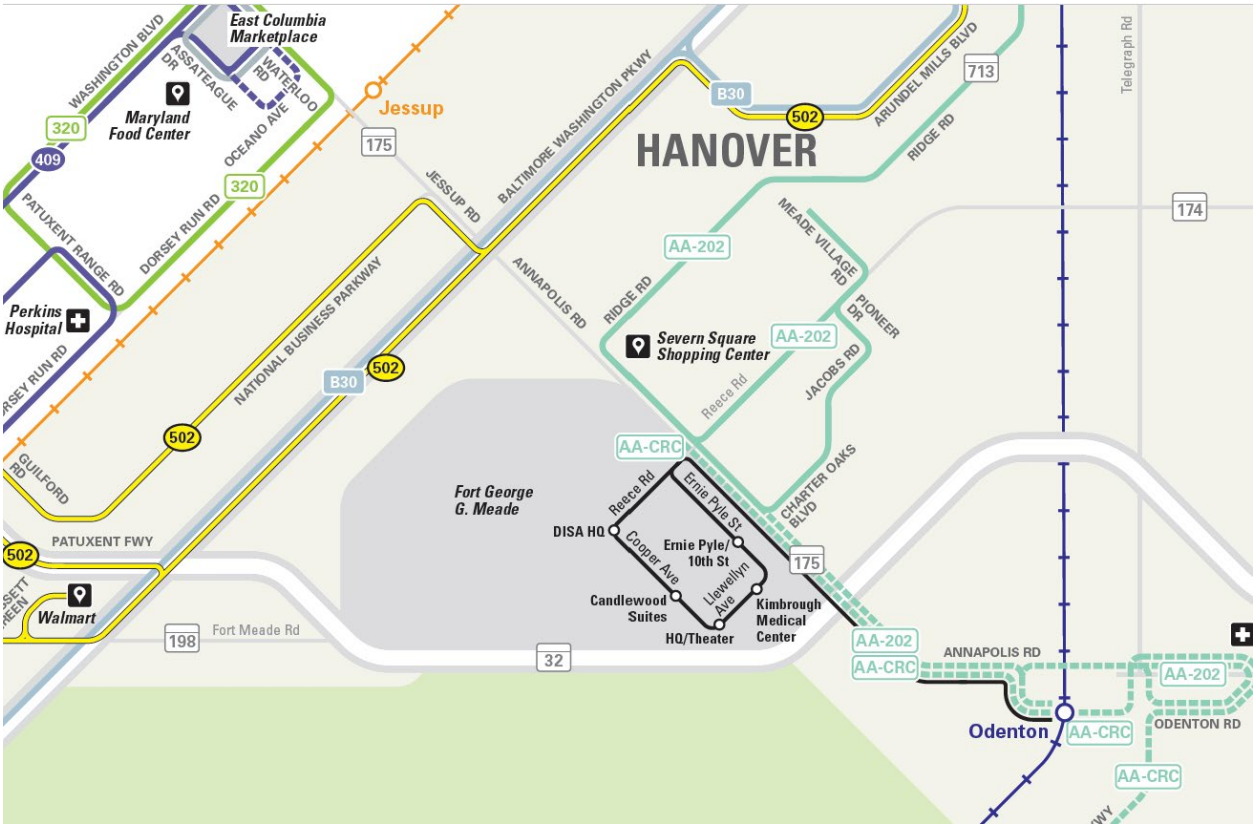
Figure 3-5. Existing Roadway Circulation

Transit. Existing transit routes (see **Figure 3-6**) that serve Fort Meade include:

- AA202 Bus – Anne Arundel County Transit
- 502 Bus – Regional Transportation Agency of Central Maryland
- B30 Bus – Washington Metropolitan Area Transit Authority Metrobus
- Penn Line – MARC Train (Odenton)

Currently, no transit operates through the project area.

Non-motorized Facilities. No sidewalks or pedestrian facilities exist within the project area.



Source: RTACM 2019

Figure 3-6. Transit Routes

3.3.2 Environmental Consequences

3.3.2.1 Evaluation Criteria

The method to determine impacts on transportation features reviewed roadway connection revisions, access control point modifications, other checkpoint upgrades, and any other facilities used by staff and visitors to gain access to the NSA campus and Fort Meade Garrison, specifically the following:

- Operational efficiencies at VCIF/VCP5, and the Mapes Road ACF
- Backups on to MD 32 and operational issues at the MD 32/MD 198/Mapes Road interchange
- Intersection operations at Mapes and O'Brien Roads

Thresholds for triggering significant or major impacts include evaluating the potential for a Proposed Action to result in an increase in traffic volumes or delays to levels that impair a roadway's handling capacity; increase traffic safety hazards; or result in a substantial reduction in levels of service.

3.3.2.2 Alternative 1

Short-term, minor to moderate, adverse and long-term, major, beneficial impacts on transportation would be expected from temporary access limitations or restrictions during construction and permanent improvement in traffic flow and access. The Proposed Action under Alternative 1 would provide a more intuitive set of connections to access points within the project area, and allow for improved access that would accommodate the ongoing growth of the NSA campus and Fort Meade Garrison. ORAM-related construction activities would result in temporary adverse impacts on traffic during road and facility construction. Phased construction would be implemented to minimize impacts on existing ingress and egress flow during construction of the proposed facilities. Additionally, to reduce effects on roadway and facility access, the project footprint would incorporate existing roadways to the extent possible.

The improvements shown in **Figure 2-2** (see Page 2-6) depict a streamlined set of access roads to relocated and improved access control points and a vehicle inspection facility. The ACF would be upgraded with additional lanes and revised road alignments. Signage, traffic lane design, and queuing distance would be used to minimize security risks and traffic congestion. Elimination of the signalized intersection at Mapes and O'Brien Roads under Alternative 1 would allow free flow of traffic onto Fort Meade to the access gates as well as off the installation. Additionally, Alternative 1 would provide grade separation between conflicting NSA campus inbound and Fort Meade Garrison outbound traffic through use of an overpass for the incoming traffic. The improved traffic flow from roadway rerouting, separation of existing lanes, and additional inspections lanes would alleviate long queues and the subsequent burden on operations, resulting in long-term, major, beneficial impacts on transportation.

3.3.2.3 Alternative 2

Impacts on transportation under Alternative 2 would be similar to those described for Alternative 1. Alternative 2 would not provide grade separation between conflicting NSA campus inbound and Fort Meade outbound traffic, but would instead control it through the installation of a roundabout (see **Figure 2-3**). A roundabout would not provide as much free flow for incoming or outgoing traffic as an overpass, such as proposed under Alternative 1.

3.3.2.4 No Action Alternative

Under the No Action Alternative, there would continue to be short- and long-term, moderate to major, adverse impacts on access facilities. Ongoing NSA campus and Fort Meade Garrison expansion is expected to increase traffic through the ORAM project area. Without additional lanes and upgraded facilities, queue length and wait times are expected to increase. Additionally, daily traffic backups on MD 32 would continue to increase, adversely impacting the traffic on that roadway. The No Action Alternative would result in a continued decrease in operational efficiency at the intersection of Mapes and O'Brien Roads.

3.3.3 Cumulative Impacts

The Proposed Action, when combined with the Mapes, Reece, and Venona Roads widening projects, is expected to have short- and long-term, minor to major, beneficial cumulative impacts resulting from improved traffic flow and increased operational efficiencies. Concurrent construction of the Proposed Action with any of the reasonably foreseeable actions would require coordination with the NSA, Fort Meade, and MDOT SHA to reduce potential impacts on traffic flow and congestion. The roadway improvement projects, including the Proposed Action, would help offset impacts from increased traffic associated with ongoing development on Fort Meade, including the PAF, CNMF, and East Campus development projects.

3.4 Noise

3.4.1 Affected Environment

3.4.1.1 Definition of the Resource

Sound is a physical phenomenon consisting of vibrations that travel through a medium, such as air, and are sensed by the human and animal ear. Noise is any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Response to noise varies depending on the type and characteristics of the noise, such as distance between the noise source and the receptor, receptor sensitivity, and time of day. Noise is often generated by activities essential to a community's quality of life, such as construction or vehicular traffic. Noise levels vary depending on housing density and proximity to parks and open space, major traffic areas, or airports. Affected sensitive receptors can be specific (e.g., schools, churches, hospitals) or broad areas (e.g., nature preserves, designated districts) in which occasional or persistent sensitivity to noise above ambient, or background, levels exist in the environment.

Sound varies by intensity and frequency. Sound pressure level, described in decibels (dB), is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Hertz are used to quantify sound frequency. The human ear responds differently to different frequencies. "A-weighing," measured in A-weighted decibels (dBA), approximates a frequency response expressing the perception of sound by humans. Common sounds encountered in daily life and their dBA levels are provided in **Table 3-1**. Most people are exposed to sound levels of 50 to 55 dBA or higher on a daily basis. The overall noise environment that people may experience on a daily basis is described in this EIS through the Day-Night Average Sound Level (DNL). The DNL metric is the average noise level measured over a 24-hour period, with a 10-dB penalty assigned to noise events occurring between 10 p.m. and 7 a.m. (acoustic night). DNL values are average quantities, mathematically representing the continuous noise level that would be present if all variations in the noise level that occur over a 24-hour period were averaged to have the same total sound energy.

The federal government supports conditions free from noise that threaten human health and welfare and the environment. Response to noise varies, depending on the type and

characteristics of the noise, distance between the noise source and whoever hears it (the receptor), receptor sensitivity, and time of day. 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, educational facilities, and libraries. Sensitive receptors may also include noise sensitive cultural practices, some domestic animals, or certain wildlife species.

Table 3-1. Common Sounds and Levels

Outdoor	Sound Level (dBA)	Indoor
Car horn	110	Rock band
Gas lawnmower at 3 feet	95	Food blender at 3 feet
Downtown (large city)	80	Garbage disposal at 3 feet
Busy highway at 50 feet	75	Vacuum cleaner at 10 feet
Normal conversation	60	Normal speech at 3 feet
Quiet urban daytime	50	Dishwasher in next room
Quiet residential daytime	40	Theater, large conference room

Source: FAA 2022, CHC 2022

Federal Regulations. The federal government has established noise guidelines and regulations for the purpose of protecting citizens from potential hearing damage and from various other adverse physiological, psychological, and social effects associated with noise. According to U.S. Army, Federal Aviation Administration, and U.S. Department of Housing and Urban Development (HUD) criteria, residential units and other noise-sensitive land uses are "clearly unacceptable" in areas where the DNL noise exposure exceeds 75 dBA, and "normally acceptable" in areas exposed to noise levels of 65 dBA or less (24 CFR Part 51). Areas that experience noise levels above 65 dBA and below 75 dBA are identified as "normally unacceptable." The Federal Interagency Committee on Noise developed land use compatibility guidelines for noise in terms of DNL (FICON 1992).

Under the Noise Control Act of 1972, the Occupational Safety and Health Administration 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).

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] 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 **Table 3-2** 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 nor 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 practical in a particular case. The request must be submitted in writing to Maryland Department of the Environment (MDE) with evidence explaining why compliance is impractical.

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

3.4.1.2 Existing Conditions

Fort Meade, including the NSA campus, is relatively quiet, with no significant sources of noise. The main source of noise on both the NSA campus and Fort Meade Garrison, and specifically the ORAM project area, is vehicular traffic. In addition to the proximity of the project area to MD 32, MD 295 (Baltimore-Washington Parkway) borders Fort Meade to the north. MDs 295 and 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 and the NSA campus 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 the NSA campus in 2009 estimated ambient noise levels at several locations to be between 55 to 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 and the NSA campus likely still fall into the "normally acceptable" range, as defined by U.S. Army and HUD criteria.

Another potential noise source is Tipton Airport, a public airport southwest of the Fort Meade. As of April 2022, approximately 104 aircraft operations per day are conducted at the airfield, primarily by local general aviation aircraft (AirNav 2022). Aircraft noise in the Fort Meade area is low because approach paths to the Tipton runway are oriented in an east-west direction, and commercial planes are not permitted to fly over Fort Meade.

The nearest on-installation noise sensitive receptors are the Fort Meade Garrison barracks, approximately 600 feet from the ORAM project area. The nearest off-installation noise sensitive

receptor is the Patuxent Research Refuge, the boundary of which is approximately 500 feet south of the project area.

3.4.2 Environmental Consequences

3.4.2.1 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 a Proposed Action. Impacts on noise would be considered significant if a Proposed Action were to result in the violation of applicable federal or local noise regulations, create appreciable areas of incompatible land use outside an installation boundary, or result in noise that would negatively affect the health of the community.

3.4.2.2 Alternative 1

Under the Proposed Action, an increase in noise levels would occur from construction equipment and additional vehicle traffic. The primary sources of noise would be from pile-driving and other construction activities, and daily truck and POV traffic. Impacts from noise would vary depending on the location and nearest-sensitive noise receptor.

Construction and Demolition. Short-term, negligible to minor, adverse impacts on the noise environment would be expected during demolition and construction activities due to the use of heavy equipment and construction traffic.

Table 3-3 presents typical noise levels (dBA at 50 feet) expected for the main phases of outdoor construction. Individual pieces of heavy equipment typically generate noise levels of 80 to 90 dBA at a distance of 50 feet (USEPA 1971, FHWA 2006). With multiple pieces of equipment operating simultaneously, noise levels can be relatively high within several hundred feet of active construction and demolition areas. Construction equipment typically exceeds the ambient sound levels by 20 to 25 dBA in an urban environment and up to 30 to 35 dBA in a quiet suburban area.

Table 3-3. Noise Levels Associated with Outdoor Construction

Construction Phase	dBA
Ground clearing	84
Excavation, grading	89
Foundations	78
Structural	85
Finishing	89

Sources: USEPA 1971, FHWA 2006

All demolition and construction would occur within the boundaries of Fort Meade and be collocated with other existing noise-compatible activities, be temporary in nature, and end at the completion of all construction phases.

People living or working near the project areas may notice or be annoyed by the noise. The nearest sensitive receptors would generally experience noise levels below 80 dBA from the

operation of construction equipment because they are more than 500 to 600 feet away. Given the temporary nature of proposed construction and demolition, distance to nearby noise sensitive areas, and the existing noise environment, these impacts would be minor. The following management actions would be performed to further reduce any realized noise impacts:

- Heavy equipment use, including pile driving, would primarily occur during normal weekday business hours (i.e., Monday through Friday, 7 a.m. to 5 p.m.) in accordance with COMAR 26.02.03.
- Heavy equipment would include noise abatement components such as mufflers, engine enclosures, engine vibration isolators, or other sound dampening supplements, which would be properly maintained and in good working order.
- Personnel, particularly equipment operators, would wear adequate personal hearing protection to limit exposure and ensure compliance with federal health and safety regulations.

Short-term, negligible, adverse impacts on the existing noise environment would be expected as a result of the increase in construction vehicle traffic. Construction vehicles and associated traffic would access Fort Meade via MD 32 through the Mapes Road ACF. Temporary construction traffic would be distributed evenly throughout the day and would generate minimal noise compared to traffic noise generated outside the installation from MD 32 and the Baltimore-Washington Parkway. Temporary construction traffic would be a fraction of the existing traffic and would likely result in a negligible increases in noise.

Operations. Long-term, negligible to minor, adverse impacts on the noise environment would be anticipated from the introduction of noise from vehicle traffic in a previously forested area. Noise elements in and around the project area are consistent with that of any military post with business and administrative activities. Personal and commercial vehicles accessing the installation, along with lawn maintenance and pedestrian activities, would be part of the normal noise environment in the area. Noise from vehicle traffic is already the primary source of noise on the installation and would not be abnormal. While the level of traffic noise would not change and would mostly be located in an area that already experiences traffic-related noise, a portion of the project would be located in an area that is currently forested and does not directly experience traffic noise. Construction of the VCIF in a currently forested portion of the installation would introduce operational and vehicle traffic noise in a new location. Additionally, the forested area provides partial noise abatement from traffic-related noise, which would be lost due to tree clearing. Because traffic noise is still largely prevalent in the vicinity, these impacts would be negligible to minor.

Noise levels from traffic would not change for the noise sensitive receptors, including the Fort Meade barracks and Patuxent Research Refuge, which already experience traffic noise from the installation and MD 32. Therefore, no impacts on these noise sensitive receptors would be expected.

3.4.2.3 Alternative 2

Impacts on the noise environment under Alternative 2 would be the same as described for Alternative 1.

3.4.2.4 No Action Alternative

Under the No Action Alternative, DoD would not implement the ORAM project, and existing conditions would remain unchanged. Therefore, no impacts on the noise environment would be expected.

3.4.3 Cumulative Impacts

If construction for any of the reasonably foreseeable actions identified 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. Although ambient noise levels or the types of noise would not be expected to change under the Proposed Action, the introduction of noise in a previously forested area for the VCIF could be exacerbated by additional traffic routed through the VCIF from expanding operations on both the NSA campus and Fort Meade Garrison. Additionally, further loss of sound absorption from forested areas would occur from tree clearing for the Proposed Action and proposed facilities and roadway improvements. Therefore, short- and long-term, minor to moderate, cumulative impacts would be expected from the Proposed Action in combination with the reasonably foreseeable actions.

3.5 Air Quality

3.5.1 Affected Environment

3.5.1.1 Definition of the Resource

Air quality is defined by the concentration of various pollutants in the atmosphere. A region's air quality is influenced by many factors, including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. Most air pollutants originate from human-made sources, including mobile sources (e.g., cars, trucks, buses) and stationary sources (e.g., power plants, emergency generators). Air pollutants are also released from natural sources such as forest fires. Air pollution occurs when one or more pollutants (e.g., dust, fumes, gas, mist, odor, smoke, vapor) is present in the outdoor atmosphere in quantities great enough to cause harm to the natural environment, including human, plant, and animal life, or to property.

As defined by 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. CO, sulfur oxides (SO_X), nitrogen oxides (NO_X), lead, and some particulates are emitted directly into the atmosphere from emissions sources. NO_X, O_3, and some particulates are formed

through atmospheric chemical reactions that are influenced by weather, ultraviolet light, and other atmospheric processes. Volatile organic compound (VOC) and NO_X emissions are precursors of O_3 and are used to represent O_3 generation.

Under the CAA (42 USC Chapter 85), the U.S. Environmental Protection Agency (USEPA) has established National Ambient Air Quality Standards (NAAQS; 40 CFR Part 50) for criteria pollutants. NAAQS are classified as primary or secondary. Primary standards protect against adverse health effects, while secondary standards protect against welfare effects, such as damage to farm crops, vegetation, and buildings. Some pollutants have short- and long-term standards. Short-term standards were designed to protect against acute, or short-term, health effects, while long-term standards were established to protect against chronic health effects. **Table 3-4** provides the federal primary and secondary NAAQS. Each state has the authority to adopt air quality standards stricter than those established under the federal NAAQS. The state of Maryland accepts the federal NAAQS (Maryland Environmental Code Section 2-302).

Areas that are and have historically complied with the NAAQS or have not been evaluated for NAAQS compliance are designated as attainment areas. Areas that violate a federal air quality standard 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 to reach attainment or ensure continued attainment.

Table 3-4. National Ambient Air Quality Standards

Criteria Pollutant	Primary/ Secondary	Averaging Period	Level	Form
CO	Primary	8-hour	9 ppm	Not to be exceeded more than once per year
		1-hour	35 ppm	
NO_2	Primary	1-hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Primary and Secondary	Annual	53 ppb	Annual mean
O_3	Primary and Secondary	8-hour	0.070 ppm[a]	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
$PM_{2.5}$	Primary	Annual	12 µg/m^3	Annual mean, averaged over 3 years
	Secondary	Annual	15 µg/m^3	Annual mean, averaged over 3 years
	Primary and Secondary	24-hour	35 µg/m^3	98th percentile, averaged over 3 years
PM_{10}	Primary and Secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Lead	Primary and Secondary	Rolling 3-month average	0.15 µg/m^3 [b]	Not to be exceeded
SO_2	Primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	3-hour	0.5 ppm	3-hour average not to be exceeded more than once per year

Source: 40 CFR Part 50

[a] Final rule was signed October 1, 2015, and was effective December 28, 2015. The previous (2008) O_3 standard of 0.075 ppm remains in effect in some areas.

[b] In areas designated nonattainment for the lead standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standard (1.5 µg/m^3 as a calendar quarter average) also remains in effect.
Key: ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter

The USEPA General Conformity Rule applies to federal actions occurring in nonattainment or maintenance areas. A conformity applicability analysis is the first step to determine whether a federal action must be supported by a general conformity determination. A conformity applicability analysis is typically done by quantifying applicable direct and indirect emissions that are projected to result from implementation of a federal action. 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 Part 93.153. *De minimis* levels (in tons per year [tpy]) vary by pollutant and also depend on the severity of the nonattainment status for the air quality management area in question. If the results of the applicability analysis indicate that the total emissions would not exceed the *de minimis* emissions levels, then the conformity process is completed, and a general conformity determination is not required. 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 Part 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 (all except O_3).

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 system. Ways in which Earth's climate system may be influenced by changes in the concentration of various gases in the atmosphere have been discussed worldwide. Of particular interest, GHGs are gas emissions that trap heat in the atmosphere. GHGs include water vapor, carbon dioxide (CO_2), methane, NO_X, O_3, and several fluorinated and chlorinated gaseous compounds. To estimate global warming potential, all GHGs are expressed relative to a reference gas, CO_2, which is assigned a global warming potential equal to one. All GHGs are multiplied by their global warming potential, and the results are added to calculate the total equivalent emissions of CO_2 (CO_2e). The dominant GHG emitted is CO_2, accounting for 79 percent of all GHG emissions as of 2020, the most recent year for which data are available (USEPA 2022a).

Most GHGs occur naturally in the atmosphere, but increases in concentrations result from human activities, such as burning fossil fuels. Scientific evidence indicates a trend of increasing global temperature over the past century because of an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative economic and social consequences across the globe.

EO 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*, signed 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 that required federal agencies to consider GHG emissions and the effects of climate change in NEPA reviews. EO 13990 requires federal agencies to capture the full costs of GHG emissions as accurately as possible, including taking global damages into account. Doing so facilitates sound decisionmaking, recognizes the breadth of climate impacts, and supports the international leadership of the United States on climate issues (CEQ 2016). Accordingly, estimated CO_2e emissions associated with the Proposed Action and alternatives are provided in this EIS for informative purposes. 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. The "social cost of carbon" is an estimate of the monetized damages associated with incremental increases in GHG emissions, such as reduced agricultural productivity, human health effects, property damages from increased flood risk, and the value of ecosystem services. The interim social cost of carbon established by the Interagency Working Group for the year 2030 is estimated at 62 dollars per metric ton in 2020 dollars (IWG-SCGHG 2021).

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.

The USEPA has promulgated two GHG regulations: (1) the Mandatory Reporting of GHGs Rule, requiring the reporting of GHG emissions annually; and (2) the GHG Tailoring Rule, which requires permitting for major new or modified sources of GHGs. The GHG Reporting Program requires certain facilities to report GHG emissions from stationary sources, if such emissions exceed 25,000 metric tons of CO_2e per year (40 CFR Part 98). The major source PSD permitting requirements for GHGs are triggered when a facility exceeds the major threshold of 100,000 tpy for CO_2e emissions.

3.5.1.2 Existing Conditions

***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 (AQCR), or AQCR 115 (40 CFR Part 81.28). AQCR 115 is within the ozone transport region that includes 11 states and Washington, D.C. The USEPA has designated Anne Arundel County as moderate nonattainment for the 2008 8-hour O_3 NAAQS and marginal nonattainment for the 2015 8-hour O_3 NAAQS. Additionally, the portion of Anne Arundel County containing Fort Meade is designated as nonattainment for SO_2. Therefore, the General Conformity Rule is potentially applicable to emissions of VOCs and NO_X (because they are precursors of O_3) and SO_X. As outlined in 40 CFR Part 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. Anne

Arundel County is designated as attainment or unclassified for all other criteria pollutants (USEPA 2022b).

Local Ambient Air Quality. Existing ambient air quality conditions near Fort Meade can be estimated from measurements taken at nearby air quality monitors. **Table 3-5** 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. 2021 Air Pollutant Concentrations near Fort Meade

Criteria Pollutant	Averaging Period	NAAQS	2021 Design Concentration
CO			
NO_2	1-hour	100 ppb	41 ppb[a]
	Annual	53 ppb	16 ppb[a]
O_3	8-hour	0.070 ppm	0.070 ppm[b]
$PM_{2.5}$	Annual	12 µg/m^3	7.1 µg/m^3 [a]
	24-hour	35 µg/m^3	16 µg/m^3 [a]
PM_{10}	24-hour	150 µg/m^3	Not available
Lead	3-month	0.15 µg/m^3	Not available
SO_2	1-hour	75 ppb	7 ppb[c]

Source: USEPA 2022c

[a] Design concentration for Howard County, Maryland. Monitor located approximately 4 miles east of Fort Meade.

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

[c] 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.

Key: ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter

Air Operating Permits. 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 the facility has 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. NSA exceeds the major source threshold for NO_X. Therefore, NSA operates under a Title V air operating permit (No. 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 2020a). **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 2020a

Per MDE Title V permit regulations (COMAR 26.11.02 and 26.11.03), a Title V Significant Permit Modification is required for facilities whose emissions increases exceed the major source thresholds. A Significant Permit Modification also would be required if it became necessary to establish federally enforceable limitations to reduce potential emissions below the thresholds. A Minor Permit Modification would be required if emissions were below the thresholds, and a federally enforceable limit was not necessary.

Fort Meade Garrison does not maintain an air operating permit but instead obtains permits to construct minor stationary sources of air emissions (e.g., emergency generators). All stationary sources of air emissions on Fort Meade Garrison are registered with MDE and accounted for in the O_3 and SO_2 State Implementation Plans. As identified in the State Implementation Plans, registered equipment includes 33 stationary sources of O_3 and 26 stationary sources of SO_2. Fort Meade Garrison is not required to report annual emissions; however, MDE uses a predictive model to calculate the emissions potential for nonattainment pollutants for registered stationary sources. The estimated emissions potential for Fort Meade Garrison includes 0.08 tpy of NO_X, 0.04 tpy of VOCs, and 0.46 tpy of SO_X (MDE 2020b, 2020c, 2023).

Climate Change and GHGs. The climate in the area is affected by its proximity to the Chesapeake Bay, Delaware Bay, and the Atlantic Ocean. Fort Meade has an average high temperature of 76.5 degrees Fahrenheit (°F) in the hottest month of July and an average low temperature of 32.2 °F in the coldest month of January. The area has an average annual precipitation of 41.94 inches per year. The wettest month of the year is September, with an average rainfall of 3.98 inches per month (Idcide 2022).

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 (USEPA 2016).

In 2017, Anne Arundel County produced 8,624,593 tons of GHGs (composed of CO_2, methane, nitrous oxide, and sulfur hexafluoride), equivalent to 8,787,508 tons of CO_2e (USEPA 2021). In 2019, Maryland produced 56.9 million metric tons of CO_2, and was ranked the 35th highest producer of CO_2 in the United States (USEIA 2019).

3.5.2 Environmental Consequences

3.5.2.1 Evaluation Criteria

Impacts on air quality are evaluated by comparing the annual net change in emissions for each criteria pollutant against threshold levels. For nonattainment and maintenance pollutants, the General Conformity Rule *de minimis* levels are used. Based on compliance with the NAAQS at Fort Meade, the General Conformity Rule is potentially applicable to emissions of VOCs and NO_X (because they are precursors of O_3) and SO_X. The applicable *de minimis* levels for these pollutants is 50 tpy for VOCs, and 100 tpy for NO_X and SO_X (40 CFR Part 93.153(b)).

For attainment pollutants, the annual net change in emissions is compared against the 250 tpy PSD threshold, as defined by the USEPA, for all criteria pollutants besides lead. The PSD threshold for lead is 25 tpy. 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 insignificance indicator 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. 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 and CEQ Final Guidance on GHG emissions, this EIS examines GHGs as a category of air emissions. It also examines future climate scenarios to determine whether elements of the Proposed Action and alternatives would be affected by climate change. This EIS does not attempt to measure the actual incremental impacts of GHG emissions from the Proposed Action and alternatives because a lack of consensus exists regarding how to measure such impacts. Impacts on climate change and GHGs would be considered significant if the Proposed Action or alternatives meaningfully contributed to the potential effects of global climate change.

3.5.2.2 Alternative 1

Alternative 1 would result in short-term (i.e., 2026 through 2028), negligible to minor, adverse impacts on air quality from construction actions required for implementation of the ORAM project. Long-term (i.e., 2028 and beyond), negligible, beneficial impacts would occur from increased operational efficiency of the access facilities resulting in decreased vehicle idling times and reduction of mobile air emissions.

Table 3-7 provides the estimated total net change in emissions from Alternative 1, which includes all construction activities. Detailed emissions calculations are provided in **Appendix C**.

Table 3-7. Estimated Annual Net Change in Emissions from Alternative 1

Year	VOC (tpy)	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (tpy)
2026 (construction)	0.177	1.025	1.0677	0.003	85.074	0.039	<0.001	321.7

Year	VOC (tpy)	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (tpy)
2027 (construction)	0.510	2.860	3.435	0.009	173.576	0.106	<0.001	936.4
2028 (construction)	0.607	1.079	1.524	0.003	0.047	0.047	<0.001	303.7
Maximum	**0.607**	**2.860**	**3.435**	**0.009**	**173.576**	**0.106**	**<0.001**	**936.4**
***de minimis* Level or PSD Threshold**	**50**	**100**	**250**	**100**	**250**	**250**	**25**	**N/A**
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Key: N/A = not applicable

Air emissions from construction would result in short-term, minor, adverse impacts on air quality. Emissions of criteria pollutants and GHGs would be directly produced from operation of heavy construction equipment, heavy duty diesel vehicles hauling demolition debris and construction materials to and from the project area, workers commuting daily to and from the project area, and ground disturbance. All such emissions would be temporary in nature and produced only when construction is occurring, from 2026 through 2028.

During construction, the air pollutant of greatest concern is particulate matter, such as fugitive dust, which is generated from ground-disturbing activities and combustion of fuels in construction equipment. Fugitive dust emissions would be greatest during initial site preparation activities and site grading, and would vary from day to day depending on the work phase, level of activity, and prevailing weather conditions. BMPs and environmental control measures would be incorporated at construction areas to minimize fugitive dust emissions and include the following:

- Use of electricity from the installation would be used preferentially over the use of generators. All generator use would be pre-approved by the installation Air Quality Manager and adhere to applicable operating procedures.
- All non-road diesel equipment would comply with the federal Clean Air Nonroad Diesel Rule, which regulates emissions from nonroad diesel engines and sulfur content in nonroad diesel fuel.
- Dust suppression techniques would be used during construction to reduce air pollution. Recommended methods include application of water, soil stabilizers, or vegetation; use of wind break enclosures; use of covers on soil stockpiles and dump truck loads; use of silt fences; and suspension of earth-movement activities during high-wind conditions (i.e., gusts exceeding 25 miles per hour).
- To the greatest extent feasible, measures to reduce diesel emissions would be implemented. These measures could include switching to cleaner fuels, retrofitting current equipment with emission reduction technologies, repowering older equipment with modern engines, replacing older vehicles, and reducing idling through operator training and contracting policies.
- Construction activities would be conducted in compliance with Maryland regulatory requirements, through the use of compliant practices or products. These requirements

appear in COMAR Title 26, Subtitle 11, Air Quality, and include the following: *Particulate Matter from Materials Handling and Construction* (COMAR 26.11.06.03.D); *Visible Emissions* (COMAR 23.22.06.02); *Control of Emissions of VOCs from Architectural Coatings* (COMAR 26.11.35); and *Control of Emissions of VOCs from Consumer Products* (COMAR 26.11.32).

Alternative 1 would not result in a net increase in emissions from mobile sources, such as automobiles and vehicular traffic, because the number of vehicle trips to and from the NSA campus or Fort Meade would not change as a result of the Proposed Action. The ORAM project would, however, increase the operational efficiency of access facilities for the NSA campus and Fort Meade Garrison, which could decrease vehicle idling times and reduce mobile air emissions, resulting in long-term, negligible, beneficial impacts on air quality. Additional long-term, beneficial impacts would occur from the removal of an emergency generator following demolition of the existing VCIF, which would reduce stationary source air emissions. Alternative 1 would not result in a change to the air permitting classification for the NSA campus or Fort Meade Garrison. If required, new stationary sources of air emissions on the NSA campus would be added to the existing Title V permit through the Minor Permit Modification process. Submission of an application to MDE for a permit modification would be required within 1 year of the first operation of the new emissions source. For new stationary sources of air emissions on Fort Meade Garrison, a permit to construct would be obtained and the stationary source would be registered with MDE.

The total net change in annual emissions from Alternative 1 would not exceed the *de minimis* level or PSD thresholds. Therefore, under Alternative 1, a general conformity determination is not required, and no significant impacts would occur. A Record of Non-Applicability to the General Conformity Rule is provided in **Appendix C**.

Climate Change and GHGs. As described in **Section 3.5.1.1**, increasing global temperature is a result of GHG emissions and the climate change associated with this global warming is predicted to produce negative economic and social consequences across the globe. Construction under Alternative 1 would produce a yearly maximum of 936.4 tons (849.5 metric tons) of direct CO_2e in 2027. By comparison, 849 metric tons of CO_2e is approximately the GHG footprint of 183 passenger vehicles driven for 1 year or 107 homes' energy use for 1 year (USEPA 2022d). In 2017, Anne Arundel County produced 8,787,508 tons of CO_2e emissions (USEPA 2021). Emissions from construction during the highest CO_2e emission year would represent approximately 0.01 percent of the total CO_2e emissions in the county. As such, air emissions produced during construction would not meaningfully contribute to the potential effects of global climate change and would not considerably increase the total CO_2e emissions produced by Anne Arundel County. Therefore, long-term, adverse impacts on climate change from GHG emissions would be negligible. Increased operational efficiency of access facilities from the ORAM project could decrease vehicle idling times and reduce mobile air and GHG emissions, which would result in long-term, minor, beneficial impacts on air quality.

Consistent with EO 13990 and CEQ guidance, this EIS examines a social cost of carbon as a means of comparing the GHG impacts of the Proposed Action and alternatives. **Table 3-8**

compares the estimated annual net change in GHG emissions and associated social cost of carbon from the alternatives to the statewide, nationwide, and global GHG emissions. The social cost of carbon for Alternative 1 would be approximately $53,000 per year for the highest CO_2e emissions year (i.e., 2027).

Table 3-8. Estimated Annual Net Change in GHG Emissions and Social Cost of Carbon

Scale	CO2e Emissions (MMT/year)	Compared to Alternative 1	Social Cost of Carbon ($/year) [a,b]
Global	33,621.5	3,957,798,705%	**$2,084,533,000,000**
United States	5,158.7	607,263,096%	**$321,63,400,000**
Maryland	56.9	6,698,058%	**$3,527,800,000**
Alternative 1	0.0008495 [c]	100%	$52,669
Alternative 2	0.0008488 [c]	99.9%	$52,626

Source: USEIA 2019, IWG-SCGHG 2021

[a] The social cost of carbon calculation assumes all CO_2e emissions are carbon dioxide.

[b] The social cost of carbon for emissions year 2030 is estimated at 62 dollars per metric ton. Values shown are in 2020 dollars.

[c] Values analyzed are from the highest CO_2e emissions year of 2027. Values have been converted from tons to metric tons using the following conversion: 1 metric ton = 1.0131 tons.

Key: MMT = million metric tons

The ORAM project area contains approximately 117 acres of forested land, which includes various hardwood species. Carbon sequestration potential for a forested area is dependent on a number of factors, including tree type (i.e., species), age, height, diameter, health, wood density, the region in which the forested area is located, and its belowground biomass. Carbon sequestration potential also is influenced by the fate of the forest material after harvesting including whether the material is used in hardwood products (e.g., furniture, structures, other wood products) or for energy. Carbon sequestered in forests can be re-emitted into the environment as CO_2 through decomposition or combustion. Much of the hardwood from forests will end up in long-term carbon pools as hardwood products and the carbon contained in these products can remain stored for years or decades depending on the end use. After harvest of forest material, carbon may also remain in materials remaining on the forest floor, soils, and in underground biomass (USDA 2014). Based on regional estimates of timber volume, carbon stocks, and carbon in harvested wood products for oak-hickory stands in the Northeastern U.S., removal of one acre of mature forest material (i.e., 65 years old) results in carbon emissions equal to approximately 31.6 tons (28.7 metric tons) per acre (USFS 2006). As discussed in **Section 3.8**, 20 percent of the project area would be preserved or re-established in accordance with the NSA's reforestation plan for the East Campus. Therefore, it was assumed 80 percent of the project area (94 acres) would be harvested and permanently lost. When applying a net carbon emissions factor of 31.6 tons of carbon per acre, approximately 2,958 tons of carbon would be released. It is estimated that approximately 40 percent of this carbon would remain in long-term carbon pools as part of hardwood products and approximately 60 percent (1,775 tons) would be emitted as CO_2 through combustion or decomposition (USFS 2006). According to a University of Maryland study, Maryland forests supported an annual carbon sink of approximately 1,218,054 tons (1,105,000 metric tons) of CO_2e per year between 2006 and 2018 (UMD 2021). The estimated CO_2 emissions from forest removal would represent less than 0.2

percent of the annual carbon sink supported by Maryland forests. As such, long-term, adverse impacts from permanent forest removal would be minor.

Ongoing changes to climate patterns in Maryland are described in **Section 3.5.1**. These climate changes are unlikely to affect the ability to implement the Proposed Action. **Table 3-9** outlines potential climate stressors and their effects on the Proposed Action, including Alternative 1. All elements of the Proposed Action in-and-of-themselves are only indirectly dependent on any of the elements associated with future climate scenarios (e.g., meteorological changes). The ORAM project area is not within a floodplain or near the shoreline, so proposed infrastructure is unlikely to be damaged should storm intensity or flooding frequency increase as a result of climate change. At this time, no future climate scenario or potential climate stressor would have appreciable effects on any element of the Proposed Action.

Table 3-9. Effects of Potential Climate Stressors

Potential Climate Stressor	Effects from the Proposed Action	Effects on the Proposed Action
Higher temperatures and more frequent heat waves	Negligible	Negligible
Increased storm intensity	Negligible	Minor
Changes to precipitation patterns	Negligible	Negligible
Rising seas and retreating shorelines	None	None
Disruption of built infrastructure	Negligible	Minor
Human health effects	Negligible	Negligible

Source: USEPA 2016

3.5.2.3 Alternative 2

As with Alternative 1, Alternative 2 would result in short-term (i.e., 2026 through 2028), negligible to minor, adverse impacts on air quality from construction actions required for implementation of the ORAM project. Long-term (i.e., 2028 and beyond), negligible, beneficial impacts would occur from increased operational efficiency of the access facilities resulting in decreased vehicle idling times and reduction of mobile air emissions.

Table 3-10 provides the estimated total net change in emissions from Alternative 2. As with Alternative 1, air emissions from construction would be temporary, occurring only from 2026 through 2028, and would result in short-term, minor, adverse impacts on air quality. Air emissions from construction during 2027 and 2028 for Alternative 2 would vary slightly from those for Alternative 1 because Alternative 1 would include the construction of an overpass and Alternative 2 would include slightly more pavement. As with Alternative 1, the total net change in annual emissions from Alternative 2 would not exceed the *de minimis* level or PSD thresholds. Therefore, under Alternative 2, a general conformity determination is not required, and no significant impacts would occur. Construction contractors would employ BMPs and environmental control measures, to the greatest extent practicable, as identified in **Section 3.5.2.2**, to reduce emissions of criteria pollutants from construction activities.

As with Alternative 1, net increases in mobile source emissions would not occur; however, increased operational efficiency of access facilities could decrease vehicle idling times and reduce mobile air emissions, resulting in long-term, negligible, beneficial impacts on air quality.

Additional long-term, beneficial impacts would occur from the removal of an emergency generator following demolition of the existing VCIF, which would reduce stationary source air emissions. Alternative 2 would not result in a change to the air permitting classification for the NSA campus or Fort Meade Garrison. If required, a Minor Permit Modification for the existing NSA Title V permit would be submitted to MDE within 1 year of facility operation to account for new stationary emissions sources on the NSA campus. A permit to construct would be obtained for new stationary emissions sources on Fort Meade Garrison, and the source would be registered with MDE.

Table 3-10. Estimated Annual Net Change in Emissions from Alternative 2

Year	VOC (tpy)	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (tpy)
2026 (construction)	0.177	1.025	1.077	0.003	85.074	0.039	<0.001	321.7
2027 (construction)	0.510	2.859	3.434	0.009	173.576	0.106	<0.001	935.6
2028 (construction and operations)	0.608	1.079	1.524	0.003	0.047	0.047	<0.001	303.5
Maximum	**0.608**	**2.859**	**3.434**	**0.009**	**173.576**	**0.106**	**<0.001**	**935.6**
***de minimis* Level or PSD Threshold**	**50**	**100**	**250**	**100**	**250**	**250**	**25**	**N/A**
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Key: NA = not applicable

Climate Change and GHGs. Construction under Alternative 2 would produce a yearly maximum of 935.6 tons (848.8 metric tons) of direct CO_2e in 2027 which is 99.9 percent of the CO_2e emissions compared to Alternative 1 (see **Table 3-8**). By comparison, 849 metric tons of CO_2e is approximately the GHG footprint of 183 passenger vehicles driven for 1 year or 107 homes' energy use for 1 year (USEPA 2022d). As with Alternative 1, emissions from construction during the highest CO_2e emission year would represent approximately 0.01 percent of the total CO_2e emissions in the county. As such, air emissions produced during construction under Alternative 2 would not meaningfully contribute to the potential effects of global climate change and would not considerably increase the total CO_2e emissions produced by Anne Arundel County. Therefore, long-term, adverse impacts on climate change from GHG emissions would be negligible. The social cost of carbon for Alternative 2 would approximate $53,000 per year for the highest CO_2e emissions year (i.e., 2027).

Similar to Alternative 1, approximately 94 acres of the forested area within the ORAM project area for Alternative 2 would be permanently lost, resulting in approximately 1,775 tons of CO_2 emissions. As with Alternative 1, CO_2 emissions would represent less than 0.2 percent of the annual carbon sink supported by Maryland forests and long-term, adverse impacts from permanent forest removal would be minor.

The ongoing changes to climate patterns described in **Section 3.5.1.2** are unlikely to affect the ability to implement the Proposed Action, including Alternative 2. As outlined in **Table 3-9**, no

future climate scenario or potential climate stressor would have appreciable effects on any element of the Proposed Action.

3.5.2.4 No Action Alternative

Under the No Action Alternative, DoD would not implement the ORAM project, and existing conditions would remain unchanged. Continued operational inefficiency of the current access facilities, combined with further changes in Fort Meade traffic distribution, would lead to increased vehicle queueing and idling times, resulting in long-term, minor, adverse impacts on air quality from vehicle emissions.

3.5.3 Cumulative Impacts

Air emissions and GHGs would be produced from all reasonably foreseeable actions identified in **Section 2.5**. Emissions from construction actions, such as roadway improvements, construction of facilities for the CNMF program, LRC improvements, East Campus development, PAF construction, and installation of a potable water transmission line would result in short-term, minor to moderate, adverse cumulative impacts when combined with the short-term, minor, adverse impacts from the Proposed Action. Construction for the reasonably foreseeable planned actions would be staggered as the actions are implemented, and construction for most actions would likely not occur in the same year as construction for the Proposed Action. BMPs and environmental control measures, as described in **Section 3.5.2.2**, would be implemented to minimize air emissions from the reasonably foreseeable planned actions and reduce cumulative impacts on air quality. Operational air emissions would occur from heating systems for new facilities and added vehicle traffic from new personnel on the NSA campus and Fort Meade Garrison for the CNMF project and the PAF. These air emissions likely would be negligible compared to the existing emissions potential for Fort Meade and the NSA campus; therefore, construction and operational emissions from the reasonably foreseeable actions are unlikely to exceed *de minimis* thresholds when combined with the Proposed Action, and significant additive adverse impacts on air quality within Anne Arundel County would not occur.

Ongoing changes to climate patterns in Maryland are described in **Section 3.5.1.2**. These changes are unlikely to adversely impact construction and operation of the facilities associated with the reasonably foreseeable actions within and outside Fort Meade and the NSA campus.

3.6 Geological Resources

3.6.1 Affected Environment

3.6.1.1 Definition of the Resource

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

Topography. Topography and physiography pertain to the general shape and arrangement of the land surface, including its 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. Such 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 appropriate cases, soil properties must be examined for their compatibility with particular construction activities or types of land use.

Prime Farmland. Prime farmland is protected under the Farmland Protection Policy Act (FPPA) of 1981. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. The FPPA also ensures that federal programs are administered in a manner that, to the extent practicable, will be compatible with private, state, and local government programs and policies to protect farmland. The Natural Resources Conservation Service (NRCS) is responsible for overseeing compliance with the FPPA, and has developed the rules and regulations for implementation (see 7 CFR 658, July 5, 1984). 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 to consider alternative actions that could avoid adverse effects. An agency may determine whether a site is farmland as defined in 7 CFR 658.2(a). Such determination and potential impacts associated with a Proposed Action are based on preparation of the farmland conversion impact rating form AD-1006 for areas where prime farmland soils occur and by applying criteria established at Section 658.5 of the FPPA (7 CFR 658).

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

3.6.1.2 Existing Conditions

Physiography and Topography. Anne Arundel County and Fort Meade 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. The sediments found in the Atlantic Coastal Plain range in age from the Triassic to Quaternary periods. The Atlantic Coastal Plain is underlain by a southeastwardly thickening sequence of sediments composed of sand and gravel aquifers interlayered with silt and clay confining units. The topography of the Atlantic

Coastal Plain is relatively flat, with slopes generally less than 1 degree towards the east. Minor variation in microtopography occurs throughout the NSA campus and Fort Meade Garrison, which is attributable to disturbances caused by development (MGS 2014, Fort Meade 2005).

The ORAM project area is characterized by flat to rolling topography with some mostly artificially constructed steep slopes in a few limited areas, including the existing berm that borders the VCIF along the west and north, some steeper slopes associated with the grading of the MD 198 roundabout and MD 32 access ramp from the roundabout, and a portion of the site area east of O'Brien Road and north of Mapes Road. A majority of the project area is currently developed or disturbed. The proposed VCIF and associated ingress and egress lanes would be constructed in largely undisturbed forested areas. The project area ranges between approximately 130 and 190 feet above mean sea level (MGS 2022).

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, the end of which resulted in deposition of Atlantic Coastal Plain sediments in lower elevations. Unconsolidated sand, clay, and silt compose the Atlantic Coastal Plain physiographic province. These sediments thicken toward the southeast, forming a wedge. Precambrian to early Cambrian igneous and metamorphic crystalline rocks underlie the sediments and are exposed along the boundary between the Coastal Plain and Piedmont provinces several miles west of Fort Meade (USGS 2000).

Sediments underlying the region consist of interbedded, poorly sorted, sand and gravel deposits up to 90 feet thick from the Pleistocene Epoch (100,000 to 1.65 million years before present [BP]) and the Patuxent Formation (0 to 250 feet thick) of the Potomac Group from the Cretaceous period (138 to 63 million years BP) (USACE 2005, MGS 2008). Metamorphic Precambrian bedrock underlies the Patuxent Formation. The Arundel Clay acts as a confining layer between two aquifers in the Patapsco and Patuxent Formations: the Lower Patapsco Aquifer and the Patuxent Aquifer, respectively. This clay is composed of red, gray, and brown grains with some ironstone nodules and plant fragments (Fort Meade 2005).

Soils. The soil units mapped within the ORAM project area include Downer-Hammonton complex, Downer-Hammonton-Urban land complex, Evesboro and Galestone soils, Fallsington sandy loams, Patapsco-Evesboro-Fort Mott complex, Patapsco-Fort Mott-Urban land complex, Udorthents, loamy, Woodstown sandy loam, and Zekiah and Issue soil. These soils are fairly evenly distributed, with Fallsington sandy loams, 0 to 2 percent slopes, being the most predominant soil type, comprising slightly less than 20 percent of the ORAM project area. Most of these soil classifications describe soils that have been modified and disturbed by earth-moving equipment or are urban land soils composed of disturbed soils and refuse (USDA-NRCS 2022).

Hydric Soils. The Fallsington and Zekiah soils are the only hydric soils identified within the project area. Hydric soils are soils that are saturated, flooded, or ponded for long enough during the vegetative growing season to develop anaerobic (oxygen-deficient) conditions in their upper part. Anaerobic soil conditions are conducive to the establishment of vegetation that is adapted

for growth under oxygen-deficient conditions and is typically found in wetlands (hydrophytic vegetation). The presence of hydric soil is one of the three criteria (hydric soils, hydrophytic vegetation, and wetland hydrology) used to determine that an area is a wetland based on the U.S. Army Corps of Engineers (USACE) *Wetlands Delineation Manual*, Technical Report Y-87-1 (USACE 1987, USDA-NRCS 2022, NSA 2010). See **Section 3.7** for a discussion of wetlands within the project area.

Prime Farmland. Of the soils identified within the project area, Downer-Hammonton complex, 2 to 5 percent slopes; Woodstown; and Fallsington, if drained, are soils identified as prime farmland, and Downer-Hammonton complex, 5 to 10 percent slopes, and Patapsco-Evesboro-Fort Mott complex are identified as farmland of statewide importance. No unique farmland or farmland of local importance soils were identified by NRCS. Most of the NSA Campus and Fort Meade Garrison, including the project area, are identified as an urbanized area on the 2010 Census Urbanized Area Reference Map: Baltimore, Maryland, and, therefore, would not be considered farmland (USCB 2010). Additionally, the prime farmland and farmland of statewide importance soils in the project area have been previously disturbed and modified due to development, and no agricultural use of these lands is occurring or is planned to occur (USDA-NRCS 2022).

Geologic Hazards. The U.S. 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 (percent g) and is proportional to the hazard faced by a particular type of building. In general, little or no damage is expected at values less than 10 percent g, moderate damage could occur at 10 to 20 percent g, and major damage could occur at values greater than 20 percent g. The 2014 Seismic Hazard Map for Maryland indicates that the region of Fort Meade and Anne Arundel County has a very low seismic hazard rating of approximately 6 percent g (NSA 2010, USGS 2014). No other potential geologic hazards are identified for the project area.

3.6.2 Environmental Consequences

3.6.2.1 Evaluation Criteria

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

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.

3.6.2.2 Alternative 1

Long-term, negligible, adverse impacts would be expected on topography from the implementation of Alternative 1. Impacts would be greatest in the northern area of the ORAM project area because this area is undeveloped; however, most of this area is relatively flat and would require minimal grading. Other areas where construction would occur would need to be graded; however, because much of the proposed area for development has previously been developed, impacts on topography would be negligible.

Short-term, minor and long-term, minor to moderate, adverse impacts on soil and geology would be expected from implementation of Alternative 1. This alternative would result in disturbance to the soils from excavation, grading, and compaction associated with construction of the VCIF, VCP5, and siting of roads and infrastructure. Soils would be compacted, and soil structure would be disturbed and modified. For areas that have been previously developed or disturbed, these impacts would be less. Loss of soil structure due to 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 within the footprint of building structures and roadways. Some activities associated with Alternative 1 would entail clearing up to 117 acres of vegetation, grading, and paving in portions of the 196-acre project area where no structures or infrastructure exist. Vegetation clearing would increase erosion and sedimentation potential. 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 aid in minimizing the potential for erosion and sediment production as a result of storms. Some areas would be converted to impervious surfaces for roads and infrastructure with proper drainage techniques, and the remaining areas affected by construction would be reseeded and revegetated, 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 square feet. 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 major, adverse 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, DoD 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 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 nearby, the project area because geologic events are not very common in Maryland 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.

3.6.2.3 Alternative 2

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

3.6.2.4 No Action Alternative

Under the No Action Alternative, DoD would not implement the ORAM project, and existing conditions would remain unchanged. Therefore, no impacts on geological resources would be expected.

3.6.3 Cumulative Impacts

Short-term, negligible to minor, adverse, cumulative impacts on geological resources would be expected from construction-related ground disturbance, grading, and soil compaction associated with the Proposed Action. In combination with construction for cumulative project facilities and roadway improvements identified in **Section 2.5**, these impacts would be slightly greater. Impacts on topography, geology, and soils from construction, however, would be localized to the site that is being developed. Construction sites that are greater than 5,000 square feet require development of 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 other actions could occur as a result of the conversion of undeveloped land, which would involve irreversible and irretrievable conversions of natural soils to urban land. Any resulting impacts would be partially offset by ESD and other sustainable measures.

3.7 Water Resources

3.7.1 Affected Environment

3.7.1.1 Definition of the Resource

Water resources are natural and human-made sources of water available for use by and for the benefit of humans and the environment, including surface water or groundwater occurring in natural or human-made impoundments or conveyance systems.

Surface water. Surface water resources generally include water occurring in streams, rivers, ponds, lakes, wetlands, and oceans. Surface water is a valuable resource used for many purposes, including ecology, recreation, agriculture, power generation, and drinking water. To help protect these resources, the USEPA established the Clean Water Act (CWA). Regulatory requirements associated with protection of surface water include the following:

Groundwater. Groundwater is water that exists in saturated zones beneath the land surface. Groundwater fills the pores and fractures in underground materials such as sand, gravel, and other rocks. If the water can be removed by pumping, the water saturated materials are identified as an aquifer. Groundwater is used as a primary source for drinking water and/or agricultural irrigation in many regions of the United States (USGS 2022). Groundwater resources are currently protected under the Groundwater Monitoring Rule and the Underground Injection Control Program of the USEPA's Safe Drinking Water Act. MDE has also implemented a Water Appropriation and Use Permit system for the state to conserve, protect, and use water resources of the state in the best interests of the people of Maryland (MDE 2022a).

- Sections 401 and 404 of the CWA, as amended: Under Section 404, USEPA and USACE regulate discharge of dredged or fill material into waters of the United States (WOTUS). WOTUS include navigable and non-navigable surface waters, including wetlands as defined under 40 CFR Part 230.3(s). Under Section 401, a federal agency may not issue a permit or license to conduct any activity that may result in any discharge into WOTUS unless a Section 401 water quality certification is issued, or certification is waived. See Section 3.8 for details regarding jurisdictional wetlands and WOTUS regulated under Sections 401 and 404 of the CWA and guided by EO 11990, Protection of Wetlands.
- Section 402 of the CWA: USEPA was directed to establish the National Pollution Discharge Elimination System (NPDES), which regulates the discharge of pollutants into the nation's waterways. The NPDES program regulates point (i.e., end of pipe) and non-point (i.e., stormwater) sources of water pollution. USEPA delegated the authority of issuing NPDES permits in Maryland to MDE. Stormwater controls for federal projects are also regulated under Section 438 of the Energy Independence and Security Act (EISA) of 2007, which requires federal agencies to reduce water quality impacts from federal development that exceeds 5,000 square feet to maintain or restore pre-development hydrology. Requirements under this regulation have been incorporated into DoD UFC 3 210-10, Low Impact Development, which in Maryland is referred to as ESD. ESD refers to systems and practices that integrate site design, natural hydrology, and smaller controls to capture and treat stormwater runoff. The State of Maryland promulgated the Stormwater Management Act of 2007, which required the state to establish a comprehensive process for stormwater management for development projects. To help ensure stormwater controls are properly evaluated and implemented for federal- and state-level construction projects within Maryland, MDE established the 2015 Maryland Stormwater Management and Erosion Control Guidelines for State and Federal Projects.
- Section 303(d) of the CWA: This is the primary law regulating pollution in the nation's waterways and requires states to identify waters where current pollution control technologies alone cannot meet the water quality standards set for the waterbody. Under these conditions, states must establish total maximum daily loads (TMDLs) to identify individual water quality-based effluent limitations for discharges into water bodies, identified as water quality limited segments (USEPA 2022e).

Coastal Zone. As defined by Section 304 of the Coastal Zone Management Act (CZMA), 16 USC Section 1451 et seq., as amended, and 15 CFR Parts 921–930, a "coastal zone" is composed of the coastal waters (including the waters therein and thereunder) and the adjacent shorelines (including the lands therein and thereunder) that are strongly influenced by each other and in proximity to the shorelines of several coastal states; the coastal zone also includes islands, transitional and intertidal areas, salt marshes, wetlands, and beaches. The coastal zone extends inland from the shorelines only to the extent necessary to control shorelands, the uses of which have a direct and significant impact on the coastal water. The CZMA, administered by the National Oceanic and Atmospheric Administration (NOAA), was developed to protect the coastal environment from growing demands associated with residential, recreational, commercial, and industrial uses. Section 307 of the CZMA requires federal actions that are reasonably likely to affect any land or water use, or natural resource of the coastal zone, be consistent with enforceable polices of a state's federally approved Coastal Zone Management Program (CZMP) (NOAA 2022). The Maryland Department of Natural Resources (MDNR) is the lead agency for the CZMP for projects within the State of Maryland; however, MDE regulates activities proposed within Maryland's coastal zone through federal consistency requirements. For activities affecting coastal and marine resources, such as estuaries and wetlands, a Coastal Zone Consistency Determination is prepared as part of the State of Maryland's environmental permitting process.

In Maryland, the enforceable coastal policies were approved by NOAA on March 19, 2020. Twenty enforceable policies are separated into three categories (core policies, coastal resources, and coastal uses) under the Maryland CZMP. Core policies include quality of life, waste and debris management, water resources protection and management, and flood hazards and community resilience. Coastal resources include the Chesapeake and Atlantic Coastal Bays Critical Area, tidal wetlands, non-tidal wetlands, forests, historical and archaeological sites, and living aquatic resources. Coastal uses include mineral extraction, electrical generation and transmission, tidal shore erosion control, oil and natural gas facilities, dredging and disposal of dredged material, navigation, transportation, agriculture, and development (MDNR 2022a).

Floodplains. A floodplain is relatively low-lying, flat land adjacent to streams, rivers, and large wetlands, and is subject to periodic inundation of flood waters. Natural floodplains provide flood risk reduction benefits by creating natural floodwater controls, protecting riparian ecosystems, and facilitating groundwater recharge. For federal projects, floodplains are protected under EO 11988, *Floodplain Management*. Before taking action, a federal agency must determine if the Proposed Action would occur in a 100-year or higher risk floodplain, and is directed to avoid, if possible, any development and/or disturbance activities within the floodplain as required under EO 11988. A 100-year floodplain is the land that is predicted to flood during a 100-year storm, which has a 1 percent chance of occurring in any given year. A 500-year floodplain is the land that is predicted to flood during a 500-year storm, which has a 0.2 percent chance of occurring in any given year.

3.7.1.2 Existing Conditions

Surface water. Most of Fort Meade and the entire ORAM project area are within the Little Patuxent River watershed of the Patuxent River Basin. A very small area within the northeastern corner of the installation drains to the Severn River. The Little Patuxent River watershed drains an area of approximately 103 square miles, primarily in Anne Arundel County, and the mainstem of the river flows along the southwestern border of Fort Meade (Fort Meade 2012a). The Little Patuxent River converges with the Patuxent River approximately 7 miles south-southeast of Fort Meade. The Patuxent River drains an area of 932 square miles before emptying into the Chesapeake Bay on the western shore. The Patuxent River is designated a "scenic river" under the Maryland Scenic and Wild Rivers Act of 1968. Three primary tributaries and sub-watersheds occur on Fort Meade, all of which drain to the Little Patuxent River. The Midway Branch originates off-installation to the north and flows southward through the western half of Fort Meade, draining approximately 1,461 acres within the installation. The second, Franklin Branch, originates as an intermittent stream near the on-installation Meade Senior High School and flows southward, draining 1,176 acres of the eastern half of the post. Franklin Branch merges with Midway Branch at Fort Meade's southern boundary, forming the Rogue Harbor Branch that flows off-installation into Allen Lake, south of MD 32. The third and southernmost tributary is composed of two small, unnamed branches that join on-post before emptying into the Little Patuxent River (Fort Meade 2012a). The unnamed tributaries and segments of the Little Patuxent River west of the base are classified as "Use Class I-P." Uses under this classification include water contact recreation, protection of aquatic life, and public water supply. Midway and Franklin Branches are identified as "Use Class I," which includes water contact recreation and protection of aquatic life (MDE 2022b).

TMDLs for chlorides and total suspended solids have been established for multiple segments of the Little Patuxent River and its associated tributaries located within Fort Meade boundaries. Anne Arundel County established a Watershed Implementation Plan to identify milestones and implementation plans to ensure the 2010 Chesapeake Bay TMDLs for nitrogen, phosphorus, and total suspended solids loads are met, with anticipated actions to restore water quality by 2025. Currently, Phase III of the Plan is in draft, with DoD committed to specific management strategies, including support for BMP implementation through continued compliance with Section 438 of the EISA. Protective measures include an upgrade and enhancement of the installation's Wastewater Treatment Plant (WWTP) and septic systems as well as providing installation information and their participation in working groups (NSA 2017). Stormwater management features, including stormwater retention ponds, are also located on Fort Meade, with several located adjacent to the ORAM project area (see **Figure 3-7**).

Currently, MDE has issued five NPDES permits for Fort Meade activities, including an NPDES WWTP State Discharge Permit issued to American Water Operations and Maintenance, Incorporated (American Water), and NPDES General Permits for Discharges from State and Federal Small Municipal Separate Storm Sewer Systems (MS4) and NPDES General Permits for Discharges from Stormwater Associated with Industrial Activities for both NSA and Fort Meade Garrison. The permits identify effluent guidelines and specific compliance requirements.

Per the MS4 permit, Fort Meade employs good housekeeping measures, such as water quality education and outreach, illicit discharge detection and elimination, construction site stormwater runoff control, post construction management, and pollution prevention. Project-specific Stormwater Pollution and Prevention Plans (SWPPP) are developed in accordance with the Fort Meade NPDES Industrial General Permit, which identify stormwater BMPs for industrial activities to avoid or minimize stormwater quality impacts, including implementation of erosion and sediment controls, chemical storage, and waste management practices.

Additional plans developed for Fort Meade and the NSA campus to assist with stormwater management include the following:

- Fort Meade and NSA Spill Prevention, Control and Countermeasure (SPCC) Plans (Fort Meade 2022b, NSA 2019b), as required under 40 CFR Section 112.5(a) and developed to help prevent oil discharges to the environment.
- NSA Facility Response Plan (FRP; NSA 2019c), as required under the Oil Pollution Act, developed to identify response planning actions for oil discharges into the environment in quantities that may be harmful.
- *Installation Pollution Prevention (P2) Plan, Fort Meade* (Fort Meade 2011a), identifies installation-specific environmental regulatory requirements, and defines and documents Fort Meade's Installation P2 Program, including goals and objectives associated with the installation's water and wastewater programs.
- *Fort Meade Integrated Natural Resource and Management Plan* (INRMP; Fort Meade 2012a), as required under the Sikes Act (USC Section 670a et seq.) as amended, used to establish goals that represent a long-term vision for the health and quality of Fort Meade's natural resources, including identifying and evaluating proposed plans and land use changes.
- *Fort Meade Area Development Plan* (U.S. Army 2020) incorporates long-term planning objectives, which include using effective water and land conservation practices to manage stormwater and restore natural hydrologic functions of resource areas more naturally. These practices are also incorporated into the Fort Meade Installation Planning Standards, which meet requirements of Section 438 of the EISA.
- *NSAW Master Plan* (NSA 2019a) incorporates long-term planning objectives for the NSA campus at Fort Meade, which includes integrating natural systems into the design of new facilities and infrastructure; incorporating stormwater facilities and landscaping into the site to enhance sustainability; and incorporating pedestrian and campus environments, which are all to comply with the Chesapeake Bay Preservation Act, as regulated under the CZMP.

Coastal Zone. Fort Meade, including the project area and surrounding Anne Arundel County, fall within Maryland's coastal zone; therefore, Fort Meade falls under CZMA jurisdictional requirements. As part of Fort Meade and NSA's response action to help minimize water quality impacts within the coastal zone, a 100-foot riparian buffer has been established along the portion of Midway Branch within Fort Meade's boundary (NSA 2017). In May 2013, DoD and the State of Maryland signed a Memorandum of Understanding (MOU) concerning the federal

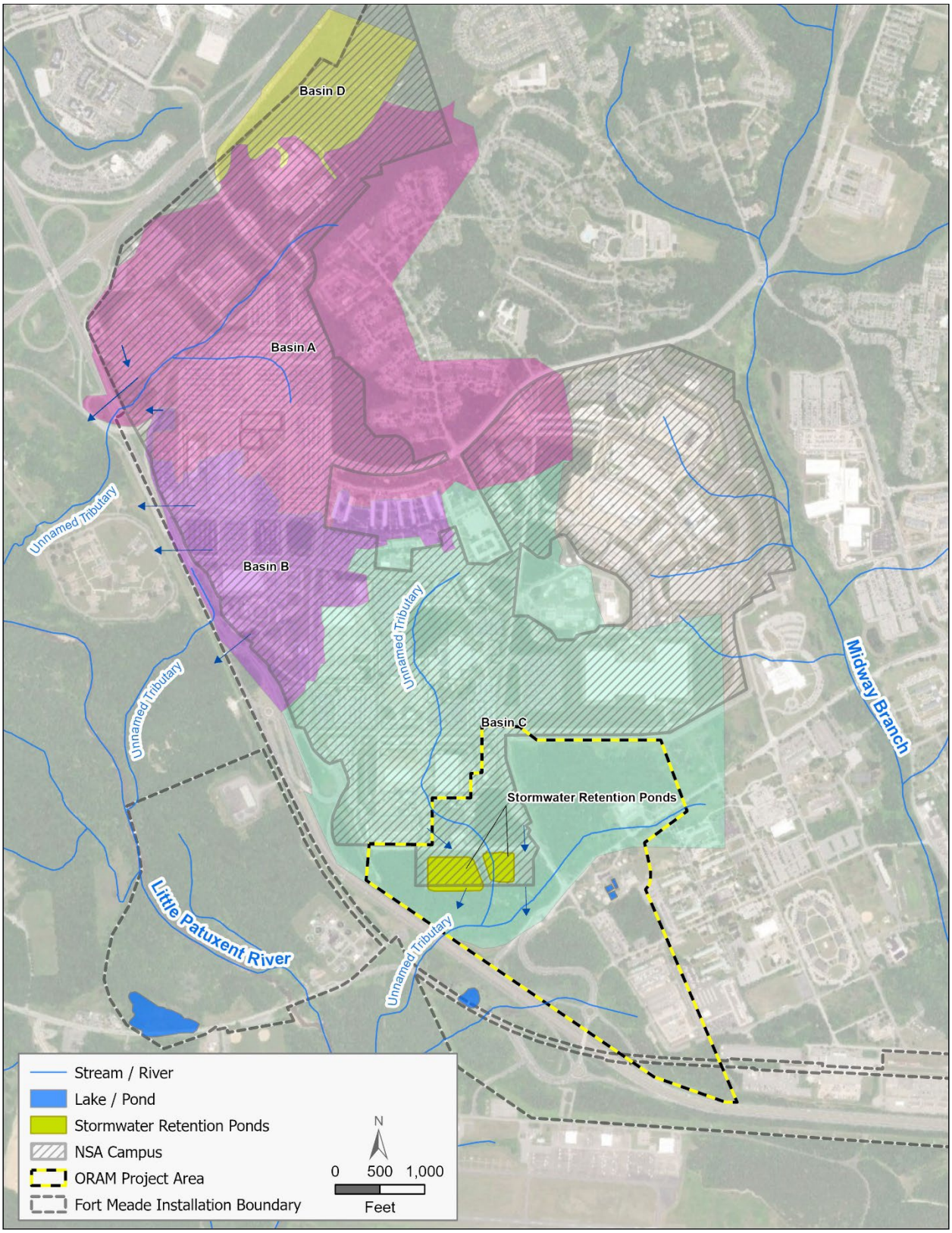


Figure 3-7. Surface Water Features in the Project Area

consistency requirements of the CZMA as well as the application and implementation of certain enforcement policies of Maryland's CZMP. Under the MOU, for projects with land disturbance activities greater than 40,000 square feet, DoD is required to submit either a negative determination with a finding of no effect on coastal uses or resources, or a consistency determination to MDE (DoD 2013).

Floodplains. There are 100 year-floodplains identified along portions of the Midway Branch, located east and southeast of the NSA campus and near the southern installation boundary (see **Figure 3-8)**. No 100- or 500-year floodplains are present within the ORAM project area. Management of floodplain impacts on Fort Meade is accomplished through constraints mapping and a no-disturbance policy in floodplain areas (Fort Meade 2012a).

Groundwater. The Patuxent, Upper Patapsco, and Lower Patapsco Aquifers lie under the project area, and the general groundwater flow direction for each aquifer is southeastward; however, the shallow groundwater flow direction does vary within the Fort Meade boundary (U.S. Army 1995). The Middle Patapsco Clay Unit is the confining layer between the Upper and Lower Patapsco Aquifers, and the Arundel Clay is the confining unit between the Lower Patapsco and Patuxent Aquifers (Fort Meade 2012a). The Upper Patapsco Aquifer is unconfined and considered the water table aquifer, with depth to groundwater identified as shallow (U.S. Army 1995).

Various VOCs, pesticides, and explosives have been detected on-installation in the Upper and Lower Patapsco Aquifers (Fort Meade 2012a). The Lower Patapsco Aquifer serves as a primary drinking water source for areas of Anne Arundel County with known near-surface water quality impacts associated with trichloroethene, tetrachloroethene, and carbon tetrachloroethene, which have been detected beyond the Fort Meade boundary and into an area beneath the City of Odenton (AAC 2022a).

The Patuxent Aquifer is the deepest aquifer and primary drinking water source for Fort Meade. Six on-installation drinking water production wells screened in the Patuxent Aquifer are located on the installation, and range in depth from 500 to 800 feet below the ground surface. These wells operate under a Water Appropriate and Use Permit from the MDE (Permit No. AA1969G021[7]), which allows an average withdrawal of approximately 3.3 million gallons per day (mgd; NSA 2017). Groundwater sampling is conducted at each drinking water well as required under the Safe Drinking Water Act, and a Source Water Assessment for Fort Meade was conducted by the Water Management Administration Division of MDE in 2005. One U.S. Geological Survey groundwater monitoring well exists within the project area. No water quality concerns have been identified for this aquifer. Additional information regarding the drinking water supply system is provided in **Section 3.10**.

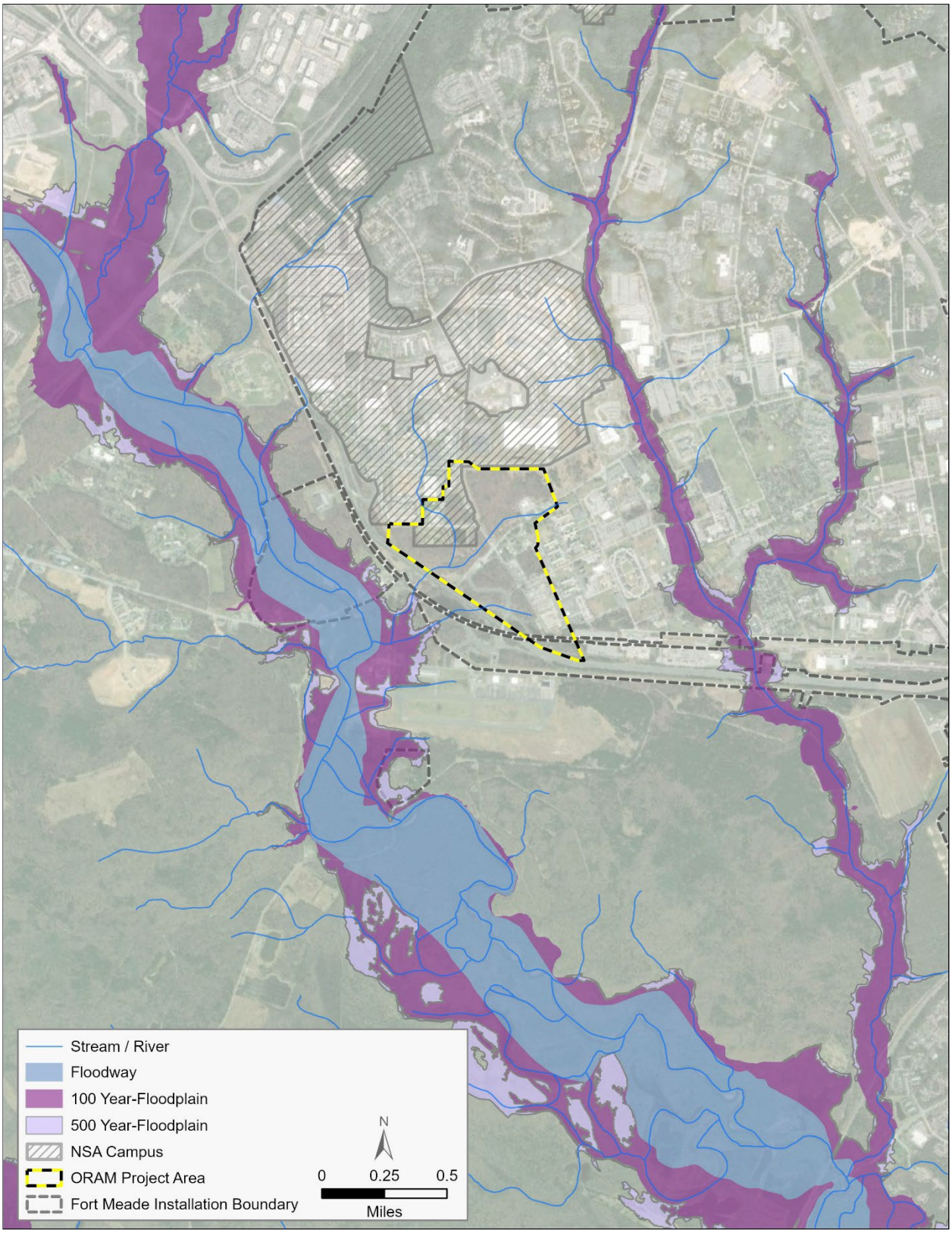


Figure 3-8. Floodplains near the Project Area

3.7.2 Environmental Consequences

3.7.2.1 Evaluation Criteria

Evaluation of impacts on water resources is based on potential changes to water quality, availability, and use, including the existence of floodplains and conflicts with associated water resource regulations. A Proposed Action would have significant or major adverse impacts if it were to substantially affect water quality, substantially reduce water availability or supply, threaten or damage hydrologic characteristics, or violate established federal, state, and/or local laws or regulations. The potential impact of flood hazards on a Proposed Action is important if such an action occurs in an area with a high probability of flooding.

3.7.2.2 Alternative 1

Short-term, negligible to minor, adverse impacts on water resources resulting from sediment and erosion runoff from demolition and construction activities are anticipated. 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 increased impervious surfaces under Alternative 1.

Surface water. Short- and long-term, negligible to minor, adverse impacts on surface water would occur from increased sediment and erosion runoff due to construction-related ground disturbance and increased impervious surfaces associated with facility development. Under Alternative 1, proposed activities would include land disturbance activities greater than 5,000 square feet and more than 1 acre within the southern-most sub-watershed basin on Fort Meade, which drains south-southwest into an unnamed tributary of the Little Patuxent River. Project design would be required to meet Section 438 of the EISA, and a Stormwater Management Plan with an approved ESCP would be required under COMAR 26.17.01, *Erosion and Control*. To meet additional NPDES permitting requirements, a Notice of Intent under MDE's General Permit for Discharges of Stormwater Associated with Construction Activity, 20-CP, along with development of a project-specific SWPPP, would be required under COMAR 26.08.04.09A (MDE 2022c). Project-specific stormwater management actions and BMPs are necessary under these plans and permits. Proposed activities under this alternative would incorporate BMPs associated with existing NSA and Fort Meade-specific P2 and resource protection plans (P2, SPCC, and NSA FRP) as referenced in **Section 3.7.1.2** and required under the Safe Drinking Water Act, such as maintaining all construction equipment according to the manufacturer's specifications, and containing and storing all fuels and other potentially hazardous materials appropriately. In the event of a spill during construction or operation, procedures outlined in the NSA and Fort Meade SPCC Plans and NSA's FRP would be followed to quickly contain and clean up a spill. Following environmental planning and permit requirements for the duration of the project would help reduce potential water quality impacts to nearby surface waters and the shallow groundwater aquifer since sediment and/or construction debris could be released into the environment during a storm event. Incorporation of ESD

standards (MDE 2022d) and stormwater BMPs, such as use of silt fencing, sediment traps, or hay bales, would also meet existing Fort Meade NPDES permitting and TMDL requirements, and minimize impacts on water quality from increased stormwater runoff as well as associated sedimentation and erosion potential due to the addition of impervious surfaces. The predevelopment hydrology of the property would be maintained or restored to the maximum extent technically feasible. DoD could coordinate use of a third-party inspector for the project to ensure that BMPs are incorporated during construction and design requirements are met by the construction contractor. MDE would perform periodic inspections of construction and demolition for the Proposed Action to ensure proper environmental management and compliance.

Proposed land disturbance activities may occur adjacent to, but not within, the high water mark of existing tributaries and/or surface water bodies identified as WOTUS under Section 404 of the CWA. Implementation of ESD, stormwater management, and BMPs would also help minimize any short-term impacts on these water resources. Potential impacts on jurisdictional wetlands under Section 404 of the CWA and Section 401 CWA certification requirements are discussed in **Section 3.8**.

Coastal Zone. Long-term, moderate to major, adverse impacts would be expected on coastal zone resources; however, the long-term, major, adverse impacts on wetlands would be addressed through mitigation. New construction and operation under the Proposed Action meets the following goals and objectives of the Maryland CZMP:

- To the extent feasible, consider ESD during the design phase of the projects.
- Develop and implement a site-specific ESCP as well as development and implementation of a Stormwater Management Plan, including SWPPP measures to control stormwater runoff.

The NSA would adhere to all federal and state permit requirements to protect coastal and marine resources and wetland areas relating to the CZMP, minimizing potential impacts to the extent practicable. Development associated with Alternative 1 would be permanent and have long-term, moderate, adverse impacts due to tree removal and conversion of land within forested areas as well as disturbance and development of pervious surfaces at various locations within the ORAM project area. In keeping with the Maryland Forest Conservation Act (FCA), DoD would preserve or reforest acreage equal to 20 percent of the total area developed within the project area. Long-term, major, adverse impacts on wetlands would result from the disturbance and permanent fill of wetlands required to support construction and operation of the proposed VCP5, VCIF, ACF, and overpass components; however, impacts on wetlands would be minimized through the use of buffers during construction and the use of culverts incorporated into project design and construction. Wetland and WOTUS impacts, such as disturbance or permanent fill, that cannot be avoided would require permitting under Section 404 of the CWA, which would identify mitigation required to address impacts. See **Section 3.8.2** for more information regarding potential impacts on forests and wetlands from the Proposed Action and corresponding mitigation measures.

ESD would be used to maintain the pre-development runoff characteristics after development has occurred. Additionally, implementation of stormwater BMPs would further minimize runoff and erosion. See **Surface Water** and **Groundwater** in this section for more information regarding potential impacts on water quality from the Proposed Action and minimization of erosion. Impacts on soils are also discussed in **Section 3.6.2**.

Other relevant enforceable policies are discussed in this EIS, including noise in **Section 3.4.2**, air quality in **Section 3.5.2**, historical and archaeological sites in **Section 3.9.2**, sewage treatment and water appropriation in **Section 3.10.2**, and hazardous substances in **Section 3.12.2**.

This EIS has been provided to the MDE as the Federal Coastal Zone Consistency Determination.

Floodplains. Alternative 1 would not occur in a 100- or 500-year floodplain as identified in **Figure 3-8**. Therefore, no impacts on floodplains would be anticipated from Alternative 1.

Groundwater. Because groundwater can be encountered in rather shallow depths at Fort Meade, proposed ground disturbance activities associated with Alternative 1 could minimally affect shallow groundwater resources during construction activities due to introduction of sediment and/or construction related materials. With proper use of appropriate ESD, stormwater management practices, and BMPs as required under federal and state policies and permits as well as requirements associated with the NSA's SPCC Plan and the Fort Meade SPCC/Installation Spill Contingency Plan (ISCP), potential impacts would be significantly reduced. Refer to **Section 3.12.2** for a discussion of potential hazardous materials and waste impacts resulting from the Proposed Action. Water quality impacts on the deeper aquifers and the Lower Patapsco and Patuxent Aquifers are not anticipated due to the depth of the aquifers and their associated confining layers. The U.S. Geological Survey groundwater monitoring well, along with other groundwater wells within the project area, would be avoided, and appropriate BMPs would be implemented to prevent potential contamination from during construction and demolition. The well would not be impacted by operation of the Proposed Action. Water resource quantity impacts are not anticipated to occur under Alternative 1 because no change in potable water consumption would occur.

3.7.2.3 Alternative 2

Impacts on water resources from Alternative 2 would be similar to those described for Alternative 1.

3.7.2.4 No Action Alternative

Under the No Action Alternative, DoD would not implement the ORAM project, and existing conditions would remain unchanged. Therefore, no impacts on water resources would be expected.

3.7.3 Cumulative Impacts

Short-term, minor, adverse, cumulative impacts on water resources could occur from construction-related increased erosion and sediment flow resulting from vegetation removal and rainfall events associated with the Proposed Action in combination with the other roadway and facility construction identified in **Section 2.5**. Implementation of stormwater management plans, P2 plans, and BMPs at construction sites would reduce the potential for adverse impacts from individual construction sites, and, therefore, reduce cumulative impacts on water resources.

Long-term, minor, adverse, cumulative impacts on water resources would be expected from the addition of impervious surfaces as a result of site development associated with the Proposed Action and future cumulative projects on and off Fort Meade identified in **Section 2.5.2**. In addition to accumulation of on-installation actions, off-installation planned projects include plans to construct a new potable water transmission line and MDOT SHA roadway-widening projects within the Fort Meade vicinity. These proposed developments would introduce additional impervious surface areas as well as further potential minor water quality and stream flow rate impacts within the Little Patuxent River watershed.

In accordance with federal and state stormwater regulations, the post-development hydrological condition of each project on Fort Meade must be the same as it was pre-development. Maintaining pre-development hydrologic conditions would be ensured through adherence to the ESD as outlined in the *Maryland Stormwater Design Manual* (MDE 2022e); policies in the Fort Meade INRMP (Fort Meade 2012a); and recommendations in the Fort Meade ADP (U.S. Army 2020). Implementation of these requirements would mitigate potentially long-term, adverse, cumulative impacts on water resources.

3.8 Biological Resources

3.8.1 Affected Environment

3.8.1.1 Definition of the Resource

Biological resources include native or naturalized plants and animals, and the habitats (e.g., wetlands, forests, grasslands) in which they exist. Protected and sensitive biological resources include federally listed (endangered or threatened), proposed, and designated or proposed critical habitat; Species of Concern managed under Conservation Agreements or Management Plans; and state-listed species.

Forest Conservation. The main purpose of the Maryland FCA is to minimize 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. Of primary interest are areas adjacent to streams or wetlands, those on steep or erodible soils, or those within or adjacent to large contiguous blocks of forest or wildlife corridors. MDNR Forest Service administers and implements the FCA for non-federal land. For non-federal actions, any activity requiring an application for a subdivision, grading permit, or sediment control permit on areas that are 40,000 square feet or larger is subject to the FCA and involves a Forest

Conservation Plan and Forest Stand Delineation (FSD) prepared by a licensed forester, licensed landscape architect, or other qualified professional (MDNR 2022b). The Maryland FCA (Natural Resources Article Section 5-1601 through 5-1613) is not applicable to federal land such as Fort Meade; however, NSA and Fort Meade Garrison have opted to voluntarily participate as long as it does not conflict with critical national security mission obligations. It is NSA and Fort Meade Garrison's intent to maintain a campus-like environment and protect forested areas to the maximum extent practical while continuing to sustain and support current and future missions. NSA and Fort Meade Garrison demonstrate compliance with the FCA by ensuring their development and construction projects follow the current Fort Meade Forest Conservation Act and Tree Management Policy to the extent possible. In keeping with the FCA standards, Fort Meade Garrison requires that the equivalent of 20 percent of a project area is preserved, or 20 percent of forest cover is re-established.

Wetlands. Wetlands are important natural systems and habitats that can support a diverse number of species. Wetlands perform several important biological functions, some of which include water quality improvement, groundwater recharge, nutrient cycling, wildlife habitat provision, and erosion protection. As discussed in **Section 3.7.1**, wetlands are protected as a subset of WOTUS 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 Part 328). USACE has jurisdiction over wetlands that are determined to be jurisdictional under Section 404 of the CWA. Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill materials into WOTUS, including jurisdictional wetlands. Additionally, Section 404 of the CWA also grants states with sufficient resources the right to assume these responsibilities.

Section 401 of the CWA gives states and regional boards the authority to regulate through water quality certification any proposed federally permitted activity that could result in a discharge to water bodies, including wetlands. The state may issue certification with or without conditions, or deny certification for activities that might result in a discharge to water bodies.

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

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

Freshwater wetlands in Maryland are protected by the Nontidal Wetlands Protection Program, which sets a state goal of no overall net-loss of nontidal wetlands acreage and functions. Activities in nontidal wetlands require a nontidal wetland permit or a letter of exemption, unless the activity is exempt by regulation. Any activity that involves excavating, filling, changing drainage patterns, disturbing the water level or water table, or grading and removing vegetation in a nontidal wetland or within a 25-foot buffer requires a permit from the MDE's Water Management Administration (MDE 2018a).

Endangered Species. Under the ESA (16 USC Section 1536), an "endangered species" is defined as any species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species likely to become an endangered species in the foreseeable future. Although candidate species receive no statutory protection under the ESA, the USFWS advises government agencies, industry, and the public that these species are at risk and might warrant protection under the ESA in the future. 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 critical habitat. The ESA requires that all federal agencies avoid "taking" threatened or endangered species (which includes significant modification or degradation of the threatened or endangered species' habitat), unless authorized. Additionally, the conservation of threatened species is regulated by 4(d) Rules, which are tools of the ESA that direct the Secretary of Interior to issue regulations deemed "necessary and advisable to provide for the conservation" of threatened species. Section 7 of the ESA establishes an informal consultation process with USFWS (and National Marine Fisheries Service) that ends with concurrence on a determination from a federal agency regarding the expected level of impact on listed species.

On May 4, 2015, the USFWS concurred with the U.S. Army Installation Management Command's determination that select military mission operations on Army installations are not likely to adversely affect the threatened northern long-eared bat (*Myotis septentrionalis*). The Programmatic Informal Consultation includes conservation measures outlined 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). The conservation measures would be incorporated into activities to avoid adverse effects on northern long-eared bats, achieving the "not likely to adversely affect" determination. The Programmatic Informal Consultation only addresses the consultation requirements for those projects that can implement the conservation measures. The Programmatic Guidelines apply to all installations identified in the document, including Fort Meade (U.S. Army 2015, USFWS 2015). USFWS recommends contacting the local state agency, state's Natural Heritage database, and local USFWS Ecological Services field office for information on the best current sources of northern long-eared bat records to determine the specific locations of the known roost (resting or sheltering places) and hibernation (hibernacula) sites. These locations are informed by records in each state's Natural Heritage database, USFWS records, other databases, or other survey efforts (80 FR 17974-18033). On November 29, 2022, the USFWS announced a final rule to reclassify northern long-eared bats

as endangered. The change in status from threatened to endangered nullified the prior 4(d) rule that tailored protections for the species when it was listed as threatened.

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. An MOU exists between the DoD and USFWS to promote the conservation of migratory birds in compliance with EO 13186.

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 the USFWS. This includes inactive and active nests. "Take," according to the BGEPA, means to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb. Activities that directly or indirectly lead to a "take" are prohibited without a permit from the USFWS.

3.8.1.2 Existing Conditions

Vegetation. Vegetative cover at Fort Meade consists of forest land, open land/meadow, and developed areas with maintained turf and street trees. Approximately one-third of the installation, or 1,500 acres, is forested. Four timber types, including Cove and Mixed Hardwood, Upland Hardwood, Pine Hardwood, and Pine, were identified in the ORAM project area during a 2021 FSD. Forest cover types are: oak/hickory forest, tulip poplar/red maple forest, and pine forest (USACE 2022a). The oak/hickory forest cover type is commonly dominated by white oak (*Quercus alba),* chestnut oak (*Quercus montana*), scarlet oak (*Quercus coccinea*), pin oak (*Quercus palustris*), willow oak (*Quercus phellos*), northern red oak (*Quercus rubra)*, black oak (*Quercus velutina*), and mockernut hickory (*Carya tomentosa*). Common understory species include American beech (*Fagus grandifolia*), black gum (*Nyssa sylvatica*), sassafras (*Sassafras albidum*), oak saplings, pignut hickory (*Carya glabra*), red maple (*Acer rubrum*), greenbrier (*Smilax* spp.), and highbush blueberry (*Vaccinium corymbosum*). The tulip poplar/red maple forest cover type is commonly dominated by tulip poplar (*Liriodendron tulipifera*), red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), sweetbay (*Magnolia virginiana*), and persimmon (*Diospyros virginiana*). Common understory species include sweetgum, sweet pepperbush (*Clethra alnifolia*), American holly (*Ilex opaca*), and pawpaw (*Asimina triloba*). The pine forest cover type is commonly dominated by Virginia pine (*Pinus virginiana*), loblolly pine (*Pinus taeda*), pitch pine (*Pinus rigida*), blackjack oak (*Quercus marilandica*), and various other oak species. Common understory species include various oak species, dwarf chestnut (*Castanea pumilla*), highbush blueberry (*Vaccinium corymbosum*), sassafras (*Sassafras albidum*), and black locust (*Robinia pseudoacacia*).

The 2021 FSD indicated that several survey plots within the 174-acre survey area have a Low Priority Retention rating (USACE 2022a). The rating is based on isolation of the stand and lack of contiguous forest, a Champion (i.e., the largest known tree of a given species in a particular geographic area) or trees with 75 percent of the diameter at breast height of Champion species, steep slopes, and known federal- or state-listed sensitive species or critical habitat on site. No specific FSD guidance exists for the Low Priority Retention rating.

Invasive plant species are an increasing concern and priority on Fort Meade, including the NSA campus. A 2011 survey reported that Asiatic bittersweet (*Celastrus orbiculatus*), Japanese honeysuckle (*Lonicera japonica*), Nepalese browntop (*Microstegium vimineum*), and mile-a-minute (*Polygonum perfoliatum*) were the most frequently encountered invasives (Fort Meade 2012b). The 2021 FSD for the ORAM project area identified the presence of Japanese wineberry (*Rubus phoenicolasius*), garlic mustard (*Alliaria peteolata*), Japanese barberry (*Berberis thunbergia*), tree of Heaven (*Ailanthus altissima*), Oriental bittersweet (*Celastrus orbiculatus*), Japanese honeysuckle, Chinese privet (*Ligustrum sinense*), mile-a-minute, and Nepalese browntop on the site (USACE 2022a).

Wetlands. Two recently conducted wetland surveys overlapped the ORAM project area, including a 2018 survey of the project area (2018 VCP5 Wetland Delineation), and a 2020 survey that covered the entire NSA campus. The USACE performed the wetland delineations to verify previous delineations, re-delineate areas that may have changed or have not been delineated within the last 5 years, and delineate new areas of WOTUS (i.e., streams and wetlands) (USACE Baltimore District 2018, 2020). The previous wetland delineation boundaries were confirmed and reflagged in 2022 and 2023.

The ORAM project area encompasses approximately 30 acres of wetlands (see **Table 3-11** and **Figure 3-9**). These wetlands were reviewed by USACE and MDE in March 2023 to make a Preliminary Jurisdictional Determination.

Table 3-11. WOTUS within the Project Area

Cowardin Classification	Area (acreage)	Length (linear feet)
Wetlands		
PEM	2.02	--
PFO	27.86	--
POW	<0.01	--
Streams		
EPH	--	642
INT	--	1,672
PER	--	12,135

Sources: USACE Baltimore District 2018, 2020
Key: PEM = palustrine emergent; PFO = palustrine forested wetlands; POW = palustrine open water; EPH = ephemeral; INT = intermittent; PER = perennial
Table Notes: The project area encompasses land within both the NSA campus and Fort Meade Garrison. Total acreages for wetlands and streams are calculated from the USACE Baltimore District's geographic information systems delineation data (USACE Baltimore District 2018, 2020).

Figure 3-9. Wetlands and Streams within the Project Area

For the palustrine forested (PFO) wetland type, which comprises the majority of wetlands within the ORAM project area, the primary hydrologic indicators include water-stained leaves, oxidized rhizospheres along living roots, saturation, sediment deposits, and drift deposits. Secondary hydrologic indicators include geomorphic position, facultative-neutral test, sphagnum moss, and drainage patterns. Dominant vegetation found within the wetland areas included tulip poplar, American beech, willow oak, black gum, chestnut oak, and red maple within the tree stratum; sweetgum, American beech, black gum, American holly, sweetbay, and winterberry (*Ilexverticillate*) within the sapling stratum; highbush blueberry (*Vaccinium corymbosum*), maleberry (*Lyonia ligustrina*), sweetbay, American holly, and green ash (*Fraxinus pennsylvanica*) within the shrub stratum; Japanese stiltgrass (*Microstegium vimineum*), cinnamon fern (*Osmunda cinnamomea*), ground pine (*Dendrolycopodium obscurum*), and Japanese honeysuckle within the herb stratum; and roundleaf greenbrier (*Smilax rotundifolia*) and Japanese honeysuckle within the woody vine stratum. The soils within these areas consist primarily of a fibric organic humus layer at the surface and a fine sandy loam, fine loamy sand, sandy loam, sandy clay loam, silt loam, sand with gravel, and loamy sand composing the remaining profile. Hydric soil indicators met in these areas included depleted matrix, depleted dark surface, and dark surface.

Streams. In general, streams considered as WOTUS within the ORAM project area were of moderate to poor quality and heavily influenced by highly urbanized characteristics of the vicinity (USACE 2018). Streams were classified based on presence of hydrology at the time of the survey. The streams within the project area all flowed southwest as tributaries to the Little Patuxent River. Ephemeral streams consisted of 642 linear feet, intermittent streams consisted of 1,672 linear feet, and perennial streams consisted of 12,135 linear feet, for a total of approximately 14,449 linear feet of streams observed within the project area.

Wildlife. The project area is primarily developed; however, natural and landscaped areas provide habitat for a variety of wildlife. A 2014 fauna survey for Fort Meade reported that 13 bird, 11 mammal, and 11 reptile and amphibian species were identified on the installation (Fort Meade 2014).

Wildlife species found on Fort Meade, including the project area, are typical of those found in urban-suburban areas. Mammals on Fort Meade include, but are not limited to, white-tail deer (*Odocoileus virginianus*), groundhog (*Marmota monax*), gray squirrel (*Sciurus carolinensis*), raccoon (*Procyon lotor*), bat, Virginia opossum (*Didelphis virginiana*), eastern chipmunk (*Tamias striatus*), mouse (*Peromyscus* sp.), vole (*Microtus* sp.), eastern mole (*Scalopus aquaticus*), and red fox (*Vulpes vulpes*) (Fort Meade 2014, U.S. Army 2007). Some avian species observed within and near the project area include American robin (*Turdus migratorius*), Baltimore oriole (*Icterus galbula*), brown thrasher (*Toxostoma rufum*), Canada warbler (*Cardellina canadensis*), Carolina chickadee (*Poecile carolinensis*), chimney swift (*Chaetura pelagica*), hooded merganser (*Lophodytes cucullatus*), Kentucky warbler (*Geothylpis formosus*), mallard (*Anas platyrhynchos*), mourning dove (*Zenaida macroura*), scarlet tanager (*Piranga olivacea*), wood duck (*Aix sponsa*), and wood thrush (*Hylocichla mustelina)*.

Protected Species. The potential exists for two federally listed bat species, one additional bat species proposed for federal listing as endangered, and a candidate insect species to occur within the proposed project area. The potential also exists for species protected under the MBTA, BGEPA, and by state listing for conservation to occur within the project area. The list of species was compiled using the Fort Meade INRMP (Fort Meade 2012a); the USFWS Information for Planning and Consulting (IPaC) system (USFWS 2022a); the Maryland list of rare, threatened, and endangered species; and recently completed surveys on Fort Meade.

The USFWS IPaC report for the ORAM project area identified the northern long-eared bat (*Myotis septentrionalis*) and the Monarch butterfly (*Danaus plexippus*) as potentially present (CMI 2022, USFWS 2022a). Based on continued population decline, the USFWS published a Final Rule to reclassify the northern long-eared bat from threatened to endangered status on November 29, 2022 (87 FR 73488). All three bat species are listed as species of greatest conservation need in Maryland and are ranked as highly state rare (S1; MDNR 2021). The Monarch butterfly is a candidate species under consideration by the USFWS for listing. Although no ESA Section 7 requirements for consultation exist for the Monarch butterfly, analysis in this EIS and planning for this project considers this candidate species and its associated obligate milkweed habitat.

Recently conducted surveys on Fort Meade also confirmed the presence of the threatened northern long-eared bat; candidate Monarch butterfly; endangered Indiana bat (*Myotis sodalis*); and tricolored bat (*Perimyotis subflavus*), which was proposed for listing as endangered on September 13, 2022 (87 FR 53681), (CMI 2018, 2022). No critical habitat exists on the installation for any of these species (USFWS 2022a, Fort Meade 2021a). NSA has initiated informal consultation with the USFWS Chesapeake Bay Field Office regarding the northern long-eared, Indiana, and tricolored bats in regards to the ORAM project (see **Appendix D**).

Bat Species. 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 very 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 2.5 miles east and northeast of the proposed project 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 2022b, 2022c, 2022d).

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 bats roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags (typically greater than or equal to 3 inches diameter at breast height), or in dead trees during the spring and summer seasons. Males and non-reproductive females may also roost in

cooler places, such as caves and mines. Northern long-eared bats most likely are not dependent on certain species of trees for roosts throughout their range; rather, the bats opportunistically use many tree species that form suitable cavities or crevices, or retain bark.

Northern long-eared, Indiana, and tricolored bats use forested areas not only for roosting but also for foraging and commuting between summer and winter habitats (USFWS 2022c, 2022d). These species overwinter in caves or mines, known as hibernacula. In southern portions of the United States where mines and caves are less common, tricolored bats are also found in the cracks and crevices of bridges or in roadside culverts (USFWS 2022b, Newman et al. 2021). Like most bats, northern long-eared, Indiana, and tricolored bats emerge at dusk to feed during their active period. They primarily fly through the understory of forested areas feeding on prey, which they catch while in flight using echolocation (i.e., an auditory behavior that uses ultrasonic signals to detect prey and maneuver through the environment) or by gleaning motionless insects from vegetation. The proposed project area contains a mid-climax hardwood forest dominated by various oaks, with pine and tulip poplar/red maple occurring as codominants. Common understory species include American beech, sassafras, red oak, pignut hickory, and red maple (USACE 2022a).

The primary threat to northern long-eared, Indiana, and tricolored bats is White Nose Syndrome, a disease of hibernating bats that has quickly spread from the northeastern to the central United States (USFWS 2022c, 2022d; 87 FR 56381). The disease is named for the white fungus (*Pseudogymnoascus destructans*) that infects the skin of hibernating bats. Some affected bats display abnormal behavior, including flying during the day and in cold weather (i.e., before insects are available for foraging) and hibernating toward a cave's entrance, where temperatures are much colder and less stable. Fat reserves in these bats are also severely diminished or non-existent, making survival to spring emergence difficult (80 FR 17974-18033). Though not as prominent as White Nose Syndrome, human disturbance and habitat loss also contribute to population declines for these species.

Monarch Butterfly. 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).

Migratory Birds. Recent fauna surveys identified 111 avian species, many of which are protected by the MBTA, that are found throughout Fort Meade (CMI 2018). Fort Meade supports Partners in Flight, an initiative to protect and conserve neotropical migratory birds and their habitats. Fort Meade records and tracks Species of Concern present on the installation (U.S. Army 2007). Designation as a Species of Concern is based on a prioritization scheme that identifies bird species most in need of conservation action. Of the Species of Concern documented on Fort Meade and potentially occurring within the project area, the black-billed cuckoo (*Coccyzuz erythroptalmus*), blue-winged warbler (*Vermivora pinus*), bobolink

(*Dolichonyx oryzivorus*), Canada warbler, cerulean warbler (*Dendroica cerulea*), chimney swift, eastern whip-poor-will (*Antrostomus vociferus*), Kentucky warbler, king rail (*Rallus elegans*), lesser yellowlegs (*Tringa flavipes*), prairie warbler (*Dendroica discolor*), prothonotary warbler (*Protonotaria citrea*), red-headed woodpecker (*Melanerpes erythrocephalus),* rusty blackbird (*Euphagus carolinus*), willet (*tringa semipalmata*), and wood thrush were identified by the USFWS IPaC system (USFWS 2022a) as migratory birds of concern within the ORAM project area. It is also assumed that other migratory birds protected under the MBTA may occur within the project area. Although not considered to be a Species of Concern for the area, the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*), which are protected under the MBTA as well as the BGEPA, were also listed as potentially present and warranting consideration due to their susceptibilities in offshore environments relating to development activities (USFWS 2022a).

State Listed Species. A review of the Fort Meade INRMP (Fort Meade 2012a), recent flora and fauna surveys, and search of the USFWS IPaC system (USFWS 2022a) indicated no state-listed protected species are known to occur on or adjacent to the project area (U.S. Army 2007; CMI 2018, 2022).

3.8.2 Environmental Consequences

3.8.2.1 Evaluation Criteria

Potential impacts on biological resources are evaluated based on the importance (e.g., legal, commercial, recreational, ecological, scientific) of the resource, 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. A habitat perspective is used to provide a framework for analysis of general classes of impacts (e.g., removal of critical habitat, noise, human disturbance). Ground disturbance and noise associated with construction activities could potentially directly or indirectly result in adverse effects on biological resources. Effects from ground disturbance were evaluated by identifying the types and locations of ground-disturbing activities in correlation to important biological resources. Mortality of individuals, habitat removal, and damage or degradation of habitats might be effects associated with ground-disturbing activities. To evaluate the effects of noise, considerations were given to the potential number of individuals or critical species present, and the type of stressors involved.

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.

3.8.2.2 Alternative 1

Vegetation. Development associated with Alternative 1 would be permanent and have long-term, moderate, adverse impacts due to tree removal and conversion of land within forest as well as disturbance and development of pervious surfaces at various locations within the ORAM

project area. The total acreage of converted forest land and vegetation disturbed would depend on the final design, layout, and site of the proposed structures and facilities as well as the constraints of each site. In keeping with the FCA, DoD would preserve or reforest acreage equal to 20 percent of the total area developed within the project area. Preservation of forested area or reforestation would be factored into the ORAM design process to maintain a campus-like environment while continuing to sustain and support current and future missions. Reforestation with native species would occur on site or nearby to best match the current ecological functions. Groups of three or more landscape trees can be planted as part of reforestation techniques. If reforestation is not entirely possible on site, then alternative sites on Fort Meade would be designated for reforestation where possible. DoD would also consider riparian buffer enhancement within the project area or on nearby sites to offset habitat impacts.

Soil disturbance could provide opportunities for nonnative and invasive species to establish or spread; however, these impacts would be negligible because implementation of the following BMPs during and following construction, demolition, and maintenance activities would prevent the establishment and spread of nonnative species:

- Inspect and clean construction equipment to remove soil, plants, and seeds
- Ensure all fill is as free of nonnative plant propagules as practicable
- Per EO 13112, *Invasive Species*, invasive species would be removed from the project area during construction, and no invasive species would be allowed during revegetation efforts
- Revegetate disturbed areas with native plant species

BMPs to minimize soil disturbance as well as control erosion and sedimentation during demolition, construction, and clearing activities would also be implemented to minimize potential impacts on adjacent downgradient forested areas and water quality (see **Section 3.7**).

Over the long term, landscaped areas around proposed buildings, roads, and parking areas would be maintained using existing landscaping practices. Reforested or preserved forest areas would be maintained consistent with the FCA.

Wetlands. Long-term, major, adverse impacts on wetlands would result from the disturbance and permanent fill of wetlands required to support construction and operation of the proposed VCP5, VCIF, ACF, and overpass components of Alternative 1. The total acreage of affected wetlands would depend on the final design, layout, and site of the proposed structures and facilities as well as the constraints of each site. See **Appendix A** for the draft FONPA for the Proposed Action.

Direct impacts on wetlands and their buffers would be minimized to the greatest extent possible through optimized use of existing roadways and developed areas. Additional short-term, minor, indirect impacts on nearby wetlands and streams could occur from sedimentation as a result of erosion at the construction sites. Implementation and proper maintenance of erosion and sediment control as well as stormwater management practices during demolition, construction, and operation would minimize the potential for indirect impacts to occur. Additionally, culverts

would be constructed where the proposed VCP5 roadways would cross the stream along Mapes Road to minimize permanent impacts on the resource.

Wetlands or associated wetland buffers within the project area would be impacted; therefore, consultation with the USACE Baltimore District Regulatory Division and MDE would be required throughout design and construction. Impacts on wetlands would be minimized through the use of buffers during construction as well as culverts incorporated into project design and construction. Wetlands and WOTUS impacts that cannot be avoided would require permitting under Section 404 of the CWA, which would identify mitigation required to address impacts. Mitigation options include wetland restoration, enhancement, or creation on or off site; banking; and credits. The mitigation strategy for the Proposed Action would be determined by the final design and level of wetland impacts. Depending on permit requirements and opportunities, on-site mitigation at Fort Meade would be desirable, but off site or purchased mitigation credits would also be considered. The final mitigation determination would be made during the design process, as impacts become more defined, and during the permitting process. All mitigation measures would follow the hierarchy outlined in the 2008 USACE Compensatory Mitigation Rule. A Nontidal Wetlands Protection Program permit would also be obtained from MDE.

Wildlife. Short-term, minor, adverse impacts on wildlife would occur as a result of temporary noise disturbances associated with construction and demolition activities, which include heavy equipment use. Loud noise can disturb wildlife, resulting in escape or avoidance behaviors; however, these effects would be temporary. Noise can also distort or mask bird and bat calls as well as other biologically relevant communications signals (e.g., songs, warning calls, fledgling begging calls), and the ability to find prey or detect predators (Caltrans 2016a, 2016b). If noise persists in a particular area, animals could leave their habitat and avoid it permanently. Avoidance behavior requires the expenditure of excess energy that is needed for survival (e.g., finding new food sources, water sources, and breeding and nesting habitats). Most wildlife species would be expected to recover quickly from noise disturbance when the construction activities have ceased. Noise associated with construction and demolition activities would only be expected to affect individuals within close proximity to the noise sources. As a result, population-level impacts would not be expected to occur. Wildlife-friendly construction standards would be used in development of the proposed facilities and infrastructure to minimize potential bird-window collisions and nighttime lighting impacts.

Short- and long-term, minor, direct, adverse impacts could occur from the mortality of small, less-mobile terrestrial species (e.g., reptiles, amphibians, rodents, small mammals) as a result of collision with construction equipment, operational vehicles, or POVs. Wildlife within the project area would be expected to have adapted to an urban environment and would generally avoid high traffic areas. Some forested and open field habitat would be lost and additional new roadways would further disconnect wildlife corridors; however, impacts would be minimized through reforestation or preservation of lands equal to 20 percent of the total developed area. Culverts would be appropriately sized to accommodate habitat connectivity for local wildlife. Per To minimize impacts on habitat connectivity in accordance with the March 21, 2023, CEQ *Guidance for Federal Departments and Agencies on Ecological Connectivity and Wildlife*

Corridors, the final design would minimize habitat fragmentation to the extent practicable, and where not possible, offsetting or compensating for these impacts. Therefore, impacts on wildlife habitat from Alternative 1 would be minor.

Protected Species. Construction associated with the ORAM 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 project area. Based on 2018 survey results, anticipated presence of these three bat species within the project area would be very low because the majority of calls during fall, spring, and winter survey efforts were consistently detected at sites located more than 2.5 miles from the project area on Fort Meade.

In accordance with existing guidelines for these species, project activities would avoid tree clearing during known roosting periods. Additionally, DoD is consulting with the local USFWS Chesapeake Bay Field Office to confirm the potential direct and indirect effects associated with various components of the Proposed Action. 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. All demolition and construction activities would occur more than 0.5 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. Therefore, disturbances related to dust are expected to be insignificant.

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. 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 avoided 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 Programmatic Guidelines would be followed (U.S. Army 2015). Additionally, construction vehicles within the ORAM project area would move slowly, allowing bats and other wildlife to avoid the vehicles, and travel mostly during the daytime when northern long-eared 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 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 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 ORAM project area contains approximately 117 acres of forested land. As discussed in the ***Vegetation*** discussion above, the total acreage of forested land and vegetation disturbed would depend on the final design, layout, and location of the proposed facilities. 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 insignificant, based on the remaining forested habitat within Fort Meade and at the Patuxent Research Refuge (less than 2 miles south of the/ project area) and the propensity of the species to use alternative roost sites. DoD would preserve or reforest lands equal to 20 percent of the total area developed within the project area. 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* (U.S. Army 2015).

DoD initiated Section 7 informal consultation with USFWS on February 6, 2023, regarding the Proposed Action. DoD recommended to USFWS that implementation of the Proposed Action may affect but is not likely to adversely affect listed species, provided all tree cutting and clearing would be avoided during the spring and summer active roosting and nesting season (see **Appendix D**). 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 re-evaluated. USFWS concurred with this determination on September 20, 2023.

Vegetation clearing for the Proposed Action could result in impacts on the Monarch butterfly. Because the butterfly is a candidate species, ESA Section 7 does not require consultation. 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. DoD would increase monarch butterfly habitat within the project area's revegetated areas and stormwater features to the maximum extent practicable.

Migratory Birds. Clearing of the ORAM project area could result in adverse impacts on migratory birds. Several bird species, including the wood thrush, Kentucky warbler, bald eagle, and golden eagle, were identified as migratory birds of concern within the project area and are known to occur at Fort Meade (USFWS 2022a, CMI 2022). Direct loss of forests, which provides nesting habitat for migratory birds, is expected under the Proposed Action. However, forested habitat occurs in adjacent areas, and birds would be expected to relocate to these habitats. Any effect on migratory birds from noise generation would be negligible. Although, construction activity associated with the Proposed Action could result in an unintentional take under the MBTA or BGEPA, implementation of the following measures would avoid it:

- Avoid clearing trees during the bird nesting season (typically spring months)
- If tree clearing cannot avoid the nesting season, conduct pre-construction surveys to identify and avoid active nests
- Train construction workers to identify and avoid active nests

3.8.2.3 Alternative 2

Impacts on biological resources under Alternative 2 would be similar to those described for Alternative 1. Under Alternative 2, development and operation of the double-lane roundabout would result in permanent tree removal from the forested area and added ground-level developed land. The total area of permanent clearing and development affecting forested areas, wetlands, and streams would depend upon the final design for the proposed roadway and associated connections. Alternative 2 would implement the same measures to avoid or minimize effects on these resources and protected species within the ORAM project area as described under Alternative 1.

3.8.2.4 No Action Alternative

Under the No Action Alternative, DoD would not implement the ORAM project, and existing conditions would remain. Therefore, no impacts on vegetation, wetlands, wildlife, or protected species would be expected.

3.8.3 Cumulative Impacts

Impacts on vegetation, wetlands, and wildlife under the Proposed Action would result in short- and long-term, minor to major, adverse impacts due to temporary and permanent tree and vegetation removal, disturbance to and/or permanent fill of wetlands, and construction noise. If construction were to occur concurrently for any of the reasonably foreseeable actions identified in **Section 2.5** with the Proposed Action, cumulative, short-term, adverse impacts on wildlife from construction-related noise would be slightly greater. Development actions associated with the other future actions on Fort Meade would likely involve additional tree and vegetation removal. Therefore, long-term, minor to major, adverse, cumulative impacts on biological resources would be expected from the Proposed Action in combination with the other development actions on Fort Meade.

3.9 Cultural Resources

3.9.1 Affected Environment

3.9.1.1 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 NHPA (1996), Archaeological and Historic Preservation Act (1974), American Indian Religious Freedom Act (1978), Archaeological Protection Act (1979), and Native American Graves Protection and Repatriation Act (1990).

The NHPA focuses on cultural resources such as prehistoric and historic sites, buildings and structures, districts, or other physical evidence of human activity considered important to a culture, 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 and 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.

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

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 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 can include archeological resources, sacred sites, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals considered essential for the preservation of traditional culture.

This section describes the nature and extent of environmental impacts resulting from the Proposed Action and alternatives on cultural resources. 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 Effect (APE) and assesses the possible effects of the proposed undertaking on historic properties in consultation with the State Historic Preservation Officer and other parties. The APE is defined as the geographic area(s) "within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." The APE for the proposed project is defined as the expected area of roadway and infrastructure development within the ORAM project area. The historic properties evaluated under this EIS were identified 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.

3.9.1.2 Existing Conditions

Cultural resources on Fort Meade are detailed in Fort Meade's 2011 *Integrated Cultural Resources Management Plan* (ICRMP; USACE 2011). An update to the ICRMP in 2020 by the USACE Baltimore District (USACE 2020a) is currently undergoing review. The updated ICRMP covers the period from 2018 through 2022 and provides guidelines and procedures to enable Fort Meade to meet its legal responsibilities related to historic preservation and cultural resources management at Fort Meade. The entirety of Fort Meade has undergone Phase I-level archaeological investigations for the presence of archaeological resources; therefore, no new archaeological fieldwork was completed for the 2020 ICRMP. Information regarding previous cultural resources investigations and their results are specified in detail in the ICRMP.

Archaeological Resources. The entirety of Fort Meade, including the NSA campus, has been investigated for the presence of archaeological resources. A total of 41 known archaeological sites are on Fort Meade; one of these sites has been determined eligible for listing in the NRHP (18AN1240). Site 18AN1240 is a late archaic period base camp. The site is located within the ORAM project area. DoD is consulting with the Maryland Historical Trust (MHT) (i.e., Maryland State Historic Preservation Officer) for this Proposed Action under Section 106 of the NHPA (see **Appendix E**), as outlined in 36 CFR Part 800.

Architectural Resources. Previous architectural investigations identified and evaluated all buildings on Fort Meade that were built prior to 1960 for NRHP eligibility. Twenty-four buildings were evaluated for NRHP eligibility between 2015 and 2018, and draft forms were submitted to

the MHT for its concurrence. The Maintenance Guidelines for the Historic District were updated in 2018. Fort Meade also conducted an exhaustive review of its complete building inventory between 2017 and 2018 to confirm which buildings had been evaluated for the NRHP and found ineligible, with clear concurrence from the MHT. Twenty-three buildings were then evaluated in 2019 as part of the effort to resolve any discrepancies between MHT and Fort Meade's records.

No buildings on Fort Meade are listed in the NRHP. Fort Meade has five historic properties that have been determined eligible for listing in the NRHP, including the Fort Meade Historic District (AA-34), WTP (Building 8688), and three bridges/culverts (Llewellyn Avenue Bridge, Redwood Avenue Bridge, and Leonard Wood Avenue Bridge) constructed during World War II by prisoners of war. The Fort Meade Historic District has 13 contributing buildings, none of which are near the ORAM project area. Building 8688, part of the installation's WTP complex, is within the project area. The three bridges/culverts are outside the ORAM project area.

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 (USACE 2011). At present, no known traditional cultural properties or Native American sacred sites are known to occur within or near the ORAM project area or at Fort Meade.

3.9.2 Environmental Consequences

3.9.2.1 Evaluation Criteria

Adverse impacts 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 impacts on cultural resources were considered and evaluated for their potential effects.

3.9.2.2 Alternative 1

Under Alternative 1, the facilities proposed for demolition and relocation are not historic; the existing VCP5 and VCIF, which includes the visitor center, kennel, and kennel office, were constructed in 2001. The construction of the new VCIF and VCP5 as well as their supporting infrastructure would have no adverse effect on Building 8688, which is part of the Fort Meade WTP complex, and is the only historic property within the ORAM project area. Although Alternative 1 would occur within the viewshed of Building 8688, the view to or from the building does not contribute to the building's significance, and the ORAM project would avoid the WTP; therefore, Alternative 1 would have no adverse effect on historic properties.

Eligible archaeological site 18AN1240 is in the project area vicinity but is outside the APE. Site 18AN1240 is planned to be avoided and preserved in place, and protective fencing would be

installed, to the greatest extent possible, with a 20-foot buffer around the entirety of the site to protect it from inadvertent impacts during staging and construction.

DoD initiated Section 106 consultation with MHT on February 2, 2023. Notification was received on March 13, 2023 that MHT concurred with DoD's finding that implementation of the Proposed Action would have no adverse effect on historic properties (see **Appendix E**). DoD will continue to consult with MHT as appropriate and as design plans evolve to ensure historic resources continue to be protected or any potential adverse effects addressed.

3.9.2.3 Alternative 2

Impacts on cultural resources under Alternative 2 would be similar to those described for Alternative 1. No known cultural resources would be impacted by Alternative 2.

3.9.2.4 No Action Alternative

Under the No Action Alternative, DoD would not implement the ORAM project, and existing conditions would remain. No intentional ground disturbance would affect archaeological; architectural; or traditional, religious, or culturally significant resources. Therefore, no impacts on cultural resources would be expected.

3.9.3 Cumulative Impacts

Impacts on archaeological sites and architectural resources have likely occurred from past construction on and off the NSA campus and Fort Meade because these areas were disturbed by previous development activities. No cumulative impacts on any previously identified archaeological or architectural resources have been identified in association with the construction of the Proposed Action or other reasonably foreseeable actions. No NRHP-eligible buildings are proposed for demolition, no archaeological sites would be adversely affected, and no known traditional cultural properties or Native American sacred sites are known to occur within the project area.

3.10 Infrastructure

3.10.1 Affected Environment

3.10.1.1 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 infrastructure components discussed in this section are potable water supply, stormwater management system, sanitary sewer and wastewater management treatment system, electrical supply, natural gas supply, and communications.

3.10.1.2 Existing Conditions

***Potable Water Supply*.** The NSA campus is connected to the Fort Meade Garrison water supply, treatment, distribution, and storage system. Fort Meade's water supply system was constructed in the 1910s and has been privatized through a contract with American Water, which provides upgrades to the system and replacements of underground transit piping. American Water maintains a state Water Appropriation and Use Permit (Permit No. AA1969G021[07]) for the supply, treatment, storage, and distribution of potable water (MDE 2012). This permit allows an average withdrawal of 3.3 mgd on a yearly basis and a 4.3 mgd peak withdrawal during the month of maximum usage. Potable water is primarily drawn from the Patuxent/Patapsco Aquifer and pumped to the Fort Meade WTP. The WTP currently has sufficient capacity with a total operating capacity of 5.0 mgd, while the peak-day demand is 3.9 mgd. The WTP capacity is currently sufficient, although with ongoing development of the NSA East Campus and other planned improvements on Fort Meade, water demand is expected to exceed both WTP capacity and the current Groundwater Appropriation Permit (NSA 2019a).

Potable water infrastructure was recently upgraded throughout the NSA campus and Fort Meade Garrison. Main water lines have been upgraded, although some potable water branches to existing buildings still require replacement. The NSA campus is supplied from the High Lift Pump Station #2, which pumps water to the Chaffee Hill Storage Tanks. These aboveground storage tanks (ASTs) have a combined capacity of 1 million gallons, and from there, gravity feeds the potable water supply to NSA campus facilities. Three additional tanks at the WTP provide additional storage capacity for emergency purposes. Within the ORAM project area, existing potable water lines are available for development (NSA 2019a)

Stormwater Management System. The NSA campus and Fort Meade Garrison have stormwater drainage systems consisting of swales, drains, and retention basins throughout the campus. The campus is divided into five stormwater drainage basins. The basins are major geographic areas defined by topography where stormwater flows to a common outfall discharge point (NSA 2019a). Northern portions of the project area are within Drainage Basin C. Human-made stormwater management ponds in this basin collect stormwater and detain it prior to discharge. Retention ponds throughout the campus are beginning to reach maximum capacity. Two stormwater management ponds are located within the ORAM project area, and the unnamed tributary downstream from the ponds flows under MD 32 into a watershed that eventually drains into the Little Patuxent River (see **Figure 3-7**). Stormwater is managed on the NSA campus through an NPDES MS4 General Permit and Maryland General Permit for Stormwater Discharges Associated with Industrial Activities. Fort Meade Garrison also has an NPDES MS4 General Permit issued by MDE for the management of stormwater pollution (MDE 2018b). Issues have occurred throughout the installation because the stormwater infrastructure is inadequate. Several points of failure have been addressed. Stormwater management facilities are also in poor condition due to lack of maintenance. To aid in stormwater management, NSA and Fort Meade Garrison have implemented stormwater management mitigation methods as described in **Section 3.7**.

Sanitary Sewer and Wastewater Management System. Fort Meade has privatized their wastewater services and system to American Water, which owns and operates the Fort Meade WWTP. Constructed in 1941, the WWTP is designed to process a daily inflow of 4.5 mgd, although the current average influent flow is approximately 1.8 mgd (NSA 2019a). American Water holds an NPDES permit (MD0021717) and a state discharge permit (17-DP-2533) for WWTP discharge on the installation. The wastewater collection system uses gravity sewer lines and sewer pump stations, although the majority of the installation is serviced by gravity sewer lines. The sanitary sewer system on the NSA campus and Fort Meade Garrison, including the ORAM project area, is considered to have very few problems, although it mainly consists of clay pipes, which may cause problems in the future due to aging/deterioration concerns (NSA 2019a).

Electrical Supply. Electrical power to the NSA campus and Fort Meade Garrison is provided by the Baltimore Gas and Electric Company (BGE). The electrical system uses substations with feeds from the local utility and on-site back up generation to meet demand. Electricity is distributed to facilities via a loop feed system. The existing electrical infrastructure is in good condition, with the main components being new or having been recently replaced. Sufficient substation capacity exists to meet the current and future missions. Electrical supply lines are located within the ORAM project area and are available for tie-ins required for future development.

Communications. The communications system at the NSA campus and Fort Meade Garrison, including the project area, is derived from multiple commercial points of presence throughout the installation. Within the main NSA campus, the existing communications infrastructure was installed in a piecemeal fashion as mission operations outgrew the original infrastructure. The communications infrastructure currently has sufficient capacity to meet the needs of the NSA campus. The majority of the communication infrastructure is older and may need replacement in the future (NSA 2019a). Existing communications lines are within the ORAM project area; the primary communication distribution line is located along the western side of O'Brien Road (USACE 2019).

Natural Gas Supply. Natural gas is provided to the NSA campus and Fort Meade Garrison by BGE. Several entrance points exist on campus, with the main service provided to the central boiler plant. A 6-inch gas main along MD 32 provides gas to the NSA South Campus and project area, with several 4-inch branches making connections to various buildings within the NSA South Campus (USACE 2019). Most of the natural gas infrastructure is new or has been replaced except for a major line that runs parallel to O'Brien Road.

Solid Waste Management. The NSA operates its own solid waste and recycling programs, independent of Fort Meade. Waste is disposed of at an off-site NSA location in accordance with existing local, state, and federal regulations. The 2018 NSA Sustainability Strategy set forth recycling and waste management goals, including reduction of overall waste consumption and generation; establishment of reuse mechanisms for excess supplies; and increasing recycling efforts for all material types. The NSA maintains a thorough recycling program while ensuring the destruction of classified materials, while recycling as much as possible. Within their

recycling process, an estimated 99 percent of paper waste is recycled into pulp and sold for use in manufacturing. The NSA Sustainability Plan offers the best scenario situation for waste management of a 20 percent intensity reduction by 2015 from a 2016 baseline. Under this scenario, 85 percent of waste would be recycled (NSA 2019a). Solid waste management and recycling at Fort Meade is guided by the installation's Integrated Solid Waste Management Plan (Fort Meade 2017). Fort Meade's solid waste management goals include reducing the rate of solid waste generation to meet or exceed DoD and State of Maryland waste-reduction goals and reduce the amount of solid waste disposed at regional landfills; reusing or recycling elements of the solid waste stream to the maximum extent possible; managing solid waste in a manner protective of human health and the environment; and complying with all applicable federal, State of Maryland, DoD, and Army solid waste management regulations and all applicable EOs and Army guidance.

3.10.2 Environmental Consequences

3.10.2.1 Evaluation Criteria

The analysis to determine impacts on infrastructure primarily considers whether a Proposed Action would exceed capacity or place unreasonable demand on a specific utility. Impacts would be considered significant if the implementation of a Proposed Action would exceed capacity, cause long-term interruption of the utility, or violate a permit condition. It is assumed contractors would be informed of utility locations prior to any ground-disturbing activities, which would be conducted in accordance with federal and state safety regulations.

3.10.2.2 Alternative 1

Potable Water Supply. Alternative 1 would result in short-term, negligible to minor, adverse impacts on the water supply from temporary service disruptions during demolition and construction as well as long-term, negligible, adverse impacts during the operational phase for the new proposed facilities from increased demand. Demolition of the existing VCP5, VCIF and associated visitor center, and MSF would cause temporary disruptions in potable water service to the area. Construction of the VCIF, MSF, and ACF may cause temporary disruption and water pressure changes while the new facilities are being tied into the potable water system. The demolition and construction of the proposed VCP5 facility would not disrupt the potable water infrastructure because the facility does not require a potable water tie-in.

The VCIF and MSF would have long-term, negligible, adverse impacts on potable water supply during the operational phase. Potable water would continue to be required for simple building plumbing to support staff and the 30 working dogs that would be housed in the kennel at the VCIF complex. The amount of potable water usage would remain unchanged from the current usage rates because the facility would be replaced as is and not expanded. Potable water required for the operational phase of the proposed facilities would not exceed the capacity of the infrastructure currently in place.

Stormwater Management. Short-term, negligible to minor and long-term, negligible, adverse impacts would occur from increased stormwater runoff rates during demolition and construction

as well as from an increase in impervious surfaces associated with Alternative 1. Removal of existing stormwater management infrastructure during demolition and prior to the completion of construction would potentially and temporarily increase stormwater runoff rates, increase erosion rates, and decrease water quality. Implementation of proper stormwater management techniques (discussed in **Section 3.11.1**) to prevent erosion, reduce runoff rates, and improve water quality would minimize adverse impacts on stormwater runoff rates from the increase in impervious surface associated with Alternative 1. All stormwater management practices would be in established accordance with the Maryland Stormwater Management Act.

Sanitary Sewer and Wastewater Treatment System. Short-term, negligible to minor and long-term, negligible, adverse impacts would occur from temporary service disruptions during demolition and construction as well as operation of the VCIF and MSF under Alternative 1. Demolition of the existing VCIF and MSF would cause temporary disruptions in sanitary sewer service to the area. The demolition and construction of the proposed VCP5 facility would not disrupt the sanitary sewer infrastructure because the facility does not require a sanitary sewer tie-in. Operation of the VCIF and MSF would have a negligible impact on the sanitary sewer infrastructure because the proposed facilities would continue to use the infrastructure, but would be small and only host a minimal number of staff.

Electrical Supply. Short-term, negligible to minor and long-term, negligible, adverse impacts from temporary service disruptions during demolition and construction as well as operation of the proposed facilities would be expected under Alternative 1. Short-term energy disruptions would be anticipated prior to demolition of the existing facilities and operation of the new facilities. In the operational phase, the VCP5, VCIF and adjacent visitor center, MSF, and ACF would have negligible impacts on the electrical infrastructure. The expected electrical usage for the proposed VCP5, VCIF, MSF, and ACF would be similar to the current electrical usage for the existing facilities.

Communications. Short- and long-term, negligible, adverse impacts on the communications infrastructure would be expected from temporary service disruptions during demolition and construction as well as operation of the new facilities under Alternative 1. Short-term disruptions would occur while the existing VCP5, VCIF, MSF, and ACF are taken off the communications system prior to demolition and the newly constructed facilities are tied in. Long-term impacts are expected to be negligible because the communications infrastructure for the Proposed Action would be similar to that of the existing facilities and, therefore, would not overwhelm the existing system.

Natural Gas Supply. Short-term, minor, adverse impacts on the natural gas distribution system would be expected from temporary service disruptions during demolition and construction, and long-term, negligible to minor, adverse impacts on the natural gas distribution system would be expected from operation of the proposed facilities. During demolition and construction, the natural gas distribution system would be expected to have short-term disruptions prior to facility demolition and when new facilities are tied-in to the existing natural gas lines. Facility operation associated with Alternative 1 would have long-term, negligible impacts on the natural gas distribution system due to demand from operation of the proposed facilities. The proposed

facilities would tie-in to existing natural gas distribution lines for heating, but demand would not be expected to exceed the natural gas capacity.

Solid Waste Management. Short-term, minor, adverse impacts and long-term, negligible, adverse impacts on solid waste would be expected under the Proposed Action. Short-term minor impacts on solid waste would primarily occur from demolition and construction debris. All waste generated from demolition and construction of the proposed VCP5, VCIF, MSF and Mapes Road ACF would be recycled to the maximum extent possible per NSA and Fort Meade Garrison policies. Any construction or demolition debris not able to be recycled would be properly disposed of at a permitted solid waste acceptance facility. Long-term, negligible, adverse impacts on the solid waste management system would be expected during the operational phase. Solid waste generation would be minimal and would not increase compared to solid waste generation from the existing VCP5, VCIF, MSF and Mapes Road ACF facilities and therefore, would not overwhelm the existing system.

Additionally, construction contractors would be informed of utility locations prior to any ground-disturbing activities that could result in unintended utility disruptions or human safety hazards to minimize potential adverse impacts. Any permits required for excavation and trenching would be obtained prior to the commencement of construction activities.

3.10.2.3 Alternative 2

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

3.10.2.4 No Action Alternative

Under the No Action Alternative, DoD would not implement the ORAM project, and existing conditions would remain. Therefore, no impacts on infrastructure would be expected.

3.10.3 Cumulative Impacts

The Proposed Action, when combined with the other reasonably foreseeable actions identified in **Section 2.5**, would generally be expected to have short-term, negligible to minor, and long-term, minor, adverse cumulative impacts on infrastructure resulting from increased demand on utility systems and generation of construction and demolition debris. Short-term, minor, adverse impacts would be expected from the construction and development of proposed facilities, including those associated with the Proposed Action, on Fort Meade due to disruptions in utility service. Construction and demolition associated with the Proposed Action and other reasonably foreseeable actions would result in increased solid waste production for a short time. All cumulative waste generated from demolition and construction activities on Fort Meade would be recycled to the maximum extent possible per NSA and Fort Meade Garrison policies. Long-term, negligible, adverse impacts on utility systems would be expected under the Proposed Action from continued demand for utilities. Although those impacts would be negligible for the greater Fort Meade, cumulative impacts on utility systems from increased demand associated with the other reasonably foreseeable actions would be minor.

3.11 Sustainability

3.11.1 Affected Environment

3.11.1.1 Definition of the Resource

First conceptualized through the establishment of NEPA, sustainability is defined as the means to create and maintain conditions under which humans and nature can exist in productive harmony, and that allow fulfilling the social, economic, and other requirements of present and future generations (42 USC Section 4321 et seq.; USEPA 2022f). Adherence to this policy is guided by CEQ's NEPA regulations (40 CFR Part 1502.16(a)(6)). Agencies are directed to consider the energy requirements and conservation potential of various alternatives and mitigation measures.

Since 1970, several policies, statutes, EOs, and supplemental agency policies and guidance documents were established to shape the federal government's sustainable planning and management practices. Recently, government agencies have made great strides toward efficiency and environmental planning.

The Energy Policy Act (EPACT) of 2005 was a major undertaking in the federal government that provided the development and management of more reliable and cost-effective energy infrastructure. EPACT addresses energy production in the United States, including energy efficiency, renewable energy, oil and gas, coal, tribal energy, nuclear matters and security, vehicle and motor fuels (including ethanol), hydrogen, electricity, energy tax incentives, hydropower, geothermal energy, and climate change technology (USDOE 2006).

In 2006, the DoD and other federal agencies attending a White House Summit of Federal Sustainable Buildings signed an MOU for *Federal Leadership in High Performance and Sustainable Buildings.* The goal set by this MOU is to collaboratively seek to establish and follow a common set of sustainable guiding principles for integrated design, energy performance, water conservation, indoor environmental quality, and materials aimed at helping federal agencies and organizations reduce the total ownership cost of facilities; improve energy efficiency and water conservation; provide safe, healthy, and productive built environments; and promote sustainable environmental stewardship (USDOE 2006).

EO 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis* (January 20, 2021), aims to reduce emissions across federal operations; invest in American clean energy industries and manufacturing; and create clean, healthy, resilient communities. Section 205, *Achieving Net-Zero Emissions Buildings, Campuses, and Installations* details guidelines for which federal buildings should adhere to under EO 13990. Section 205(a) states "each agency shall achieve net-zero emissions across its portfolio of buildings, campuses, and installations by 2045 and reduce greenhouse gas emissions by 50 percent from buildings campuses and installations by 2032 from 2008 levels, prioritizing improvement of energy efficiency and the elimination of onsite fossil fuel use" (The White House 2021).

EO 14008, *Tackling the Climate Crisis at Home and Abroad* (January 27, 2021), has three overarching objects: promote safe global temperature, increase climate resilience, and support a financial pathway toward lower GHG emissions and climate resistant development. EO 14008 aims to use federal procurement to support climate change actions, including a carbon pollution-free electric sector by 2035 as well as zero-emission vehicles for federal, state, local, and tribal governments. Section 213, Sustainable Infrastructure, states "The Chair of the Council on Environment Quality and the Director of the Office of Management and Budget shall take steps, consistent with applicable law, to ensure that Federal infrastructure investment reduced climate pollution, and require that federal permitting decisions consider the effects of greenhouse gas emissions and climate change."

Sustainability consists of technologies and systems, physical structures, management strategies, and cultural practices that when incorporated into design and use of infrastructure and utilities, enable resource use efficiency that supports operational readiness while maintaining balance with the natural environment. Sustainable components are incorporated into the infrastructure and utilities discussed in **Section 3.10**. The regulatory requirements addressing sustainability for the ORAM project area serve as the existing conditions under which the Proposed Action and alternatives are assessed.

3.11.1.2 Existing Conditions

NSA has developed a sustainability strategy to establish funding, strategy, and policy for the sustainability programs. The agency's *2018 Sustainability Strategy* strives to "meet the mission challenges of tomorrow. NSA will lead the intelligence community in sustainability by optimizing energy efficient practices and minimizing resource consumption while integrating natural and built elements into the workplace environment to enable success for future generations." The sustainability strategy is composed of six components used to align current activities with mission-focused sustainability goals, including: (1) Energy and Emissions, (2) Waste and Recycling, (3) Acquisition and Procurement, (4) Workforce Environment, (5) Land and Natural Environment, and (6) Water Conservation and Management. The 2019 *NSAW Master Pan* has prioritized the implementation of sustainable, environmentally friendly, low-impact, and efficient practices and technologies into projects to add to the overall payback of each undertaking on its campus (NSA 2019a). The 2020 Fort Meade ADP details the developmental vision; preparation of installation planning standards; and updates for the long-range components of the installation, including regulatory planning and a green infrastructure component (U.S. Army 2020).

DoD Instruction 4170.11, *Installation Energy Management* (August 2018), and DoD's UFC 1-200-02, *High Performance and Sustainable Building Requirements* (April 2019), implement the Federal Guiding Principles for sustainable buildings and sustainability goals in DoD actions. These DoD policies guide development strategies to incorporate life-cycle cost-effective, resource-efficient, and sustainable practices into every new construction and major building renovation (DoD 2018a, 2019).

Sustainable management options implemented at the NSA campus on Fort Meade have, according to the NSAW Master Plan*,* included improving the transit network by implementing a transit system serving the buildings along Sigaba Way, reducing the number of vehicle trips, improving pedestrian networks to encourage walking between buildings, continuing the transition of surface parking areas to structured parking areas in an effort to reduce impervious surface cover, enhancing bio-retention areas to improve stormwater management and increase infiltration of rain water, and increasing use of reclaimed water to support cooling and other campus requirements (NSA 2019a). The NSA campus has also been in the process of expanding the number of Leadership in Energy and Environmental Design (LEED) Silver-certified buildings. LEED certifications are a green building rating system developed by the U.S Green Building Council (USGBC) that are used to provide a set of standards for environmentally sustainable construction. LEED certification is a globally recognized symbol of sustainability and provides a framework for healthy, efficient, and cost-saving buildings. In addition to LEED building certifications, NSA implements building-based sustainability measures, including the use of vegetated roofs and the use of horizontal surfaces (e.g., awnings, canopies, walkways) and vertical structures (e.g., building facades, parking structure walls) as solar energy platforms to provide an energy source for buildings (NSA 2015).

Similar to NSA, Fort Meade Garrison strives to meet or exceed LEED standards for building efficiency and sustainability. As Fort Meade pursues new construction, the application of LEED requirements would be evaluated to incorporate best practices (U.S. Army 2020).

Green infrastructure is a major component in the sustainability efforts set forth at the NSA campus and Fort Meade Garrison. Green infrastructure is defined by the USEPA as “the range of measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspiration stormwater and reduce flows to sewer systems or to surface waters” (USEPA 2022g). NSA and Fort Meade Garrison use green infrastructure, also referred to as ESD, to the maximum extent possible.

3.11.2 Environmental Consequences

3.11.2.1 Evaluation Criteria

A sustainability analysis to determine potential impacts of sustainable design considers whether a Proposed Action would contribute to DoD and NSA’s overall sustainability goals, as measured by compliance with pertinent regulations. Pursuant to NEPA, EPACT, EOs 13990 and 14008, and DoD and NSA policies, impacts from energy usage and alternative energy sources are also evaluated. Impacts would be considered significant if implementation of a Proposed Action resulted in the substantial inability to achieve compliance with these regulations and policies.

3.11.2.2 Alternative 1

Long-term, minor to moderate, beneficial effects on sustainability would occur due to the use of sustainable strategies, including strategic planning for water efficiency and energy conservation. The VCP5, VCIF, MSF, and Mapes Road ACF would include sustainability features that could

be cost-effectively integrated to meet the intent of the NSA and Fort Meade Garrison sustainability standards and Net Zero policy.

In compliance with the Federal Guiding Principles, EOs 13990 and 14008, and DoD's sustainability and performance policies, the Proposed Action would incorporate sustainability components and strategies to achieve sustainability, lifecycle cost-effectiveness, and resource-use-efficiency standards to the maximum extent practicable.

Facility and site design of the proposed building construction would place emphasis on maximizing operating efficiencies of building systems and minimizing the environmental footprint. Proposed facilities would be energy efficient and use sustainable technology wherever feasible.

Strategies for Efficient Stormwater Management. As discussed in **Section 3.10**, stormwater facilities would be designed to comply with the appropriate State of Maryland regulations, DoD's Sustainable Building Policy, NSA design standards, the NSAW Master Plan (NSA 2019a), and Fort Meade ADP (U.S. Army 2020) to the maximum extent feasible.

ESD techniques specific to stormwater management are defined within the Maryland Stormwater Management Act and would be implemented to the maximum extent possible to minimize the impact of land development on water resources by assuming natural hydrological runoff characteristics. ESD includes optimizing conservation of natural features (e.g., drainage patterns, soil, vegetation), minimizing impervious surface cover to slow runoff rates while increasing percolation and infiltration, and using additional nonstructural practices deemed appropriate by the MDE (MDE 2009).

The use of ESD and BMPs related to stormwater management would also adhere to MDE anti-degradation policies. Portions of the project area are within a wetland (including a 100-foot wetland buffer). ESD strategies could be used to improve the quality of stormwater runoff entering the wetland areas by using sustainability techniques, including preservation of naturally vegetated areas and soil types that slow runoff rates, filter out pollutants, and promote infiltration; directing stormwater runoff into or across vegetated areas to encourage recharge and improve filtration; and using runoff catchments such as rain barrels, vegetated buffers, and vegetated roofs to lessen the severity of stormwater runoff. Another water efficiency strategy could include the use of vegetated swales as a low-impact stormwater management technique through bioretention. Vegetated swales would include a system of natural materials (sand beds, organic layers, plants, plant medium) that naturally filter runoff while in retention. ESD strategies and BMPs would offer long-term beneficial impacts to water quality on the NSA campus through a reduction in runoff volume, reduced erosion, and an increased filtration rate of runoff entering nearby wetlands.

Energy and Materials Conservation. Fort Meade Garrison aims to achieve Net Zero through promotion of passive and active energy sources. Net Zero refers to "an installation with zero energy consumption and zero carbon emissions netted annually" (U.S. Army 2020). With the proposed construction of new facilities, opportunities for energy reduction and alternatives

would be used to the maximum extent possible. Renewable energy is a resourceful option for sustainability, primarily using solar and wind methods. Solar and wind design can be passive and very productive in providing clean energy. Harvesting on-site energy through solar and wind can also reduce grid dependency and improve energy security in the event of a grid failure. A Net Zero installation is a long-term solution for energy, especially amid rising fossil fuel costs and concerns over GHG emissions.

The proposed new facilities would be constructed in accordance with EO 13990 Section 203, *Transitioning to 100 Percent Carbon Pollution-Free Electricity.* EO 13990 requires all agencies to increase their percentage use of carbon pollution-free electricity, so the agency constitutes 100 percent of facility energy use on an annual basis by FY30. EO 13990 also states agencies must facilitate carbon pollution-free electricity and storage capacity by use of their real estate property assets, including rooftops, parking structures, and adjoining land, for development of carbon pollution-free electricity production (The White House 2021).

In addition to renewable energy sources, efficient building design is also helpful in conserving energy use. Reducing building energy use through techniques such as efficient lighting and heating/cooling can significantly reduce energy costs. On the NSA campus and Fort Meade Garrison, regional plants or decentralized systems are the preferred method for heating and cooling due to their energy efficiency and reduced impact during construction (NSA 2019a).

Construction, demolition, and reconfiguration related to Alternative 1 would be recycled or reused to the maximum extent possible, as described in **Section 3.10**. Proposed new facilities would be designed to accommodate recycling programs for paper, cardboard, glass, plastics, and metals. Proposed new facilities should also be built with materials with as highly recycled content as possible, including steel, ceiling panels, gypsum wallboard, and glass. Materials for proposed construction could be more sustainable if locally sourced. Sourcing local materials would decrease energy used and pollution generated in transport. Common materials would most likely be available within 500 miles of the project area, including steel, wallboard, carpet, and glass.

3.11.2.3 Alternative 2

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

3.11.2.4 No Action Alternative

Under the No Action Alternative, DoD would not implement the ORAM project, and existing conditions would remain. Therefore, no impacts on sustainability would be expected.

3.11.3 Cumulative Impacts

Long-term, minor to moderate, beneficial impacts would occur from implementation of sustainability measures, such as increased efficient energy and water usage, reduced waste generation, increased use of recycled materials, increased use of cost-effective sustainable

practices, and the incorporation of sustainable design under the Proposed Action. Although impacts from the Proposed Action would be negligible for the greater Fort Meade, when combined with implementation of sustainability measures for the other reasonably foreseeable actions proposed on Fort Meade, identified in **Section 2.5**, beneficial impacts on sustainability would be slightly greater. Impacts would reflect the incorporation of sustainable design in compliance with MDE standards and EOs 13990 and 14008. If sustainable practices, such as those used on Fort Meade, were used for off-installation projects, additional beneficial impacts would also be expected.

3.12 Hazardous Materials and Wastes

3.12.1 Affected Environment

3.12.1.1 Definition of the Resource

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

Hazardous waste is defined by the Resource Conservation and Recovery Act (RCRA) at 42 USC Section 6903(5), as amended by the Hazardous and Solid Waste Amendments, as “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.” Certain types of common hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes, and their associated regulatory requirements are specified in 40 CFR Part 273.

Special hazards are those substances that might pose a risk to human health and are addressed separately from other hazardous substances. Special hazards include asbestos-containing material (ACM), lead-based paint (LBP), and polychlorinated biphenyls (PCBs). The USEPA is given authority to regulate these industrial chemicals by the Toxic Substances Control Act, Title 15 USC Section 53. The USEPA has established regulations regarding asbestos abatement and worker safety under 40 CFR Part 763, with additional regulation concerning emissions (40 CFR Part 61). Whether from lead abatement or other activities, depending on the quantity or concentration, the disposal of LBP waste is potentially regulated by RCRA at 40 CFR Part 260. The disposal of PCBs is addressed in 40 CFR Parts 750 and 761.

An evaluation of hazardous materials and wastes for an EIS generally focuses on underground storage tanks (USTs); ASTs; and the presence, storage, transport, handling, and use of pesticides, herbicides, fuels, solvents, oils, lubricants, ACMs, PCBs, and LBP. The evaluation

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

Fort Meade's Directorate of Public Works (DPW) Environmental Division is responsible for managing hazardous materials and waste. Fort Meade and NSA operate under an SPCC Plan/ISCP for all facilities where hazardous materials are stored. The SPCC Plan/ISCP delineates measures and practices that require implementation to prevent and/or minimize spills/releases from storage and handling of hazardous materials to protect the ground and water surface. The ISCP also provides emergency response instructions for spills and uncontrolled releases of hazardous materials (NSA 2019b).

3.12.1.2 Existing Conditions

Hazardous Materials and Petroleum Products. Both NSA and Fort Meade Garrison use, handle, and store hazardous materials and petroleum products, which include liquid fuels (e.g., gasoline, diesel); dielectric fluid; kitchen grease; pesticides; petroleum, oils, lubricants; cleaners; and hydraulic fluids. NSA receives liquid fuels for use in power generation equipment by way of bulk delivery (e.g., 7,500- and 4,500-gallon commercial tanker trucks). These liquid fuels are stored in ASTs that have approximately 2 million gallons of collective storage capacity (NSA 2019c). Similarly, Fort Meade receives liquid fuels and oil via commercial tanker trunks, which unload and transfer fuel and oil to Fort Meade storage tanks and containers. Fort Meade maintains a 3,000-gallon capacity mobile refueler and a truck equipped with four portable fuel tanks (one 500-gallon and three 100-gallon capacity) to unload and transfer oil to or from the various ground storage tanks, ASTs, USTs, mobile tanks, drum storage, hydraulic oil containers, pad-mounted transformers, and used cooking oil containers with approximately 280,000 gallons of total storage capacity (Fort Meade 2022b). The use and storage of hazardous materials and petroleum products on the NSA campus and Fort Meade Garrison are managed by applicable NSA and Fort Meade P2 plans, SPCC plans, and the NSA FRP (NSA 2019b, 2019c; Fort Meade 2011a, 2022b).

Common usages of hazardous materials and petroleum products within the project area include pesticide applications, fuel for heating buildings, and lubricants and fuels for landscaping equipment and maintenance processes. The existing VCIF and VCP5 do not contain hazardous materials or petroleum products. No evidence exists of spills related to hazardous materials or petroleum products at the VCIF and VCP5.

Hazardous and Petroleum Wastes. NSA is a RCRA Large-Quantity Generator, which is a facility that generates more than 1,000 kilograms of hazardous waste or more than 1 kilogram of acutely hazardous waste per month (NSA 2019c). NSA operates a less than 90-day hazardous waste storage facility to the northeast of the project area. Typical hazardous and petroleum

wastes generated at the installation include oils, lubricants, antifreeze, brake fluids, hydraulic fluids, paint and paint thinners, cleaners, degreasers, solvents, and batteries.

NSA maintains a Hazardous Waste Generator's Guide for their facilities. These plans describe the roles and responsibilities with respect to the waste stream inventory, waste analysis planning, hazardous waste management procedures, training, emergency response, and P2. The plan establishes procedures to comply with applicable federal, state, and local standards for hazardous waste management.

Fort Meade is also considered a RCRA Large-Quantity Generator of Hazardous Waste, and has its own USEPA ID number separate from NSA (Fort Meade 2022c). Hazardous waste management is outlined in Fort Meade's *Installation Hazardous Waste Management Plan* (Fort Meade 2011b). Those who handle or manage hazardous materials or hazardous waste are trained in accordance with federal, state, local, and U.S. Army requirements (Fort Meade 2022a). Each facility has appointed an emergency management coordinator who is responsible for emergency response actions until relieved by hazardous materials spill response personnel. As a designated large quantity generator, Fort Meade Garrison is allowed to accumulate hazardous waste for up to 90 days on site. The installation operates a centralized 90-day hazardous waste accumulation site located at Building 2250, the Controlled Hazardous Substance Storage Facility (Fort Meade 2022c). Fort Meade Garrison also has numerous hazardous waste satellite accumulation points and universal waste accumulation sites around the installation. Typical hazardous waste on the installation includes the result of maintenance of U.S. Army equipment and property; expired shelf-life hazardous materials; medical service support activities; and use petroleum, oil, and lubricants.

The VCIF and VCP5 do not contain any hazardous or petroleum wastes. The buildings have not historically held hazardous or petroleum wastes and have not held functions used for processes that would produce either hazardous or petroleum wastes. No evidence exists of spills or releases of hazardous or petroleum wastes at the VCIF and VCP5.

Storage Tanks and Oil/Water Separators. No ASTs or oil/water separators occur within the footprint of the ORAM project area. Two USTs are present at Building 8375 within the project area, but no alterations to that building or associated USTs would be conducted as part of this project.

Pesticides. In accordance with DoD Instruction 4150.07, *DoD Pest Management Program*, Fort Meade minimally uses pesticides. Army Regulation (AR) 200-1, *Environmental Protection and Enhancement*, promulgates policies, responsibilities, and procedures to implement the Army Pest Management Program, and Fort Meade's practices are covered in its Integrated Pest Management Plan (DoD 2018b). The operations of the VCIF and VCP5 do not involve pesticides, and none of these products are stored or used at the sites.

Asbestos. Asbestos is regulated by USEPA under the CAA; Toxic Substances Control Act; and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). USEPA has established that any material containing more than 1 percent asbestos by weight is

considered an ACM. ACMs are generally found in building materials such as floor tiles, pipe insulation, ceiling and wallboard coverings, sheet rock, shingles, gaskets, and heating and air-conditioning unit connectors in buildings built before the early 1980s. ACMs at Fort Meade, including the NSA campus, are managed according to an Asbestos Management Program. The purpose of the program is to establish procedures to maintain ACMs in good condition and minimize the release of asbestos dust to the environment (Fort Meade 2008). The use of ACMs in new building construction has become very infrequent since the 1980s, after several regulations restricted their use.

Lead-Based Paint. In 1978, the U.S. Consumer Products Safety Commission banned the use of LBP for residential use. Under the LBP Poisoning Prevention Act (42 USC Section 4822), as amended, LBP hazards equal to or greater than 1 microgram per cubic centimeter must be abated. AR 420-70 provides policies and guidance for use when performing real property maintenance, repair, and demolition of buildings and structures. LBP at Fort Meade, including at the NSA campus, is managed according to a Lead Hazard Management Plan. The purpose of the plan is to establish procedures to identify and control the hazards of LBP (Fort Meade 2006). All of the buildings proposed for demolition were constructed in 2001, so these buildings are assumed not to contain any LBP.

PCBs. PCBs are a group of organic compounds used as dielectric and coolant fluids in equipment such as transformers, capacitors, fluorescent light ballasts, electric motors, and hydraulic systems. Chemicals classified as PCBs were widely manufactured and used in the United States throughout the 1950s and 1960s. The production of PCBs was banned in the United States in 1979. PCBs are managed and regulated in accordance with the USEPA's Toxic Substances Control Act of 1976 (40 CFR Part 761). AR 200-1 states that U.S. Army policy is to manage PCBs in place unless operational, economic, or regulatory considerations justify removal. The use, management, disposal, and cleanup of PCBs at U.S. Army installations must comply with 40 CFR Part 761. Possible sources of PCBs within the VCIF and VCP5 include electrical light ballasts, capacitors, and electrical surge protectors within the buildings. However, no PCB contamination has been documented at these buildings (USACE 2020b, 2022b).

Radon. Radon is a naturally occurring colorless, odorless, radioactive gas formed by the natural breakdown or decay of uranium in rock, soil, and water. It tends to accumulate in enclosed spaces that are below ground and poorly ventilated, such as basements. Radon has been determined to increase the risk of developing lung cancer. In general, the risk increases as the level of radon and the length of exposure increase. USEPA has established a guidance radon level of 4 picoCuries per liter (pCi/L) for indoor air at residences; however, no standards have been established for commercial structures. Radon gas accumulations greater than 4 pCi/L are considered to represent a health risk to occupants.

The USEPA rates Anne Arundel County, Maryland, as a Federal Radon Zone 2. Counties in Zone 2 have a predicted average indoor radon screening level between 2 and 4 pCi/L (USEPA 2022h). An installation-wide radon screening survey occurred in 1990, where radon samples were collected from select buildings. All indoor radon levels were below 4 pCi/L (Fort Meade 1990).

Environmental Contamination and Ordnance. The Defense Environmental Restoration Program (DERP) was formally established by Congress in 1986 to provide for the cleanup of DoD property at active installations, Base Realignment and Closure (BRAC) installations, and formerly used defense sites throughout the United States and its territories. The three programs under the DERP are the Installation Restoration Program (IRP), Military Munitions Response Program (MMRP), and Building Demolition/Debris Removal Program. The IRP requires each installation to identify, investigate, and clean up contaminated sites. The MMRP addresses nonoperational military ranges and other sites that are suspected or known to contain unexploded ordnance, discarded military munitions, or munitions constituents. The Building Demolition/Debris Removal Program involves the demolition and removal of unsafe buildings and structures.

Eligible DERP sites include those contaminated by past defense activities that require cleanup under CERCLA and certain corrective actions required by RCRA. Non-DERP sites are remediated under the Compliance-Related Cleanup Program.

The Site Management Plan Annual Update for Fort Meade contains the most up-to-date catalog of all known and potential environmental contamination sites on Fort Meade, including the NSA campus, and it summarizes the current status and planned activities for each site (USACE 2020b, 2022b). The Site Management Plan identifies each site as an area of interest (AOI). AOI sites are organized by funding source and include IRP, MMRP, and BRAC sites. Additional details regarding each AOI site are provided in the various preliminary assessment (PA)/site inspection (SI) reports prepared by geographic area of the installation and site-specific investigation, remedial action, and close-out reports. Five AOIs overlap the project area (see **Figure 3-10**).

Historically, portions of Fort Meade were used for military training purposes from World War I through World War II. The Fort Meade MMRP identifies two active MMRP sites and four “response complete,” no further action required MMRP sites at Fort Meade. One of the active MMRP sites (FGGM-003-R) overlaps the ORAM project area. None of the “response complete” sites are within the project area.

FGGM-003-R, Former Mortar Range Munitions Response Site (MRS) (Operable Unit (OU)-40), includes two MRSs, Former Mortar Area MRS (FGGM-003-R-01), and Former Training Area MRS (FGGM-003-R-02). The northeast portion of the project area overlaps the Former Training Area MRS and the Former Mortar Area MRS (see **Figure 3-10**). FGGM-003-R-01 is an approximately 62-acre site used from the early 1920s until the early 1940s for mortar training. Evidence indicates that only practice mortar rounds were used on the range. Anecdotal information indicates that unused, small arms ammunition was discarded at FGGM-003-R-01; however, no evidence supports the use of small arms ammunition at this range. FGGM-003-R-02 is a 260-acre site used for general troop training, and the presence of a former small arms ammunition casing disposal pit indicates this site was also used for ammunition disposal.

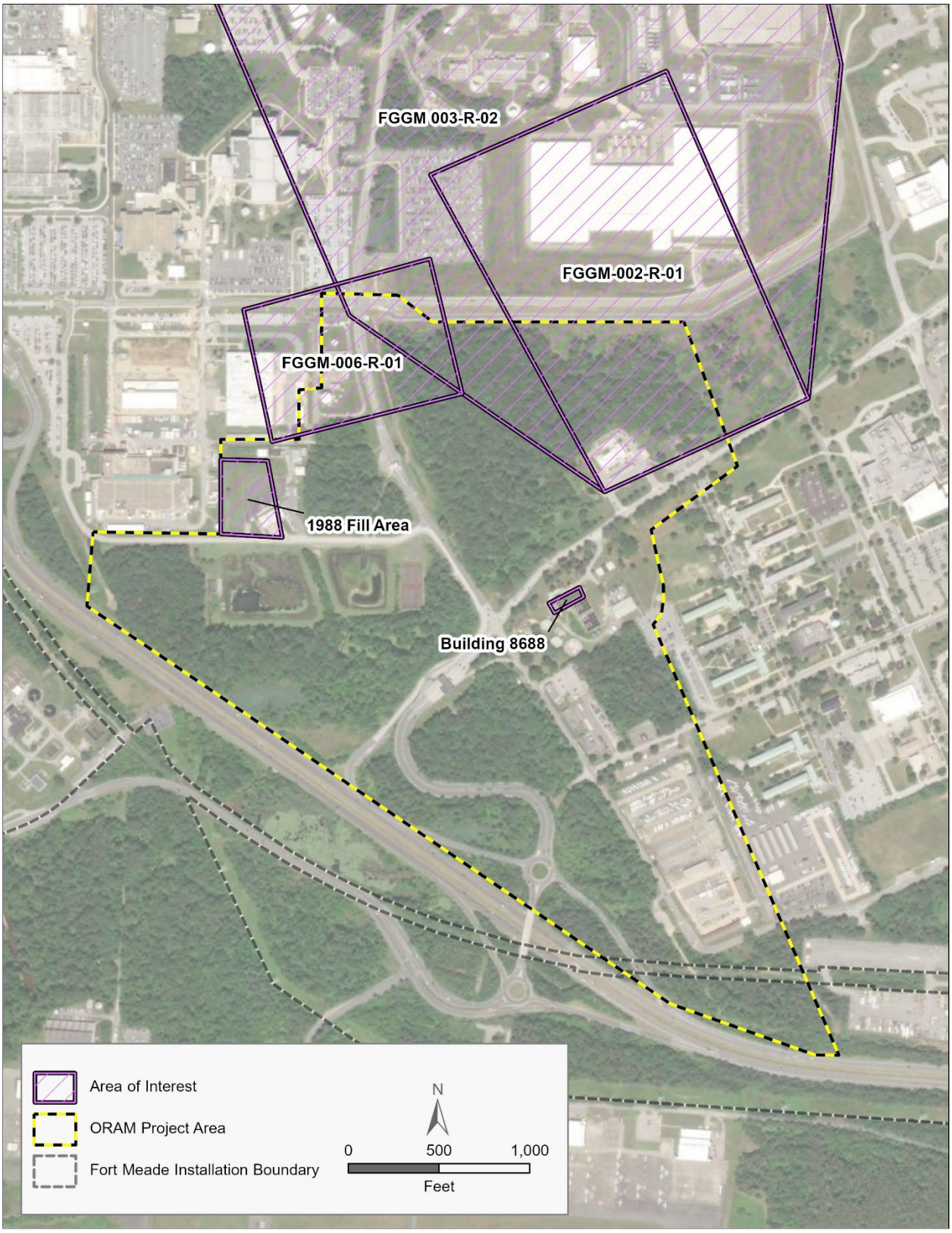


Figure 3-10. Remediation AOIs Overlapping the ORAM Project Area

The Former Mortar Range MRS site is an open MMRP site, and a low probability exists of encountering material potentially presenting an explosive hazard. A Record of Decision for the Former Mortar Range, including remedial alternatives, was finalized in September 2012. Land use controls and long-term management were selected as the remedy. Select metals and other munitions constituents were tested from soil and groundwater samples, and it was determined that no further action was required for munitions constituents. Additionally, no casings were observed in any of the seven test pits within FGGM-003-R-02 that were dug in July 2013. The Final Interim Remedial Action Completion Report for FGGM 003-R-01 and the Final Remedial Action Report for FGGM-003-R-02 were signed by the U.S. Army and USEPA in May 2014 (USACE 2020b, 2022b).

A former pistol range (FGGM-006-R-01) also overlaps the northern portion of the project area along O'Brien Road (see **Figure 3-10**). The pistol range was used from 1924 until the early 1940s. Information regarding the frequency of use and types of ammunition used at this range was never documented, but it is suspected that 0.45-caliber ammunition was most commonly used. Soil samples identified lead in the soil but at levels below regulatory limits. FGGM-006-R-01 requires no further remedial action (USACE 2020b, 2022b).

FGGM-95 (OU-45), the Fill – 1988 area, also overlaps the ORAM project area near VCP5. The Fill – 1988 area was identified as an AOI during the USEPA's (1996) aerial photographic investigation of Fort Meade. During this investigation, USEPA labeled potential fill in this area in 1988 and 1996 historic aerial photographs; however, the potential fill was not discussed in the text of the USEPA's report (USEPA 1996). As part of the PA/SI, subsurface soil samples were collected and analyzed for VOCs, semi-volatile organic compounds, and metals. The USEPA approved no further action required for this AOI in 2016.

FGGM-03 (OU-6), the WTP (Building 8688), is also located within the project area along Mapes Road. The WTP was constructed in 1941, and the facility stores and uses lime and chlorine at an on-site laboratory, with acids and buffers for testing purposes. It was identified as a solid waste management unit because of routine discharge of waste to the sanitary sewer (BCM 1996), but soil sample results indicate that no CERCLA release has occurred. USEPA concurred on July 16, 2021; the AOI has been closed with respect to CERCLA; and the USEPA approved the no further action required designation.

3.12.2 Environmental Consequences

3.12.2.1 Evaluation Criteria

Impacts on hazardous materials and wastes would be considered adverse if a Proposed Action resulted in noncompliance with applicable federal or state regulations, or increased the amounts of hazardous materials and petroleum products procured and hazardous wastes generated beyond current management procedures and capacities. Impacts would also be considered adverse if a Proposed Action resulted in the disturbance of ACM, LBP, PCBs, and contaminated sites that would cause negative effects on human health or the environment. Adverse impacts

also result from actions that make it more difficult or costly to remediate environmental contamination sites or discoveries that may impact on-site construction.

3.12.2.2 Alternative 1

Hazardous Materials and Petroleum Products. Short-term, negligible, adverse impacts from hazardous materials and petroleum products are possible during implementation of the Proposed Action. Construction would require the use of certain hazardous materials such as sealants, paints, welding gases, solvents, and preservatives. Petroleum products, such as diesel, gasoline, and hydraulic fluids, would be used in construction vehicles and other heavy equipment. The quantities of hazardous materials and petroleum products needed during construction would be minimal, and their use would be short in duration. DoD would manage the storage, use, and disposal of construction materials in accordance with current practices and management schemes. All hazardous materials and petroleum products would be stored in containers that meet federal, state, and local requirements and handled in accordance with NSA's Hazardous Materials Management Program as well as the guidelines and standards set by the Fort Meade DPW Environmental Division for hazardous materials and waste management. Any potential aboveground storage tanks required for the Proposed Action would be installed and maintained in accordance with applicable federal and state regulations. No new underground storage tanks would be required for Alternative 1. Secondary containment systems would be employed as necessary to prevent or limit accidental spills. Additionally, a health and safety plan would be prepared prior to commencement of construction and demolition.

No hazardous materials or petroleum products are currently stored within the ORAM project area; therefore, no hazardous materials and petroleum products would need to be removed. While the WTP stores and uses lime and chlorine at an on-site laboratory with acids and buffers for testing purposes, this facility would not be part of the active construction area for Alternative 1. No hazardous material or petroleum product releases or contamination have been documented within the project area. All hazardous materials storage locations are/would be equipped with emergency response procedures and site-specific contingency plans. All construction equipment would be maintained according to the manufacturer's specifications, and all fuels and other potentially hazardous materials would be contained and stored appropriately. In the event of a spill, procedures outlined in NSA's SPCC Plan and FRP as well as Fort Meade Garrison's SPCC Plan/ISCP would be followed. If the spill were to overflow secondary containment, it would be quickly contained and cleaned up. No adverse impacts related to the management of hazardous materials and petroleum products are anticipated.

Hazardous and Petroleum Wastes. Short-term, negligible, adverse impacts from hazardous and petroleum wastes are possible during implementation of the Proposed Action. NSA and Fort Meade Garrison are already classified as large-quantity generators and are responsible for stringent management and reporting requirements. Construction activities would generate minor quantities of hazardous and petroleum wastes; however, these quantities would not exceed the capacities of existing hazardous and petroleum waste disposal streams at Fort Meade. Similar to hazardous materials, the construction contractor would be required to comply with BMPs and measures outlined in NSA's SPCC Plan and FRP as well as Fort Meade Garrison's SPCC

Plan/ISCP to reduce the potential for spills and to ensure quick cleanup. Procedures for the usage and disposal of construction material waste streams would be similar to those already conducted at the installation. The contractor would be responsible for disposing hazardous and petroleum wastes in accordance with federal and state laws as well as the NSA's Hazardous Materials Management Program and Fort Meade Garrison's *Installation Hazardous Waste Management Plan* (Fort Meade 2011b).

Waste generation levels and storage times would not cause the installation to exceed its current large-quantity generator status or change its processes or plans. No hazardous or petroleum wastes are currently stored within the ORAM project area; therefore, no hazardous or petroleum wastes would need to be removed. No hazardous or petroleum waste disposal areas have been documented within the project area; however, if any soil containing hazardous or petroleum wastes were discovered during construction activities, the construction contractor would be required to immediately stop work, report the discovery to the installation, and implement appropriate safety measures. Commencement of field activities would not continue in this area until the issue was investigated and resolved. No adverse impacts related to the management of hazardous and petroleum wastes are anticipated.

Storage Tanks and Oil/Water Separators. Short-term, negligible, adverse impacts from storage tanks and oil/water separators are possible during implementation of the Proposed Action. Temporary ASTs to store equipment fuel and non-potable water would be installed to support construction activities of the Proposed Action. These ASTs would be removed following construction completion, and all construction contractors would use proper hazardous materials management practices, including secondary containment, and follow NSA's Hazardous Materials Management Program, as well as the guidelines and standards set forth by Fort Meade's DPW Environmental Division, and applicable federal and state regulations to prevent and limit releases from the ASTs. In the event of a spill, the contractor would follow the appropriate measures outlined in NSA's SPCC Plan and FRP as well as Fort Meade Garrison's SPCC Plan/ISCP. The USTs currently existing within the project area would not be impacted by Alternative 1.

Asbestos. No impacts from ACM would be expected from Alternative 1. No buildings potentially containing ACM are located within the project area. New construction would not result in the use or exposure of ACM because regulations prohibit the use of ACM in new construction when asbestos-free substitute materials exist.

Lead-Based Paint. No impacts from LBP would be expected from Alternative 1. No buildings containing LBP are within the project area. New construction would not result in the use or exposure of LBP because regulations prohibit the use of LBP in new construction.

PCBs. No impacts from PCBs would be expected from Alternative 1. The Proposed Action does not include the use of any PCBs. Transformers containing PCBs may still be present on the site and would be replaced where practical. Furthermore, these transformers present no known issues. Any items that contain PCBs would be handled in accordance with NSA's Hazardous

Materials Management Program as well as the guidelines and standards set forth by the Fort Meade DPW Environmental Division for hazardous materials and waste management.

***Radon*.** Long-term, negligible, adverse impacts from radon would be expected in the event that indoor radon testing is conducted and indicates that elevated radon concentrations are located inside any buildings associated with the Proposed Action. If so, appropriate mitigation measures, such as installing radon pumps to exhaust vapors outside or installing passive radon systems to lower radon levels, would be required.

***Environmental Contamination and Ordnance*.** No impacts from environmental contamination and ordnance would be expected from Alternative 1. The sites located within the project area do not require further action and are classified as no further action required. Construction procedures would include a plan for any occurrence of unusual odor, soil, or groundwater coloring. If, during construction, excavated soils exhibit hazardous characteristics, work would be suspended until a remedial investigation of the soils was conducted by trained specialists. Therefore, no adverse impacts related to the AOIs are anticipated.

The two MRSs, Former Mortar Area (FGGM-003-R-01) and Former Training Area (FGGM-003-R-02), overlap the northern portion of the project area. However, a low probability exists of encountering material potentially presenting an explosive hazard in these areas, and work would be done in accordance with the associated land use controls. Contractors who would be working in these areas would be trained on the identification and avoidance of potential hazards. If any ordnance were encountered during the work activities, the contractor would be required to immediately stop work, report the discovery to the installation, and implement appropriate safety measures. All ordnance would be collected and disposed in accordance with federal requirements and ARs by trained and certified personnel. Commencement of field activities would not continue in that area until the issue was resolved.

3.12.2.3 Alternative 2

Impacts on hazardous materials and wastes under Alternative 2 would be similar to those described for Alternative 1.

3.12.2.4 No Action Alternative

Under the No Action Alternative, DoD would not implement the ORAM project, and existing conditions would remain. Therefore, no impacts on hazardous materials and wastes would be expected.

3.12.3 Cumulative Impacts

The Proposed Action and the other reasonably foreseeable actions on the NSA campus and Fort Meade, identified in **Section 2.5**, would be expected to have short-term, negligible to minor, adverse impacts as a result of use and storage of hazardous material and petroleum products, as well as the generation of hazardous wastes during construction activities. All uses would be in accordance with existing laws, regulations, and management plans. Hazardous materials and

wastes as well as petroleum products would be contained and disposed according to procedures already in place at the NSA campus and Fort Meade Garrison.

3.13 Socioeconomics and Environmental Justice

3.13.1 Affected Environment

3.13.1.1 Definition of the Resource

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

Environmental Justice. EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, pertains to environmental justice issues and relates to various socioeconomic groups and the disproportionate effects that could be imposed on them. This EO requires that federal agencies' actions substantially affecting human health or the environment do not exclude persons, deny persons benefits, or subject persons to discrimination because of their race, color, or national origin. The EO was enacted to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with the respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EO 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All*, affirms that environmental justice is central to the implementation of civil rights and environmental laws, and directs agencies to consider measures to address and prevent disproportionate and adverse impacts on communities with environmental justice concerns, including the cumulative impacts on pollution and other burdens such as climate change. EO 14096 also directs agencies to use CEQ's Climate and Economic Justice Screening Tool to identify communities with environmental justice concerns.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* states that each federal agency "(a) shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect 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." Children might be more susceptible than adults to certain environmental effects and risks. Therefore, activities occurring near areas that have higher concentrations of children during any given time, such as schools and childcare facilities, might further intensify potential impacts on children.

Considerations of concern related to environmental justice and protection of children include race, ethnicity, and the poverty status of populations in the Proposed Action's vicinity. Such information aids in evaluating whether a Proposed Action would render vulnerable any of the groups targeted for protection in EOs 12898, 14096, and 13045.

The affected area for evaluating environmental justice is the area within which potential impacts from a Proposed Action could occur on an environmental justice population. As defined by CEQ, minority or low-income environmental justice communities should be identified if the percentage of persons characterized as being a minority or low-income population in a given area is greater than 50 percent or meaningfully greater than the minority or low-income population percentage of the general population. This analysis assumes any number greater than the reference population to be meaningfully greater (CEQ 1997). Environmental justice communities present were determined using these thresholds. Further, for purposes of this EIS, minority and low-income 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). The U.S. Census Bureau 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 and households whose income is below the federal poverty threshold based on income data collected in the 2016–2020 American Community Survey.

Additionally, children are defined as those under the age of 18, while elderly citizens are defined as those above the age of 65. Larger populations of children or elderly within an area that may be affected by a proposed action is an indication that higher proportions of people are within the area who would be more vulnerable to environmental stressors.

3.13.1.2 Existing Conditions

In addition to NSA, Fort Meade is home to more than 115 government agencies and all six branches of the military service: Army, Navy, Air Force, Space Force, Marines, and Coast Guard. The installation supports more than 55,000 military and civilian personnel, making it Maryland's largest employer (U.S. Army 2020). Fort Meade and NSA create or support 125,729 jobs, earning an estimated $9.2 billion in employee compensation (Fort Meade Alliance 2022). The installation's close proximity to both the Baltimore, Maryland, and Washington, D.C., metropolitan area allows workers to commute from a large number of communities with varied socioeconomic, racial, and ethnic characteristics. This EIS uses the following spatial levels to assess impacts to socioeconomics and environmental justice:

- Census Block Groups adjacent to the project area (240037515001 and 240037406011) and the Census Block Group containing the project area (240037406032). Census Block Group 240037406031 is directly adjacent to the project area to the west and comprises

Tipton Airport and the Patuxent Research Refuge, but no residences, and, therefore, is not included in the analysis. Census Tracts adjacent to the project area (7515.01, 7406.01, and 7406.03) are used where Census Block Group-level data is not available.

- Reference communities for socioeconomics and environmental justice, which include Anne Arundel County, which comprises the Census Block Groups, and the State of Maryland

Residency distribution and commuting distances were considered, but determined not to be a factor in determining socioeconomic effects because no personnel changes would occur under the Proposed Action. The area containing the project area on Fort Meade (Census Block Group 240037406032) and the areas outside of the installation adjacent to the project area (Census Block Groups 240037515001 and 240037406011) were evaluated for minority and low-income populations, and compared to the reference communities.

Demographics. **Table 3-12** provides the 2010 and 2020 population estimates from the U.S. Census Bureau (USCB 2010, USCB 2020a). Census Block Group 240037406032, which encompasses Fort Meade experienced population growth between 2010 and 2020, as did the reference communities. Census Block Group 240037515001 experienced a slight decrease (approximately 8 percent) in population between 2010 and 2020. Census Block Group 240037406011, located directly north of the NSA campus and Fort Meade, appears to have experienced an approximately 45 percent decrease in population, though because of redistricting after the 2010 census, there was likely to be a slight increase instead. Census Tract 7406.01, which encompasses Census Block Group 240037406011 and the neighboring groups that were impacted by the redistricting, experienced an approximately 48 percent increase in population between 2010 and 2020, likely primarily due to new housing in that area.

Table 3-12. Population Summary for 2010 and 2020

Location	2010 Population	2020 Population Estimate	Percent Change (2010 to 2020)
Census Block Group			
240037515001[a]	2,894	2,647	-8
240037406011[b]	2,645	1,465	-45
240037406032[c]	867	3,245	274
Subtotal	**6,406**	**7,357**	**13**
Reference Communities			
Anne Arundel County	537,656	575,421	7.0
State of Maryland	5,773,552	6,037,624	4.6

Source: USCB 2010, USCB 2020a
Note: Redistricting between the 2010 and 2020 census changed the names and areas encompassed by Census Block Groups in Anne Arundel County.
[a] Census Block Group 240037515001 in 2020 encompassed the same area as Census Block Group 240037515002 in 2010. The population comparison is still 1:1.
[b] Census Block Group 240037406011 in 2020 occupied a large portion of the area encompassed by Census Block Group 240037406014 in 2010, though the northeastern corner of the previous 240037406014 was removed from the 2020 Census Block Group 240037406011. Therefore, population estimates are best estimates and are not exactly a 1:1 comparison.
[c] Census Block Group 240037406032 in 2020 encompassed most of Fort Meade, which was largely covered by the same Census Block Group in 2010. However, in 2010, the ORAM project area was encompassed by Census Block Group 240037406031 instead. The remainder of Census Block Group 240037406031 in 2020 is the same as it was in 2010, encompassing the Patuxent Research Refuge and Tipton Airport. Therefore, for accuracy, the census data for

the 2010 Census Block Groups 240037406032 and 240037406031 were combined to compare to the 2020 census data for Census Block Group 240037406032.

Employment. Employment characteristics for all spatial levels are detailed in **Table 3-13.** The primary employment industry across Census Tract 7515.01 and the references communities is the educational, health, and social service industry, while the primary employment industry for Census Tracts 7406.01 and 7406.03 is the armed forces (USCB 2020b). The percentage of people employed in the construction industry is highest in Census Tract 7515.01 at approximately 14 percent, lower in Census Tracts 7406.01 and 7406.03 at approximately 2 percent, and around 7 percent in both Anne Arundel County and the State of Maryland (USCB 2020b).

Table 3-13. American Community Survey 5-Year Estimates for Employment Sectors by Industry Across Spatial Levels (2016–2020)

Employment Sectors	Census Tract 7515.01	Census Tract 7406.01	Census Tract 7406.03	Reference Communities	
				Anne Arundel County	State of Maryland
Percentage of persons employed in the Armed Forces	0.6	37.8	65.0	3.0	0.7
Agriculture, forestry, fishing and hunting, and mining (percent)	0	0.7	0	0.3	0.5
Construction (percent)	14.3	2.0	1.8	7.1	7.1
Manufacturing (percent)	8.6	3.0	0.1	4.9	4.5
Wholesale trade (percent)	5.0	0	0	2.5	1.7
Retail trade (percent)	11.5	10.4	1.4	9.9	9.3
Transportation and warehousing, and utilities (percent)	0	2.9	0.75	4.5	4.8
Information (percent)	1.1	0.5	1.0	1.8	1.9
Finance, insurance, real estate, and rental and leasing (percent)	3.1	1.9	0.8	5.9	6.1
Professional, scientific, management, administrative, and waste management services (percent)	12.6	9.4	6.1	16.4	15.8
Educational, health, and social service (percent)	17.2	11.4	4.2	20.6	23.7
Arts, entertainment, recreation, accommodation, and food services (percent)	6.9	7.1	4.5	8.1	8.1
Other services (except public administration) (percent)	7.7	0.9	0.3	5.2	5.4
Public administration(percent)	5.9	9.1	10.0	12.7	10.9

Source: USCB 2020b

Law Enforcement and Fire Protection. Fort Meade and NSA each operate a police force on the installation. Fort Meade provides emergency and fire protection services for the NSA campus. Anne Arundel County has its own police force and 48 fire and emergency rescue stations, including the Fire Headquarters (AAC 2022b).

Environmental Justice. Minority, low-income, child, and elderly populations are characterized across all spatial levels in **Table 3-14** (USCB 2020c, 2020d, 2020e, 2020f). Census Block Groups 240037515001 and 240037406011, in the area adjacent to the project area, and

Census Block Group 240037406032 containing the project area on Fort Meade, were evaluated for minority and low-income populations and compared to the reference communities. Census Block Groups 240037515001 and 240037406032 have minority populations of approximately 34 percent of the total population, which are lower than that of the State of Maryland (46 percent), but higher than that of Anne Arundel County (29 percent; USCB 2020c). Census Block Group 240037406011 has a minority population of approximately 25 percent of the total population, which is lower than that of both Anne Arundel County and the State of Maryland (USCB 2020c). Census Block Group 240037515001 has a lower Hispanic and Latino population than the reference communities, while Census Block Group 240037406011 has a Hispanic and Latino population that is higher than that of Anne Arundel County but lower than that of the State of Maryland, and Census Block Group 240037406032 has a higher Hispanic and Latino population than that of both reference communities (USCB 2020d). Census Block Groups 240037515001 and 240037406011 have lower percentages of families below the poverty line than Anne Arundel County and the State of Maryland, and lower median household incomes (USCB 2020e, 2020f). Census Block Group 240037406032 has a higher percentage of families below the poverty line at approximately 7 percent than the reference communities, and a median household income that is lower than that of Anne Arundel County, but lower than that of the State of Maryland (USCB 2020e, 2020f). The Climate and Economic Justice Screening Tool does not identify the project areas as encompassing disadvantaged communities (CEJST 2023).

Census Block Group 240037406032 has a child population lower than that of the reference communities and no elderly population (USCB 2020g). Census Block Groups 240037406011 and 240037515001 have higher child populations than that of the reference communities at 39.1 and 30.5 percent respectively (USCB 2020g). Additionally, Census Block Group 240037515001 has a higher elderly population than the reference communities. Census Block Group 240037406011 has no elderly population.

Table 3-14. Race, Ethnicity, and Poverty Characteristics 2020

Race and Ethnicity	Census Block Group 240037515001	Census Block Group 240037406011	Census Block Group 240037406032	Reference Communities	
				Anne Arundel County	**State of Maryland**
Total Population	**2,647**	**1,465**	**3,245**	**575,421**	**6,037,624**
White (percent)	65.8	74.6	66.3	71.0	54.2
Black or African American (percent)	23.1	11.5	16.6	16.7	29.9
American Indian or Alaska Native (percent)	0	0	0.7	0.2	0.3
Asian (percent)	5.8	1.7	4.8	3.8	6.4
Native Hawaiian and Other Pacific Islander (percent)	0	0	0	0	0
Other Race (percent)	2.4	1.4	1.0	2.9	4.7

Race and Ethnicity	Census Block Group 240037515001	Census Block Group 240037406011	Census Block Group 240037406032	Reference Communities	
				Anne Arundel County	**State of Maryland**
Two or More Races (percent)	2.9	10.8	10.6	5.3	4.5
Hispanic or Latino (percent)	7.1	8.9	12.3	8.0	10.3
Families below federal poverty threshold (percent)	3.3	2.2	7.1	3.8	5.9
Median household income	$57,125	$75,417	$97,378	$103,225	$87,063
Child (under age 18; percent)	30.5	39.1	15.0	22.3	22.2
Elderly (Over age 64; percent)	17.3	0	0	14.8	15.4

Source: USCB 2020c, 2020d, 2020e, 2020f, 2020g

3.13.2 Environmental Consequences

3.13.2.1 Evaluation Criteria

Socioeconomics. Significance of impacts for socioeconomics varies depending on the context of a Proposed Action. The significance of socioeconomic impacts is assessed in terms of whether direct impacts on the local economy and related impacts on other socioeconomic resources (e.g., income, employment) are deemed substantial.

Environmental Justice. Race, ethnicity, and poverty data were examined for Census Block Groups 240037515001, 240037406011, and 240037406032, and compared to Anne Arundel County and State of Maryland as reference communities to determine if a minority or low-income population could be disproportionately affected by the Proposed Action.

3.13.2.2 Alternative 1

Socioeconomics. Impacts on socioeconomics would be short-term, minor, adverse and negligible, beneficial as a result of economic stimulation from the Proposed Action as well as potential delays to law enforcement and emergency service response from increased construction traffic and lane closures. Short-term impacts from demolition, construction, and roadway improvement activities under Alternative 1 would be expected to stimulate the local economy through increases in payroll taxes, sales receipts, and the indirect purchase of goods and services. Construction workers would likely be local (i.e., from the ROI), and based on **Table 3-13**, enough construction workers are available within the ROI to support the Proposed Action. No population change is associated with Alternative 1; therefore, the number of personnel at the installation would not increase. Because construction workers would likely already be coming from jurisdictions around Fort Meade, they would not be expected to have a long-term impact on socioeconomics, including demographics and employment. Short-term,

minor, adverse impacts on law enforcement and emergency service response would be expected due to increased personnel and associated vehicle traffic entering and exiting the installation as well as temporary lane closures. There would be no long-term change in the amount of traffic entering or exiting the installation as a result of the Proposed Action. Transportation impacts on local populations from the roadway reconfiguration associated with the Proposed Action are discussed further in **Section 3.3**.

Environmental Justice. No impacts on environmental justice would be expected from implementation of the Proposed Action. Because Alternative 1 would occur within the installation boundaries in an already developed area that does not have any residential areas in the immediate vicinity and no long-term changes in the amount of traffic entering or exiting the installation would occur, impacts associated with construction and operation would not affect neighboring populations. Additionally, construction and operation would not occur in areas where children would be anticipated to gather, such as schools, parks, or churches. Therefore, no disproportionate impacts on minority, low-income, child, or elderly populations would be expected.

3.13.2.3 Alternative 2

Impacts on socioeconomics and environmental justice under Alternative 2 would be similar to those described for Alternative 1. Construction of the additional double-lane roundabout under Alternative 2 would have a lower cost than construction of the overpass bridge under Alternative 1.

3.13.2.4 No Action Alternative

Under the No Action Alternative, DoD would not implement the ORAM project, and existing conditions would remain. Therefore, no impacts on socioeconomics and environmental justice would be expected.

3.13.3 Cumulative Impacts

Short-term, minor to moderate, beneficial and minor, adverse, cumulative effects on socioeconomics would be expected from implementing the Proposed Action when combined with the other reasonably foreseeable actions, identified in **Section 2.5**. Short-term, beneficial impacts on the local economy are expected for the 2-year duration of the ORAM project, as well as the other reasonably foreseeable actions from increased construction labor force employment and expenditures for construction workers' wages and taxes, construction materials, and purchase of other goods and services. Short-term, minor, adverse, cumulative effects on law enforcement and emergency service response capability would be expected during periods of increased construction-related traffic and congestion. The Proposed Action and other reasonably foreseeable actions are not expected to disproportionately affect minority or low-income populations, so no cumulative impacts on environmental justice are anticipated.

3.14 Other Impacts

3.14.1 Unavoidable Adverse Impacts

The Proposed Action would result in development of land that is currently forested. Moderate adverse impacts on vegetation, wildlife, and stormwater would be unavoidable because that habitat would be disturbed or completely lost and replaced with impervious surfaces. It is anticipated that potentially adverse impacts on geological resources and water resources (i.e., sedimentation, erosion, stormwater runoff) could be minimized during site design and by using of BMPs. Construction and demolition activities also unavoidably generate solid waste.

3.14.2 Relationship Between Short-Term Uses and Long-Term Productivity

Short-term uses of the biophysical components of the human environment include direct impacts, usually related to construction activities, which occur over a period of less than 5 years. Long-term uses of the human environment include those impacts that occur over a period of more than 5 years, including permanent resource loss.

This EIS identifies potential short-term, adverse impacts on the natural environment from construction activities. These potential adverse impacts include soil erosion, stormwater runoff into surface water and wetlands, and removal of vegetation and wildlife habitat. These kinds of short-term impacts would persist only during construction activities in localized sections or occasional maintenance activities (e.g., vegetation management) in terrestrial areas. Generally, disturbed areas would recover once ground-disturbing activities, noise, and construction vehicles leave the area.

Removal of forest for facility construction would be considered an adverse impact on the long-term productivity of forests on Fort Meade.

3.14.3 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 ORAM project would involve the irreversible and irretrievable commitment of materials, energy, biological resources, and landfill space. The impacts on these resources would be permanent.

Materials. Material resources irretrievably used for the Proposed Action include steel, concrete, and other building materials. Such materials are not in short supply and would not be expected to limit other unrelated construction activities. The irretrievable use of material resources would not be considered significant. The preferential use of recycled building materials would reduce the overall amount of materials used for building construction.

Energy. Energy resources used for the Proposed Action would be irretrievably lost. These include fossil fuels (e.g., gasoline, diesel, natural gas, No. 2 fuel oil) and electricity. During construction, gasoline and diesel fuel would be used for the operation of construction vehicles and equipment. Long-term operation of new facilities would use electricity generated by combusting fossil fuels, both for primary and backup power. Overall, consumption of energy resources would not place a significant demand on their availability within the region. Therefore, no major impacts would be expected. The preferential use of energy efficient technologies and maximized use of recycled materials would reduce the overall impacts on energy resources.

Biological Resources. The Proposed Action would result in some irretrievable loss of vegetation and wildlife habitat from clearing of forest stands. The loss of vegetation would remove potential wildlife habitat and could degrade some remaining scenic and natural qualities of Fort Meade. This would result in a permanent loss or conversion of open spaces. However, in accordance with the NSA's reforestation plan for the East Campus that adheres to the Fort Meade Forest Conservation Act and Tree Management Policy, the Proposed Action would reforest 20 percent of the total area developed on the East Campus. Reforestation would occur on site or nearby, and be in addition to standard landscaping. Additionally, irretrievable loss of wetlands is possible under the Proposed Action. However, any permanent impacts would be subject to permitting under Section 404 of the CWA and require mitigation efforts, which would be determined as deemed necessary upon final design and consultation.

Landfill Space. The generation of construction and demolition debris as well as subsequent disposal of that debris in a landfill would be an irretrievable adverse impact. Construction contractors would be expected to recycle at least 40 percent of the debris that is generated. If a greater percentage is recycled, then irretrievable impacts on landfills would be reduced. Numerous rubble landfills as well as construction and demolition processing facilities could handle the waste generated. However, any waste generated by the Proposed Action that is disposed in a landfill would be considered an irretrievable loss of that landfill space.

Resources that would be permanently and continually consumed by implementation of the Proposed Action include water, electricity, and fossil fuels. To the extent practicable, P2 considerations would be included. Additionally, sustainable management practices would be in place to protect and conserve natural and cultural resources.

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5. List of Preparers

This EIS has been prepared under the direction of the DoD. The individual HDR-Tehama JV contractors who contributed to the preparation of this document are listed below.

Charles Arthur
Quality Control (QC)
B.A. Architecture
Years of Experience: 26

Michelle Bare
Noise
B.S. General Studies
Years of Experience: 33

Michael Brown, PE
Transportation
B.S. Civil Engineering
Years of Experience: 25

Timothy Didlake
Air Quality
B.S. Earth Sciences
Years of Experience: 15

Brian Dow
Geological Resources
B.S. Geological Sciences
Years of Experience: 22

Elizabeth Grover
Technical Editing/Formatting/QC
M.A. Anthropology
B.A. Anthropology
Years of Experience: 22

Caroline Guerra
Water Resources
B.S. Environmental Science
Years of Experience: 20

Carolyn Hein
Air Quality
B.S. Environmental Science
Years of Experience: 3

Abbey Humphreys
Description of the Proposed Action and Alternatives, Noise, NEPA Support
M.S. Biology
B.S. Environmental Biology
B.S. Geospatial Science
Years of Experience: 6

Jake Irvin
Biological Resources
M.S. Environmental Science
B.S. Environmental Science
Years of Experience: 3

Aaron Loller
GIS Support
B.S. Environmental Science
Years of Experience: 8

Orly Ludwig
Socioeconomics and Environmental Justice,
B.S. Environmental Biology
Years of Experience: 1

Joshua Mace
Biological Resources
M.S. Natural Resources – Fisheries
B.S. Environmental Science
Years of Experience: 19

Celeste Pachella, GIT
Infrastructure, Sustainability
B.S. Environmental Science
Years of Experience: 1

Deborah Peer
Biological Resources, Land Use
M.S. Environmental Science & Management
B.S. Zoology
B.S. Wildlife Science
Years of Experience: 22

Amberlyn Rector
Land Use
B.S. General Studies
Years of Experience: 2

Hilary Rummel
Deputy Project Manager, Cultural Resources, Hazardous Materials and Wastes
M.A. Anthropology/Archaeology/Geographic Information Systems
B.S. Biology & History
Years of Experience: 15

Patrick Solomon, CEP
Project Manager
M.S., Geography
B.A., Geography
Years of Experience: 28