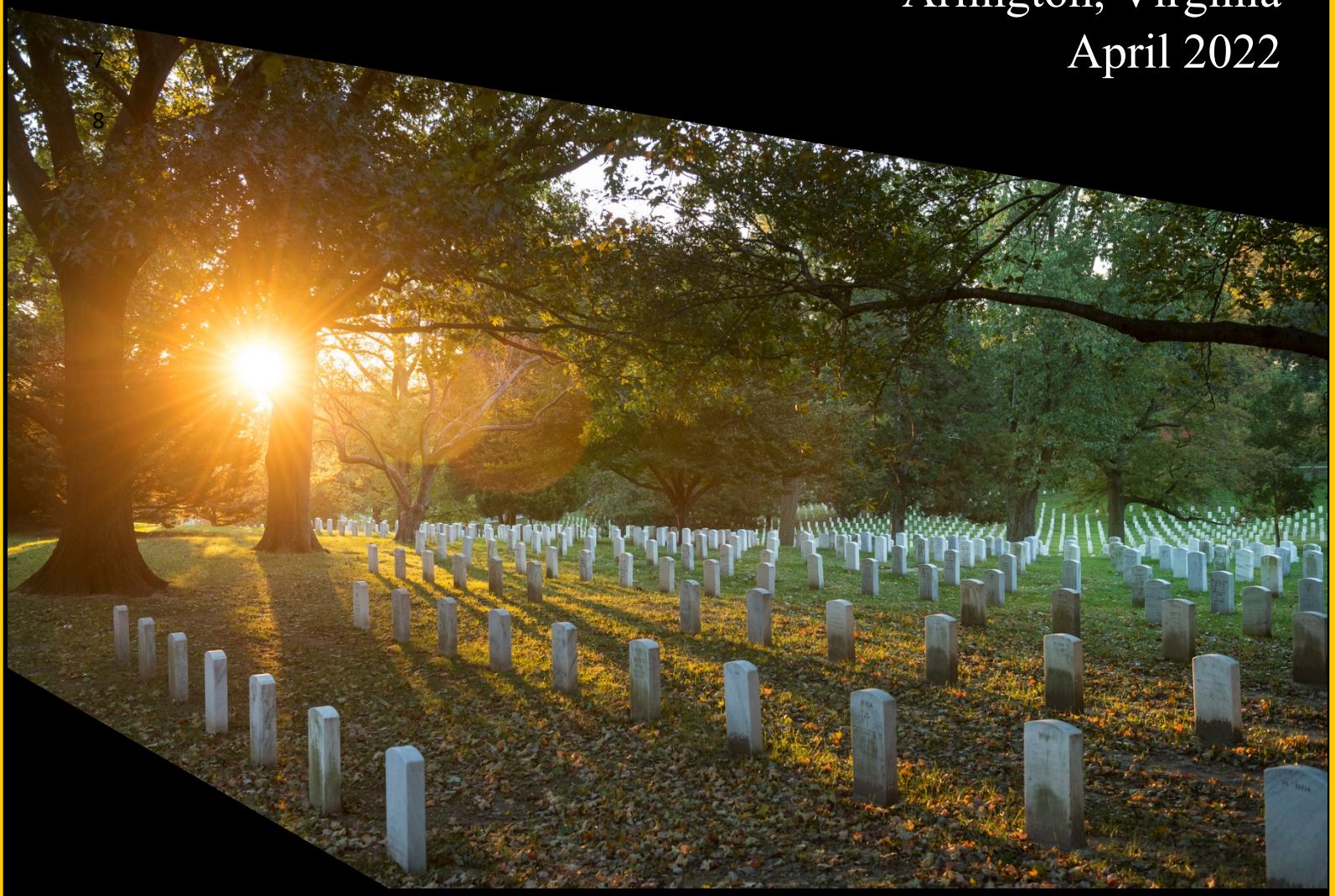
Draft
Environmental Assessment

Security Upgrades
Arlington National Cemetery
Arlington, Virginia
April 2022



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Cover Sheet

Proposed Action: Security upgrades at Arlington National Cemetery

Type of Document: Draft Environmental Assessment

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Abstract

Arlington National Cemetery (ANC) proposes to upgrade security measures to meet antiterrorism and force protection (AT/FP) standards for federal facilities. Physical and operational security upgrades have been identified to address deficiencies and improve the overall AT/FP posture of ANC. These include a security screening memorandum of agreement, establishing an on-site emergency operations center, upgrading perimeter fencing, and upgrading interior bollards and barriers.

This Environmental Assessment (EA) analyzes potential impacts of these AT/FP upgrades, focusing on cultural resources, water resources, biological resources, air quality, utilities, infrastructure, land use, and the surrounding community.

ANC evaluated AT/FP upgrade action alternatives that would satisfy the purpose of and need for the Proposed Action, as well as a no action alternative, which provides a comparative baseline for analysis. Reasonable alternatives were selected via a screening process. During the preparation of this document, Alternative 2 for the Section 52 and 53 Fence and Boundary Wall Upgrade was executed due to security needs. All alternatives were considered prior to execution. All alternatives, including Alternative 2, were fully evaluated in this document and no significant impacts were identified.

ANC is consulting with the Virginia Department of Historic Resources and the Virginia Department of Environmental Quality during the preparation of this EA.

EA organization: The Executive Summary provides an overview of potential impacts for each resource category. Chapter 1 details the purpose of and need for the action and provides background information. Chapter 2 describes the Proposed Action and alternatives. Chapter 3 presents existing conditions and describes potential environmental consequences of the Proposed Action alternatives and No Action Alternative. Chapter 4 identifies persons and agencies consulted. Chapter 5 lists EA preparers.

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Acronyms and Abbreviations

ACHP	Advisory Council on Historic Preservation
ANC	Arlington National Cemetery
APE	area of potential effects
AR	Army Regulation
AT/FP	antiterrorism and force protection
BMP	best management practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
DHR	Department of Historic Resources
DoD	Department of Defense
EA	Environmental Assessment
EO	Executive Order
EOC	emergency operations center
FLEXOPS	flexible operations center
GHG	greenhouse gas
HFC	hydrofluorocarbon
JBM-HH	Joint Base Myer – Henderson Hall
MS4	municipal separate storm sewer system
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NEI	National Emissions Inventory
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NO_x	nitrogen oxides
PA	Programmatic Agreement
PFC	perfluorocarbon
PM_{10}	particulate matter less than or equal to 10 micrometers in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 micrometers in diameter
ROI	region of influence
SF_6	sulfur hexafluoride [
SHPO	State Historic Preservation Officer
SO_x	sulfur oxides
U.S.C.	United States Code
UFC	Unified Facilities Criteria
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound
VDOT	Virginia Department of Transportation
VPDES	Virginia Pollutant Discharge Elimination System

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Executive Summary

ES.1 Proposed Action

Arlington National Cemetery (ANC) proposes to upgrade security to meet antiterrorism and force protection (AT/FP) standards for federal facilities. This Environmental Assessment (EA) evaluates the potential consequences to the human and natural environment associated with these proposed security upgrades.

ANC's current security does not meet AT/FP (hereafter referred to as "security") standards for federal facilities. Internal and external assessments of ANC security identified deficiencies between established security criteria and existing security conditions. Physical and operational security upgrades (i.e., the Proposed Action) have been identified to address deficiencies and improve the overall security posture of ANC. These projects are summarized below.

ES.1.1 Security Screening Memorandum of Agreement with Joint Base Myer – Henderson Hall

A memorandum of agreement with Joint Base Myer – Henderson Hall (JBM-HH) would be developed to provide vehicle screening services for commercial delivery and service vehicles and clarify emergency operations center (EOC) functions for ANC grounds.

ES.1.2 Flexible Operations Center in Welcome Center

This project would retrofit a room in the Welcome Center to function as a flexible operations center for ANC that supplements the off-site EOC at Joint Base Myer – Henderson Hall.

ES.1.3 Fence and Boundary Wall Upgrades

This project would upgrade ANC boundary fencing and walls to meet security standards at the Ord & Weitzel Drive Gate, Sections 52 and 53, along Memorial Avenue, at the Visitor Parking Garage area, and at Sections 69 through 76.

ES.1.4 Bollard and Barrier Upgrades

This project would replace all bollards at ANC with one design that is removable and interchangeable. Upon completion, there would be 71 removable bollards at 35 locations. This project would also include installing 20 concrete planter barriers at the tram loading area and Columbarium and one mobile concrete bollard at the Welcome Center entrance on Memorial Avenue.

ES.2 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to upgrade security at ANC. The Proposed Action is needed to remedy deficiencies and improve the overall security posture at ANC. As an installation under the jurisdiction of the U.S. Army—and one of unparalleled meaning to the Nation—the safety and security of ANC's resources and visitors are of upmost importance.

ES.3 Alternatives Considered

ANC selected screening criteria to ensure that all reasonable alternatives were considered for this EA. Alternatives for this Proposed Action must:

- Comply with applicable regulations.
- Address security deficiencies identified during security assessments and satisfy security requirements.
- Be implementable or identified for implementation in the near term (i.e., next 5 years).
- Be comparable in complexity and cost to alternatives that address the same security deficiency (i.e., does not cost more than double that of another reasonable alternative).
- Preserve the historical character of ANC (i.e., result in no adverse effects to historic resources at ANC and require no mitigation).

ANC is considering three action alternatives that meet the purpose of and need for the Proposed Action and a No Action Alternative. All three action alternatives include treatments for the security fence at Sections 52 and 53.

Under Alternative 1, the security fence would be constructed of 8-foot-tall steel pickets and posts. It would be placed on the outside of the existing masonry wall. Placement would allow enough space from the wall for vegetation maintenance and removal of leaves and debris.

Under Alternative 2, the security fence would be constructed of a 4-foot-tall, high-strength steel fence topper atop the existing masonry wall at Sections 52 and 53. This would bring the overall height of the wall and fence combined to 8 feet.

Alternative 3 would be the same as described for Alternative 1 except that the fence along the masonry wall would be placed as close as possible to the wall instead of allowing space for maintenance.

Under the No Action Alternative, the Proposed Action would not occur. As required by the National Environmental Policy Act, the No Action Alternative is analyzed in this EA and will be used to consider the consequences of not implementing the Proposed Action.

ES.4 Summary of Environmental Resources Evaluated in the Environmental Assessment

All potentially relevant environmental resource areas were initially considered for analysis in this EA. Two resource areas were selected for analysis: cultural resources and air quality. These resources are analyzed in detail due to potential impacts to them as well as to address compliance with the National Historic Preservation Act and the Clean Air Act, respectively.

Potential impacts to the following resource areas are considered to be negligible or absent: water resources, geological resources, biological resources, utilities, infrastructure, land use, and the surrounding community. Therefore, these resource areas are not analyzed in this EA.

ES.5 Summary of Potential Environmental Consequences of the Action Alternatives and Major Mitigating Actions

ES.5.1 Cultural Resources

No Action Alternative: The No Action Alternative would have no effects to cultural resources. There would be no retrofit of the Welcome Center to create a flexible operations center, no upgrades to ANC boundary fencing, and no bollard and barrier upgrades.

Alternatives 1, 2, and 3: The memorandum of agreement with JBM-HH to provide security screening would be an administrative action that would have no effects on historic properties at ANC. The refitting of a room within the Welcome Center for use as a flexible operations center would primarily consist of electrical wiring and the installation of interior electronics, which are allowed under the conditions of ANC's Programmatic Agreement with the Virginia State Historic Preservation Officer. The Programmatic Agreement streamlines Section 106 consultation for routine operation, maintenance, and repair activities at ANC. No adverse impacts to the Arlington National Cemetery Historic District, the Memorial Amphitheater Historic District, or the Arlington Ridge Park Historic District are anticipated from the proposed fence and boundary wall upgrades or the bollard and barrier upgrades.

Under any of the action alternatives, impacts to archaeological resources are not anticipated. All construction would occur in portions of the area of potential effects that have been surveyed and found not to contain archaeological resources or that have been disturbed through prior development of the cemetery or adjacent infrastructure. The finding of previously undiscovered cultural resources would also not be expected.

ES.5.2 Air Quality

No Action Alternative: Under the No Action Alternative, the security upgrades at ANC would not be completed and there would be no changes to air emissions-generating activities at ANC. Air emissions would remain at current baseline levels, and there would be no impact to air quality in the region of influence.

Alternatives 1, 2, and 3: Emissions associated with security upgrades at ANC would not generate significant quantities of any pollutants. Furthermore, these emissions would be temporary, only lasting the duration of the upgrading construction process. Once completed, emissions would return to baseline levels. Therefore, no significant impacts to air quality would occur.

ES.6 Public Involvement

CEQ regulations direct federal agencies to involve the public in preparing and implementing their NEPA procedures. This section will be updated in the Final Draft EA. This section will summarize the public participation and coordination that took place during the development of this EA.

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1 Purpose and Need

Arlington National Cemetery (ANC) has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act of 1969 (NEPA), as implemented by the Council on Environmental Quality (CEQ) and Army regulations. This EA evaluates the potential consequences to the human and natural environment associated with proposed security upgrades at ANC. Chapter 1 provides background information, an overview of the Proposed Action, discussion of the purpose of and need for the action, and information on public participation and government/intergovernmental coordination.

ANC's Mission Statement: *Arlington National Cemetery represents the American people for past, present, and future generations by laying to rest those few who have served our nation with dignity and honor, while immersing guests in the cemetery's living history.*

1.1 Background

ANC proposes to upgrade security measures to meet antiterrorism and force protection (AT/FP) standards for federal facilities. ANC's current security does not meet AT/FP (hereafter referred to as "security") standards for federal facilities. Physical and operational security upgrades (i.e., the Proposed Action) have been identified to address deficiencies and improve the overall security posture of ANC.

Emergency Services' Mission Statement: *Joint Base Myer-Henderson Hall Directorate of Emergency Services protects life, health, property, environment and stands ready to respond to all hazards by providing the community with quality Law Enforcement, Physical Security, Fire Protection and Emergency Services to the JBM-HH, Arlington National Cemetery and the United States Military District of Washington Communities.*

ANC includes 639 acres located west of Washington, D.C., in Arlington, Virginia. The cemetery lies at the west end of Memorial Avenue, directly across the Arlington Memorial Bridge from the Lincoln Memorial (Figure 1-1). ANC is under the jurisdiction of the Department of the Army.

ANC serves as the most hallowed burial ground of our Nation's fallen and is where, to date, over 400,000 have been laid to rest. ANC is an active military cemetery, with an average of 150 veterans or family members interred each week. ANC memorializes history, as it is the final resting place for the military heroes and patriots who built, preserved, and protected our Nation, from the Revolutionary War to the wars in Afghanistan and Iraq. Over 3 million people visit ANC each year. The graves, memorials, and landscape provide an important sense of peace and beauty for visitors.

Security at ANC is provided by the Directorate of Emergency Services (Emergency Services) at Joint Base Myer – Henderson Hall (JBM-HH). ANC is a semi-closed installation (e.g., no open access, visitors must pass through security screening to enter) with controlled entry. ANC operates under a Physical Security Plan that is part of the ANC Protection Program.

Figure 1-1. Location of Arlington National Cemetery

The Physical Security Plan prescribes policies and procedures to plan and implement the Army Physical Security Program at ANC. The plan provides policies on how to use physical security equipment, appoint physical security officers and inspectors, conduct physical security inspections and surveys, manage physical security credentials, manage and use identification cards and badges, manage restricted areas, conduct access control for installations and stand-alone facilities, and manage security forces at ANC.

1.2 Introduction to the Proposed Action

The Proposed Action is to upgrade security at ANC. Internal and external assessments of ANC security identified deficiencies between established security criteria and existing security conditions. Due to their sensitive nature, the security assessments are not available for public release or reference. Overall security posture at ANC is based on a combination of all of the following regulations and criteria:

- Code of Federal Regulations (CFR)
  - 32 CFR 553, Army Cemeteries
- Department of Defense (DoD) regulations
  - DoD 2000.16, DoD Antiterrorism Standards
  - DoD 5200.08-R, Physical Security Program
- U.S. Army regulations (ARs)
  - AR 190-13, The Army Physical Security Program
  - AR 525-13, Antiterrorism
- Unified Facilities Criteria (UFC)
  - UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings
  - UFC 4-010-23, Emergency Operations Center Planning and Design
  - UFC 4-020-01, DoD Security Engineering Facilities Planning Manual
  - UFC 4-022-03, Security Fences and Gates
  - UFC 4-021-01, Design and Operation and Maintenance: Mass Notification
  - UFC 4-021-02, Electronic Security Systems

Based on the assessments, ANC identified various projects to address deficiencies and improve the overall security posture. The Proposed Action as described in this EA comprises a subset of these projects as determined based on screening criteria.

1.3 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to upgrade security at ANC. The Proposed Action is needed to remedy deficiencies and improve the overall security posture at ANC. As an installation under the jurisdiction of the United States Army—and one of unparalleled meaning to the Nation—the safety and security of its resources and visitors are of upmost importance.

1.4 Scope of the Environmental Analysis

This EA describes potential impacts to the human environment resulting from implementation of the Proposed Action. The Proposed Action includes a subset of identified security upgrades. These include perimeter fencing, enhanced visitor vehicle management, access gate controls, on-site operations center, re-deployable traffic control devices, and defined mutual assistance security memoranda with adjoining agencies. Section 2.2 (Proposed Action and Alternatives) details these upgrades.

1.4.1 Future Security Upgrades

While implementing the Proposed Action would increase security at ANC, it would not fully align ANC with all security standards. ANC has, and will continue to, upgrade its security to protect the installation, personnel, visitors, and resources for which it is responsible. Additionally, as threats are constantly evolving, ANC regularly assesses its security posture to counter new threats as they arise.

Future security upgrades outside the scope of this Proposed Action would be addressed in separate NEPA analyses, as were preceding upgrades. Effects of the Proposed Action and effects of recent and future near-term upgrades (e.g., within 5 years) may combine and result in additive impacts, which are assessed in this EA.

1.4.2 Applicable Laws and Regulations

This EA conforms to NEPA, as amended (42 United States Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality Regulations Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500–1508), and the Environmental Analysis of Army Actions (32 CFR 651). Other laws, regulations, and statutes relevant to the Proposed Action that are addressed in this EA include:

- Clean Air Act (42 U.S.C. section 7401 et seq.)
- Clean Water Act (33 U.S.C. section 1251 et seq.)
- Coastal Zone Management Act (16 U.S.C. section 1451 et seq.)
- National Historic Preservation Act (54 U.S.C. section 300101 et seq.)
- Endangered Species Act (16 U.S.C. section 1531 et seq.)
- Migratory Bird Treaty Act (16 U.S.C. section 703 et seq.)
- Executive Order (EO) 11988, Floodplain Management
- EO 12088, Federal Compliance with Pollution Control Standards
- EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Section 3.4.2 (Table 3-5) describes how the Proposed Action complies with the regulations listed above.

1.5 Public Participation and Government/Intergovernmental Coordination

CEQ regulations direct federal agencies to involve the public in preparing and implementing their NEPA procedures. This section will be updated in the Final Draft EA. This section will document the public participation and governmental/intergovernmental coordination that took place during the development of this EA.

ANC is consulting with the Virginia Department of Historic Resources (DHR) regarding the Proposed Action. Appendix A will include the results of this consultation.

ANC is consulting with the Virginia Department of Environmental Quality regarding the Coastal Zone Management Act and the Virginia Coastal Management Program. Appendix C will contain the results of consultation.

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2 Description of Proposed Action and Alternatives

2.1 Screening Criteria

ANC selected screening criteria to ensure that all reasonable alternatives were considered for this EA. Alternatives for this Proposed Action must fulfill the following criteria:

- Comply with applicable regulations:
  - 32 CFR 553, Army Cemeteries
  - AR 190-13, The Army Physical Security Program
- Address security deficiencies identified during security assessments/satisfy requirements.
- Be implementable/identified for implementation in the near term (i.e., next 5 years).
- Be comparable in complexity and cost to alternatives that address the same security deficiency (i.e., does not cost more than double that of another reasonable alternative).
- Preserve the historic character of ANC (i.e., result in no adverse effects to historic resources at ANC and require no mitigation).

2.2 Proposed Action

The Proposed Action comprises the following projects described in Sections 2.2.1 through 2.2.4. These projects were identified to address deficiencies in security that can be implemented within the next 5 years at ANC. Figure 2-1 shows the locations of these projects.

2.2.1 Security Screening Memorandum of Agreement with Joint Base Myer – Henderson Hall

A memorandum of agreement with JBM-HH would be developed to provide vehicle screening services for commercial delivery and service vehicles and clarify emergency operations center (EOC) functions for ANC grounds. At present, ANC only allows vetted commercial drivers on cemetery grounds. This agreement would allow for nonvetted drivers and vehicles to proceed through JBM-HH to be screened for admittance to ANC.

2.2.2 Flexible Operations Center in Welcome Center

This project would retrofit a room in the Welcome Center (Figure 2-2) to function as a flexible operations center (FLEXOPS) for ANC that supplements the off-site EOC at JBM-HH.

Joint Base Myer – Henderson Hall handles emergency operations at a dedicated center located on the installation. ANC needs a FLEXOPS to provide continuity of emergency operations in case the EOC at JBM-HH is compromised or unable to provide coverage for the cemetery.

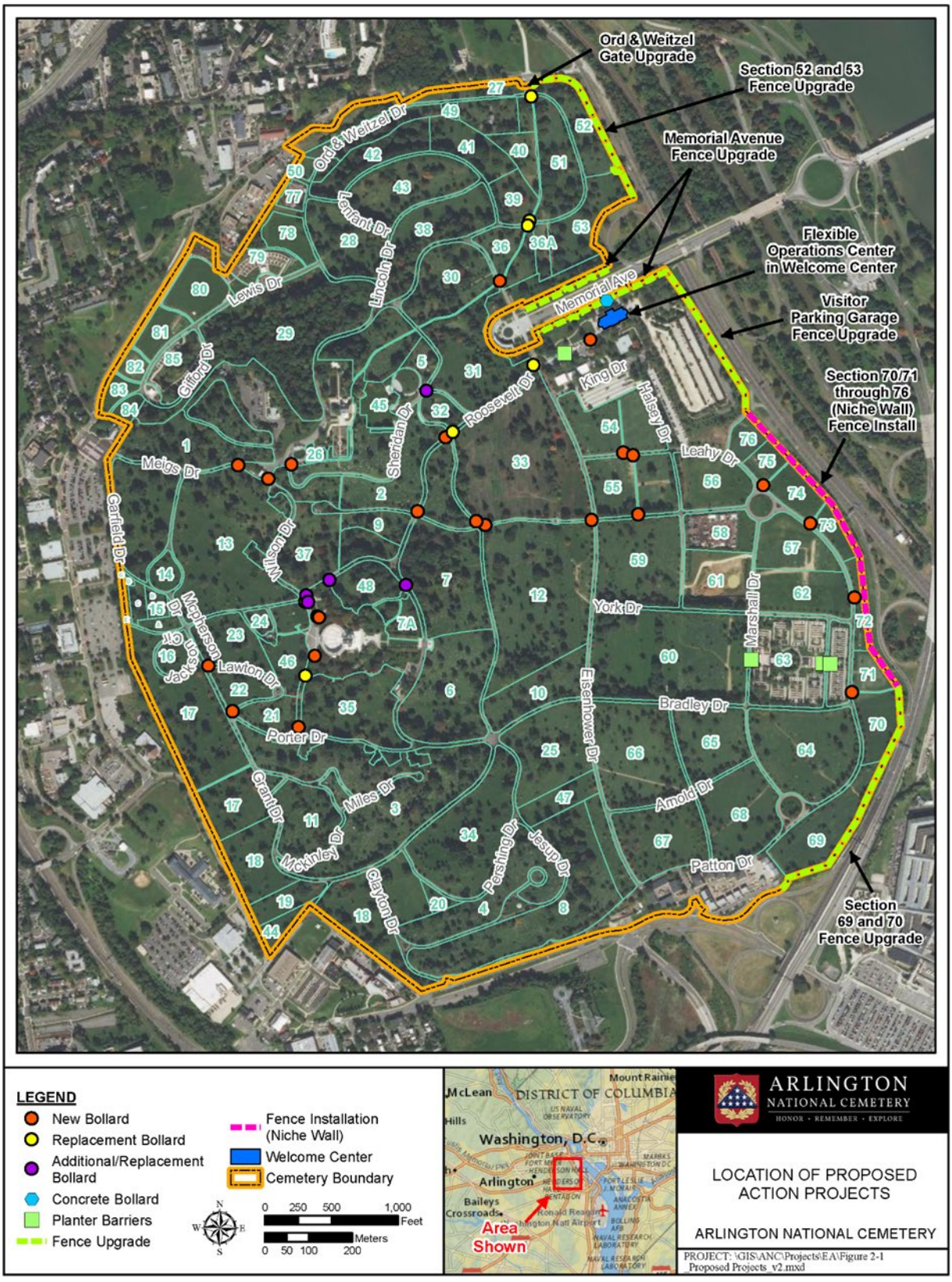

Figure 2-1. Location of Proposed Action Projects

Figure 2-2. Arlington National Cemetery Welcome Center

2.2.3 Fence and Boundary Wall Upgrades

This project would upgrade ANC boundary fencing and walls to meet security standards at the Ord & Weitzel Drive Gate, Sections 52 and 53, along Memorial Avenue, at the Visitor Parking Garage area, and at Sections 69 through 76.

The Ord & Weitzel Drive Gate (Figure 2-3) does not comply with security standards. This nonhistoric gate features a hinged 4-foot-tall pedestrian gate, two 7-foot-tall (total height) red sandstone gate piers, and an automated sliding vehicle entry gate that is 5 feet, 6 inches tall. This gate would be upgraded to comply with security standards. This would be accomplished by replacing the steel pedestrian and vehicle gates with new 8-foot-tall gates and increasing the height of the existing sandstone gate piers to 10 feet tall. The existing gate pier capstones would be removed, and 3 feet of new matching red sandstone would be added. The original capstones would then be reinstalled, bringing the total height of the gate piers to 10 feet tall.

Sections 52 and 53 are bounded by an approximately 4-foot-tall masonry wall (Figure 2-4) that is approximately 1,300 feet long. It does not conform to security standards as it is too low and easily scaled. This section of boundary is currently the lowest section of perimeter boundary wall and represents the greatest boundary security issue at ANC.

Figure 2-3 Ord & Weitzel Drive Gate

Memorial Avenue is bounded by 6-foot-tall chain-link fences to the north and south. These fences are located behind large, maintained hedges (Figure 2-5 and Figure 2-6). The fences do not conform to security standards as they are too low and do not have an anti-climb design. The fence on the north side of Memorial Avenue is approximately 770 feet long. The fence on the south side of Memorial Avenue is approximately 1,000 feet long in total (combined length of three segments). These fences would be upgraded to an 8-foot-tall, post-and-picket, steel security fence or an 8-foot-tall, anti-climb design, chain-link fence.

The Visitor Parking Garage area is bounded by a 6-foot-tall chain-link fence (Figure 2-7). The fences do not conform to security standards as they are too low and do not have an anti-climb design. This section of fencing is approximately 1,220 feet. The fence would be upgraded to an 8-foot-tall, post-and-picket, steel security fence.

Sections 69 and 70 feature a steel post-and-picket fence constructed on top of a masonry wall (Figure 2-8). The fence-and-wall combination barrier varies in height, depending on location, and reaches 6 feet tall at its southern (the Service Complex) and northern (Section 70) terminus. This section is approximately 1,760 feet long. This fence-and-wall barrier does not conform to security standards as it is too low. The post-and-picket topper piece of the fence would be upgraded so that the minimum total height is 8 feet tall along the entire length. Existing attachment sites would be reutilized to the extent possible to keep intact the integrity of the design, workmanship, and materials of the historic masonry wall. Where it is not possible to reuse existing attachment sites, posts would be located away from the edges of capstones and away from joints between adjacent capstones. The majority of the masonry wall would remain untouched.

Figure 2-4. Section 52 Masonry Wall

Source: (Google Earth, 2017)

Figure 2-5. Memorial Avenue Chain-Link Fence
(south side, behind hedge shown)

Figure 2-6. View West on Memorial Avenue – Hedges on North and South Sides Backed by 6-Foot-Tall Chain-Link Fence

Source: **(Google Earth, 2021)**

Figure 2-7. Visitor Parking Garage Chain-Link Fence

Figure 2-8. Section 69 and 70 Boundary Wall/Fence

Sections 70/71 through 76 are bounded by the Niche Wall columbarium (Figure 2-9). This 6-foot-tall structure contains 6,573 compartments for cremated remains in a gray fieldstone wall. The Niche Wall is approximately 2,390 feet long and does not conform to security standards as it is too low and was not designed to be a security feature. An 8-foot-tall, post-and-picket steel security fence would be installed on the outside of the Niche Wall along its entire length. The fence would tie into Gate 110 and the Section 69 and 70 fence.

2.2.4 Bollard and Barrier Upgrades

Bollards and barriers at ANC are used to deter civilian vehicle traffic from entering certain areas. At present, ANC uses two types of bollards (17 bollards at 11 locations). These bollards use different keys/locking mechanisms and are not interchangeable. The bollards are aging and in varying states of disrepair. Due to their age and condition, some bollards cannot be removed as designed.

This project would replace all existing bollards at ANC as well as add additional bollards determined necessary for security. All bollards would be consistent, removable, and interchangeable. Upon completion, there would be 71 removable bollards at 35 locations. These locations have been selected by ANC security staff to provide the necessary security and flexibility for ANC operations and functions. Bollards would be emplaced and removed as needed. Bollards would be designed to blend into the overall landscape of ANC while still being visible to drivers. Figure 2-10 shows an example of an existing bollard at ANC.

Figure 2-9. Niche Wall

Figure 2-10. Existing Bollard

In addition, this project would include installation of 20 concrete planter barriers at the tram loading area and Columbarium and one mobile concrete bollard at the Welcome Center entrance on Memorial Avenue. Existing bollards are too spread out to prevent a vehicle from entering (Figure 2-11). Pedestrians gather in these areas, which are exposed to vehicles. The planter barriers would match existing concrete features (e.g., match color and texture of existing concrete structures), and the bollard would match three existing bollards at the Welcome Center. Figure 2-12 shows an example of a concrete planter barrier (note that this is an example, and final design selection would undergo a thorough review to ensure planter barriers meet ANC design guide specifications).

Figure 2-11. Welcome Center Concrete Bollards

Figure 2-12. Example Concrete Planter Barrier

2.3 Alternative 1 – Sections 52 and 53 Steel Post-and-Picket Fence with Easement

Alternative 1 would implement the Proposed Action as described in Section 2.2 (Proposed Action and Alternatives) with an additional fence upgrade for Sections 52 and 53 as described below.

Under Alternative 1, the security fence would be constructed of 8-foot-tall steel pickets and posts. It would be placed on the outside of the existing masonry wall. Placement would allow enough space from the wall for vegetation maintenance and removal of leaves and debris. The fence would match the fence currently emplaced on the perimeter of JBM-HH as well as match the fence on the west side of the Ord & Weitzel Drive Gate (Section 27) (Figure 2-13).

Figure 2-13. Example of Masonry Wall Fronted by Steel Fence (Section 27)

Where the masonry wall ends at Section 53, the fence would abut a matching post-and-picket fence that continues on to Memorial Avenue. An easement would be required from Arlington County and the Virginia Department of Transportation (VDOT) to install the fence on the section that features the masonry wall.

2.4 Alternative 2 – Sections 52 and 53 Steel Picket Fence Topper

Alternative 2 would implement the Proposed Action as described in Section 2.2 (Proposed Action and Alternatives) with the fence upgrade for Sections 52 and 53 as described below.

Under Alternative 2, the security fence would be constructed of 4-foot-tall, high-strength steel fence topper atop the existing masonry wall at Sections 52 and 53. This would bring the overall height of the wall and fence combined to 8 feet. The design would match the existing wall and fence combination that exists elsewhere at ANC (Figure 2-14).

Figure 2-14. Example of Masonry Wall with Steel Fence Topper

2.5 Alternative 3 – Sections 52 and 53 Steel Post-and-Picket Fence with Limited Easement

Alternative 3 would implement the Proposed Action as described in Section 2.2 (Proposed Action and Alternatives) with the fence upgrade for Sections 52 and 53 as described below.

Alternative 3 would be the same as described for Alternative 1 except that the fence along the masonry wall would be emplaced as close as possible to the wall instead of allowing space for maintenance. An easement would still be needed, but the easement area would be smaller.

2.6 Alternatives Screened from Further Consideration

The following alternative project iterations have been eliminated from further consideration because they do not conform to one or more of the screening criteria listed in Section 2.1 (Screening Criteria).

2.6.1 Flexible Operations Center in Building Other Than Welcome Center

While compliant with all screening criteria, after review by security officials and specialists, no other buildings at ANC were identified as available or capable of hosting an EOC due to their location and distance to emergency egress routes. Therefore, alternative EOC buildings were not considered further.

2.6.2 Visitor Parking Area Fence and Memorial Avenue Fence Upgrade (4-Foot Wall/4-Foot Topper)

Under this alternative, the fences in these areas would be a 4-foot-tall masonry wall with a 4-foot-tall steel fence topper, matching what is present in many areas of ANC. This alternative would not comply with the comparable cost screening criteria. Masonry wall construction with a high-strength, steel fence topper was estimated to cost almost three and a half times more per linear foot than steel fencing alone (using RS Means construction cost estimating software) (Kidder, 2021). Therefore, this alternative was not considered further.

2.6.3 Sections 71–76 Niche Wall Upgrade (2-Foot Wall Topper)

Under this alternative, the Niche Wall would be upgraded to feature a 2-foot-tall steel fence topper, bringing its total height to 8 feet. Because the Niche Wall is an active columbarium and not a security feature, with many internments already completed and funerals occurring regularly, this alteration of use and function would not be appropriate. Therefore, this alternative was not considered further.

2.7 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur, and ANC would remain noncompliant with security requirements and would potentially experience greater exposure to security threats. Thus, the No Action Alternative would not meet the purpose of and need for the Proposed Action. As required by NEPA, the No Action Alternative is carried forward for analysis in this EA and will be used to analyze the consequences of not implementing the Proposed Action—not simply to reach a conclusion of "no impact"—and serve as a comparative baseline for analysis.

2.8 Best Management Practices Included in Proposed Action

This section presents an overview of the best management practices (BMPs) that are incorporated into the Proposed Action as described in this EA. BMPs are existing policies, practices, and measures that ANC would adopt to reduce the impacts of the Proposed Action. Although BMPs reduce potential impacts by avoiding, minimizing or reducing/eliminating effects, BMPs are distinguished from potential mitigation measures because BMPs are (1) existing requirements for the Proposed Action, (2) ongoing, regularly occurring practices, or (3) not unique to this Proposed Action. In other words, the BMPs identified in this document are inherently part of the Proposed Action and are not potential mitigation measures proposed as a function of the NEPA environmental review process for the Proposed Action. Table 2-1 lists BMPs included in this Proposed Action. Mitigation measures are discussed in Chapter 3.

BMPs include actions required by federal or state law or regulation. The recognition of the general management measures prevents unnecessarily evaluating impacts that are unlikely to occur.

Table 2-1. Best Management Practices

Resource	BMP Description	Impacts Reduced/Avoided
Water Quality/Soils	The contractor would implement measures included in the existing stormwater pollution prevention plan for erosion and sediment controls and stormwater BMPs. The contractor would install, maintain, and operate erosion and sediment control measures, such as silt fences, storm drain protection, soil retention blankets, etc., prior to the start of any work that could cause pollution to state waters. The contractor would keep paved roads, parking lots, and walkways clear of dirt, debris, and other materials. The contractor would immediately remove any dirt, debris, or materials deposited onto these surfaces. The contractor would furnish and use drip pans under equipment oil and fuel tanks and cover equipment when not in use and during rain events.	Reduce erosion, sedimentation, and stormwater pollution during construction.
Solid Waste	The contractor would recycle materials such as cardboard, paper, aluminum/metal cans, plastic and glass jars/bottles, scrap metal, concrete, and asphalt and manage solid waste generated during the project in accordance with federal and state laws and regulations.	Reduce solid waste generated and divert waste from landfill.
Air Quality	The contractor would use all necessary reasonable control measures to reduce air pollution from any material or equipment used during construction. This includes, but is not limited to, wetting down dry materials as necessary to prevent blowing dust and keeping waste and materials in covered containers. Contractor vehicles would be in good condition with up-to-date emissions inspections. Vehicle emissions inspections are required for certain vehicles registered or operated in northern Virginia. Contractor vehicles would not be idled longer than 3 minutes except when the vehicle's propulsion engine is providing auxiliary power for purposes other than heating and air conditioning.	Reduce air pollution.
Cultural Resources	During any soil-disturbing activities, if prehistoric or historic artifacts, human remains, buried features, or structural foundations are discovered, the contractor would be directed to stop work and contact the Cultural Resources/NEPA Manager immediately.	Reduce potential impacts on any unknown and undisturbed prehistoric or historic artifacts, human remains, buried features, or structural foundations.

BMP = best management practice; NEPA = National Environmental Policy Act

1

3 Existing Conditions and Environmental Consequences

This chapter describes the environmental resources and baseline conditions that could be affected from implementing any of the alternatives.

All potentially relevant environmental resource areas were initially considered for analysis in this EA. In compliance with NEPA, CEQ, and Army requirements, the discussion of the affected environment (i.e., existing conditions) focuses on resource areas potentially subject to impacts. The level of detail used in describing a resource is proportionate with the expected level of potential environmental impact. Accordingly, this section provides a detailed examination of the potential effects of the Proposed Action and alternatives to cultural resources and air quality.

The potential impacts to the following resource areas are considered to be negligible or absent: water resources, geological resources, biological resources, utilities, infrastructure, land use, and the surrounding community. Therefore, these resource areas, briefly discussed below, are not analyzed in this EA.

Land use. The Proposed Action would not impact land use. There would be no changes to land use resulting from the Proposed Action.

Visual resources. The Proposed Action would result in impacts to visual resources; however, these impacts are analyzed in context to historic viewsheds and are analyzed in detail in Section 3.1 (Cultural Resources). Therefore, visual resources are not addressed as a stand-alone resource in this document.

Water resources. The Proposed Action would not impact water resources other than the installation of fence footers and bollard posts. At most, Alternatives 1 and 2 would result in approximately 812 square feet of total ground disturbance (using construction standards found in UFC 4-022-03 [0.8 square foot per fence post footer and 1.8 square feet per bollard footer]). This small disturbance area, approximately the size of five parking spaces, would be minor. There would be no meaningful increase in impervious surfaces at ANC as a result of the Proposed Action. New fence post footers would be installed subgrade with grass on top (planted or replaced as appropriate), and new bollards would be installed in previously paved areas.

Furthermore, the Proposed Action would not result in new point or non-point sources of water pollution. Clean Water Act permits would not be required for construction (e.g., Virginia Pollutant Discharge Elimination System [VPDES] permit for Stormwater Discharges from Construction Activities) or operation (e.g., VPDES permit for Industrial Activities) of Proposed Action activities. A Land Disturbing Activity/Stormwater Permit would not be required as the Proposed Action would not disturb 2,500 square feet or greater.

ANC operates a small municipal separate storm sewer system (MS4) under VPDES Permit Number VAR040139, effective November 1, 2018. ANC implements pollution prevention and good housekeeping practices throughout its facility to minimize and prevent pollutants from

discharging to its MS4. Written procedures, a Stormwater Pollution Prevention Plan, a Nutrient Management Plan, and training are key parts of ANC's pollution prevention and good housekeeping program. These documents are made available to construction contractors. The BMPs for water quality described in Section 2.8, which are included as requirements in ANC construction contracts, would be employed during construction.

No surface waters, wetlands, or floodplains occur within any Proposed Action areas. Appropriate best management practices would be implemented to ensure that contaminants are not introduced into water sources.

Geological resources (including topography and soils). The Proposed Action would not impact geology, topography, or soils. No unique geologic features (e.g., caves, cliffs, canyons, etc.) are present in Proposed Action areas. Geologic features that are present (e.g., mostly various types of sand and gravel sedimentary deposits) would not be impacted by Proposed Action activities, the most intrusive of which would consist of excavating fence post and bollard footers. The topography of the affected areas would remain unchanged (e.g., no leveling, cutting or filling of terrain). As noted in the discussion of water resources above, there would be very little ground disturbance under the Proposed Action and, consequently, the Proposed Action would not result in impacts to soils.

Biological resources. The Proposed Action would not impact biological resources. All Proposed Action activities occur on previously developed areas and/or maintained lawn or landscaped areas. Wildlife present during construction would be accustomed to human presence and activities. Migratory birds in the area would likely leave any area of disturbance. There would be no takes of migratory birds. Tree removal is not anticipated under the Proposed Action. The monarch butterfly (*Danaus plexippus*) is a species that may be seasonally present on ANC. This species is a candidate species for listing under the federal Endangered Species Act. Because the Proposed Action would not affect monarch butterfly habitat at ANC (milkweed [*Asclepias spp*.] and nectar-providing flowers), the Proposed Action would have no effect on the monarch butterfly.

Public health and safety: The Proposed Action would not impact public health and safety. All Proposed Action activities would occur on Army property, or an easement obtained by the Army. Work areas would be cordoned off and signed to prevent the public from accessing these areas during construction. Proposed Action construction contractors would abide by all Army and Occupational Safety and Health Administration requirements.

Infrastructure (including utilities). The Proposed Action would not impact infrastructure (e.g., roads, buildings, sidewalks) or utilities (potable water, sewer, electricity, etc.). The Proposed Action would not build, modify, or remove any infrastructure at ANC. Proposed Action activities would not result in an increased demand for any utility service at ANC. Prior to any construction, utilities would be located and marked so that they would be avoided and, therefore, service would not be interrupted during construction. Therefore, infrastructure is not addressed further in this document.

Noise. The Proposed Action would not result in noise impacts to people. Construction equipment associated with the Proposed Action would not consist of large heavy equipment such as pile

drivers and bulldozers. Noise generated by the installation of fence upgrades and other Proposed Action activities would be temporary, localized, and similar to daily noise from ANC internment operations, which utilize excavators and front-end loaders, as well as maintenance such as mowing, trimming, pruning, hydroseeding, and sod removal and installation.

Transportation. The Proposed Action would not result in impacts to transportation. Proposed Action activities would not require the shutdown or alteration of any roadways. Delivery of Proposed Action materials would not impact traffic in any measurable way and would add a negligible number of daily trips to total traffic at ANC. Ample areas exist to stage/laydown materials as well as perform work outside of roadways.

Surrounding community (including socioeconomics and environmental justice). The Proposed Action would not impact population, demographics, housing, community services and facilities, or income because the number of permanent employees within the project area would not change. During construction, there would be a temporary and minor beneficial impact associated with the use of local labor and supplies. Workers would likely be hired from the local workforce or would already be established employees of a contractor and would not be associated with any permanent in-migration of workers. Because Proposed Action activities are confined to ANC (as are the impacts, if any, to other resource areas), the Proposed Action would not result in impacts to minority or low-income populations.

Hazardous materials and wastes. The Proposed Action would not impact hazardous materials and wastes. Small amounts of hazardous materials would be used during the construction phase of Proposed Action activities. These may include paints, adhesives, solvents, etc. These materials would be handled in accordance with all applicable regulations. Correspondingly, small amounts of these materials may need to be disposed of as hazardous waste. These wastes would be disposed of in accordance with ANC's hazardous waste management program and all applicable regulations. The volume of hazardous waste generated by the Proposed Action would not exceed any U.S. Environmental Protection Agency (USEPA) generator thresholds and would not jeopardize ANC's status as a small-quantity generator of hazardous waste. There are no known sites regulated under the Comprehensive Environmental Response, Compensation, and Liability Act or Resource Conservation and Recovery Act within any of the Proposed Action areas.

3.1 Cultural Resources

3.1.1 Definition of Resource

Cultural resources include archaeological sites, structures, cultural landscapes, museum collections, and ethnographic resources. Significant cultural resources are identified as historic properties (as defined in 36 CFR 60.4) if they are either considered to be eligible for or listed in the National Register of Historic Places (NRHP).

Section 106 of the National Historic Preservation Act (NHPA) mandates that federal agencies consider the impact of their undertakings on historic properties within the project's area of potential effects (APE), illustrated in Figure 3-1. The APE for cultural resources consists of areas

where physical disturbance (i.e., digging) would occur and areas where there would be a potential change to the visual setting of historic properties through the introduction of new physical elements (e.g., fencing, bollards). For the purposes of cultural resources analysis, the Proposed Action region of influence (ROI) was considered equivalent to the APE, as defined by 36 CFR 800.16(d). If adverse effects on historic properties are identified, then agencies must attempt to avoid, minimize, or mitigate these impacts to resources considered important in our Nation's history.

3.1.2 Existing Conditions

3.1.2.1 Archaeological Resources

There are no known archaeological resources recorded in the APE for direct physical disturbance. The areas, and specific locations where the security barriers would be constructed have had repeated disturbances from cycles of construction and demolition and, as a result, have a very low potential for intact archaeological sites. For the portion of the APE within the cemetery, there is virtually no undisturbed ground in that part of the APE given the roadways, graves, and underground utilities filling the area. The likelihood of finding or identifying NRHP-eligible archaeological resources would be very small.

3.1.2.2 Buildings, Structures, and Landscape

The above-ground cultural resources in the APE include the Arlington National Cemetery Historic District and the Arlington Ridge Park Historic District, both of which are listed in the NRHP. The Arlington National Cemetery Historic District was established as a military cemetery during the Civil War and contains many contributing elements including the Tomb of the Unknown Soldier, the dead from the Nation's military conflicts, and the graves of many former U.S. presidents. ANC has a Programmatic Agreement (PA) with the Virginia State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP) (Arlington National Cemetery, 2014). This PA streamlines Section 106 consultation for routine operation, maintenance, and repair activities at ANC. The Arlington Ridge Park Historic District is located immediately north of Sections 27 and 52 in the northeastern portion of ANC. The Arlington Ridge Park Historic District is an open-space memorial that includes the famous United States Marine Corps Memorial monumental sculpture and the Netherlands Carillon, one of the first examples of modern architecture used for a commemorative monument in the Nation's capital (VDHR, 2020).

3.1.3 Environmental Consequences – No Action Alternative

The No Action Alternative would have no effects to cultural resources. There would be no retrofit of the Welcome Center to create a FLEXOPS, no upgrades to ANC boundary fencing, and no bollard and barrier upgrades.

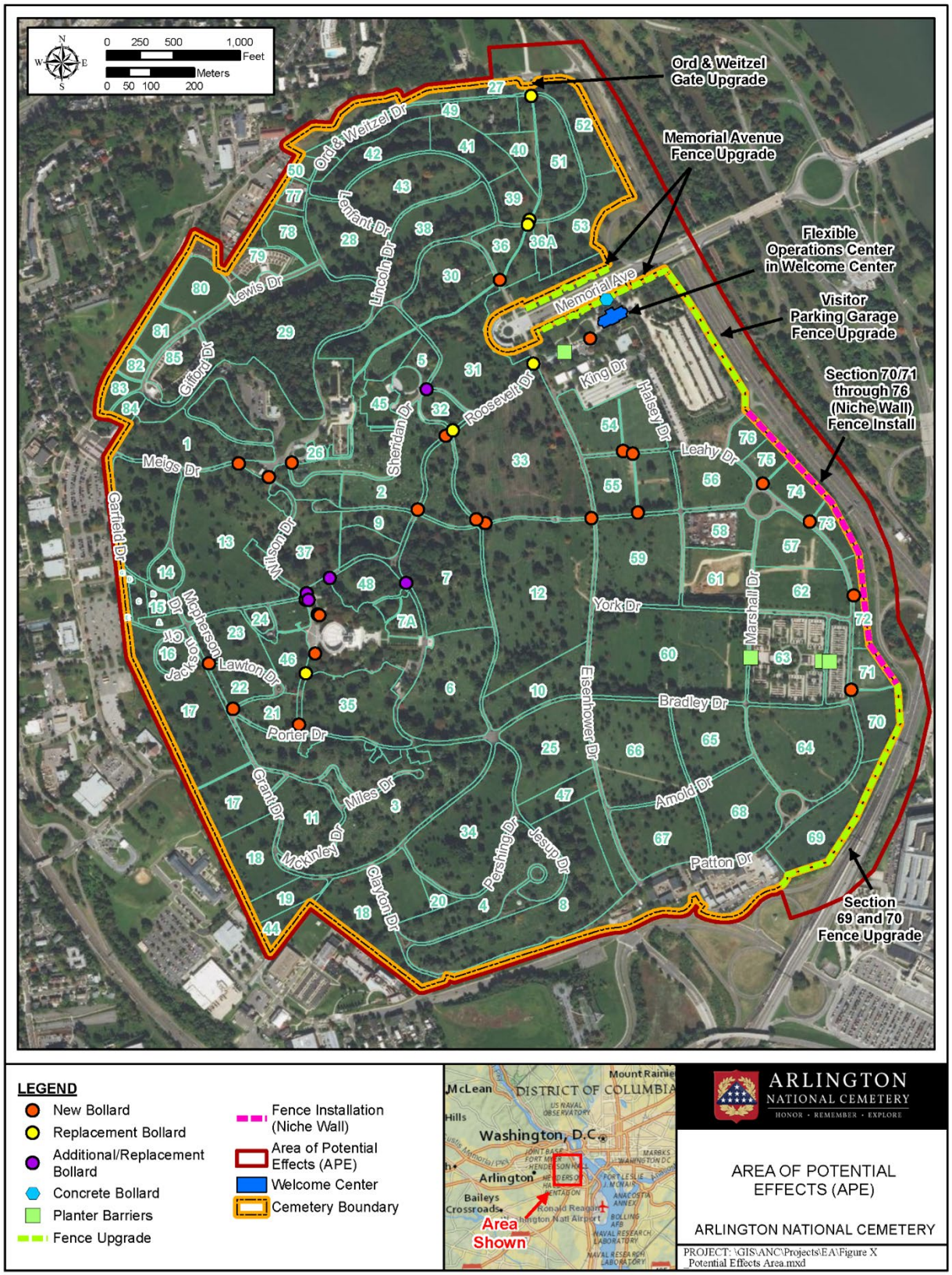

Figure 3-1. Area of Potential Effects

3.1.4 Environmental Consequences – Alternative 1

3.1.4.1 Security Screening Memorandum of Agreement with Joint Base Myer – Henderson Hall

Under the Proposed Action, a memorandum of agreement with JBM-HH would be developed to provide vehicle screening services. This agreement would allow for nonvetted drivers and vehicles to proceed through JBM-HH to be screened for admittance to ANC. This administrative action would have no effect on historic properties at ANC.

3.1.4.2 Flexible Operations Center in Welcome Center

The Proposed Action would include refitting a room in the Welcome Center for use as a FLEXOPS. The Welcome Center (formerly known as the Visitor's Center) is a contributing element to the Arlington National Cemetery Historic District according to criteria in "National Register Eligibility of National Cemeteries – A Clarification of Policy" (Arlington National Cemetery, 2014). NRHP guidance on national cemeteries indicates that all active elements contribute to the historic significance on a continuing basis, even recent additions.

ANC has a PA with the Virginia SHPO and the ACHP (Arlington National Cemetery, 2014). This PA streamlines Section 106 consultation for routine operation, maintenance, and repair activities at ANC. According to stipulations of the PA, certain interior work activities including "Rehabilitation in-kind/replacement in-kind of electrical wiring including lighting, fire alarms, smoke/heat detectors, fire suppression systems, telephones, and local area network are considered undertakings but have limited potential to adversely affect historic properties and therefore do not require further review under this Agreement." The refitting of a room within the Welcome Center for use as a FLEXOPS would primarily consist of electrical wiring and the installation of interior electronics, which are allowed under the conditions of the PA. Therefore, there would be no adverse effects on the Welcome Center or the Arlington National Cemetery Historic District from retrofitting the Welcome Center room to serve as a FLEXOPS.

3.1.4.3 Fence and Boundary Wall Upgrades

The Proposed Action would include upgrading the ANC boundary fencing and walls to meet security standards. This project addresses fencing and walls at the Ord & Weitzel Drive Gate, Sections 52 and 53, along Memorial Avenue, at the Visitor Parking Garage area, and at Sections 69 through 76.

The upgrade of the non-historic Ord & Weitzel Drive Gate would consist of replacing the steel pedestrian and vehicle gates with new 8-foot-tall gates and increasing the height of the existing sandstone gate piers to 10 feet tall. The existing gate pier capstones would be removed, and 3 feet of new matching red sandstone would be added. The original capstones would then be reinstalled, bringing the total height of the gate piers to 10 feet tall. The proposed gate would visually match the height and appearance of the existing 8-foot-high black metal picket fences located immediately to the west.

The security fence upgrade at Sections 52 and 53 would consist of adding an 8-foot-tall steel post-and-picket security fence. The new fence would be placed outside the existing masonry wall with enough room between the wall and the fence to allow maintenance activities (i.e., lawn

mowing, debris cleanup). Each new fence post would require a 12-inch-diameter hole approximately 3 feet deep. Ground disturbance from the installation of 170 steel posts, each 3 inches in diameter, would total approximately 133 square feet. The proposed fence would visually match existing 8-foot-high black metal picket fences located between Section 53 and the Route 110 on-ramp immediately to the south and along the northern boundary of Section 27, immediately west of Section 52.

Upgrades to the security fencing along Memorial Avenue and at the Visitor Parking Garage would replace the existing 6-foot-high chain-link fences with 8-foot-tall steel post-and-picket fences. The new fencing would total approximately 1,770 feet along Memorial Avenue and 1,220 feet at the Visitor Parking Garage. Each new fence post would require a 12-inch-diameter hole approximately 3 feet deep. Ground disturbance for these two projects from the installation of approximately 390 steel posts (each 3 inches in diameter) would total approximately 307 square feet. The fencing would visually match existing 8-foot-tall black metal picket fences currently in use in the immediate vicinity of the proposed upgrades, at the Route 110 on-ramp adjacent to the east of Memorial Avenue and just north of the Visitor Parking Garage.

The security fence upgrade at Sections 69 and 70 would involve placement of a new steel fence topper on the existing masonry wall. These sections currently feature a steel post-and-picket fence atop a masonry wall that, due to the height of the surrounding landscaping, do not reach the 8-foot security requirement. This upgrade would replace the current fence topper with one 8 feet in height along the entire length of Sections 69 and 70. The new fence topper would utilize the existing fence attachments on the current masonry walls and visually match the existing security fence of these sections as well as existing masonry walls with steel fence toppers along Southgate Road, immediately west of Section 69.

The security fence upgrade at Sections 70/71 through 76 would involve building an 8-foot-tall steel post-and-picket fence outside the Niche Wall along its entire length. Sections 70/71 through 76 are bounded by the Niche Wall columbarium, a 6-foot-tall structure containing compartments for cremated remains in a gray fieldstone wall. Each new fence post would require a 12-inch diameter hole approximately 3 feet deep. Ground disturbance from the installation of approximately 313 steel posts, each 3 inches in diameter, would total approximately 245 square feet. The proposed fencing would match existing 8-foot-high black metal picket fences currently in use at the Route 110 on-ramp at Memorial Avenue, north of Section 76, and elsewhere at the boundary of ANC.

No adverse effects to the Arlington National Cemetery Historic District or the Arlington Ridge Park Historic District would be anticipated from the proposed fence and boundary wall upgrades. The proposed upgrades at the Ord & Weitzel Drive Gate and the 8-foot-tall steel post-and-picket security fence upgrades for Sections 52, 53, Memorial Avenue, Visitor Parking Garage, and Sections 70/71 through 76 would introduce a change to the visual environment. These changes would not constitute an adverse effect. The new gate and fencing would visually match existing 8-foot-tall black metal picket fencing in use at the Route 110 on-ramp immediately northeast of Memorial Avenue and along Marshall Drive directly west of Section 153. The increase in the height of the sandstone piers at the Ord & Weitzel Drive Gate would be accomplished by adding new matching red sandstone and reutilizing the existing capstones, which would retain the

appearance and character of the piers. The fence toppers proposed for Sections 69 and 70 would utilize existing fence attachments to the extent possible to keep intact the integrity of the design, workmanship, and materials of the historic masonry wall. These new fence toppers would match existing fence toppers nearby along the southern boundary of ANC, bordering Southgate Road. ANC would retain the historic views and vistas within the cemetery after completion of fence and wall upgrades. The historic location and elements within the districts would be maintained. The historic boundary wall would be retained. Headstones and circulation patterns would remain unchanged. The cemetery would continue to convey its historic significance both as a military cemetery and through its landscape architecture and architecture. There would be no changes to the integrity of location, workmanship, feeling, or associations of ANC's historic district elements listed in or eligible for the NRHP.

The Arlington Ridge Park Historic District, a portion of which is within the APE, is north of the proposed fence upgrade to Section 52. The boundary wall with added picket fence would be visible from the southern portion of Arlington Ridge Park. The fence would be more apparent during winter months when leaves fall from surrounding trees and other plants are not in bloom. Nevertheless, this change would have no effect on the character of the park.

Effects on archaeological resources would not be anticipated. All construction would occur in areas of the APE that have been surveyed and found not to contain archaeological resources and/or have been disturbed through prior development of the cemetery or adjacent infrastructure. It would not be expected that undiscovered cultural resources would be found during fence and wall upgrades. In the event of an inadvertent discovery during ground-disturbing operations, all work would cease, the ANC Cultural Resources Manager would be contacted immediately to notify the appropriate agencies, (e.g., Virginia DHR), and standard procedures would be followed to protect the artifacts and determine their significance. Therefore, fence and wall upgrades would have no adverse effects on intact archaeological resources or the Arlington National Cemetery Historic District.

3.1.4.4 Bollard and Barrier Upgrades

The Proposed Action would include installation of 71 removable bollards at 35 locations within the ANC. Seventeen of these 71 bollards (at 11 locations) would be replacements for existing outdated bollards; the remaining 54 would be new bollards at 24 new locations. The installation of the bollards would require the excavation of holes up to 18 inches in diameter at a maximum depth of 12 inches. Total ground disturbance associated with the bollard installation would be approximately 125 square feet. In addition to the bollards, 20 concrete planter barriers would be placed at four locations on ANC, and a single concrete barrier would be placed at the Welcome Center pedestrian gate. The barriers would be installed on paved surfaces with no ground disturbance.

No adverse effects to the Arlington National Cemetery Historic District are anticipated from the bollard and barrier security features. The new bollard and barrier plan would establish a consistent design that is compatible with the historic character of the cemetery. An increase in the number of both bollards and barriers would change the visual environment, but historic views and vistas within the cemetery would be retained. The historic location and elements within the districts

would be maintained. Headstones and circulation patterns would remain unchanged. The cemetery would continue to convey its historic significance both as a military cemetery and through its architecture and landscape architecture. There would be no changes to the integrity of location, workmanship, feeling, or associations of ANC's historic district elements listed in or eligible for the NRHP.

No effects to archaeological resources would be anticipated from the proposed bollard and barrier upgrades. There are no known archaeological sites in the APE where the bollards would be installed. All bollards would be installed on paved or concrete surfaces where prior ground disturbance from road construction and paving activities preclude intact archaeological deposits at the planned depth for bollard installation. The installation of concrete barrier planters and a concrete barrier at the Welcome Center would involve no ground disturbance. Therefore, bollard and barrier upgrades would not result in adverse effects on intact archaeological resources or the Arlington National Cemetery Historic District.

3.1.5 Environmental Consequences – Alternative 2

Alternative 2 would implement the Proposed Action with environmental consequences as described in Sections 3.1.4.1 through 3.1.4.3. Under Alternative 2, the fence upgrade at Sections 52 and 53 would consist of the addition of a 4-foot-tall, high-strength steel fence topper on the existing masonry wall instead of constructing a separate fence.

No adverse effects to the Arlington National Cemetery Historic District or the Arlington Ridge Park Historic District would be anticipated from the proposed fence and boundary wall upgrades. The proposed upgrades at the Ord & Weitzel Drive Gate and the 8-foot-tall steel post-and-picket security fence upgrades for Memorial Avenue, Visitor Parking Garage, and Sections 70/71 through 76 would introduce a change to the visual environment. These changes would not constitute an adverse effect because the new gate and fencing would visually match existing 8-foot-tall black metal picket fencing in use at the Route 110 on-ramp immediately northeast of Memorial Avenue and along Marshall Drive directly west of Section 52, and the increase in the height of the sandstone piers at the Ord & Weitzel Drive Gate would be accomplished by adding new matching red sandstone and reutilizing the existing capstones, which would retain the appearance and character of the piers. The fence toppers proposed for Sections 52, 53, 69, and 70 would utilize existing fence attachments to the extent possible to keep intact the integrity of the design, workmanship, and materials of the historic masonry wall. These new fence toppers would match existing fence toppers nearby along the southern boundary of ANC, bordering Southgate Road. This minor change to the visual environment would have no effect on the character of the Arlington National Cemetery Historic District, as described for Alternative 1.[1]

[1] Note that during the preparation of this EA, the Army, due to security concerns and after considering all alternatives, proceeded with the Alternative 2 option for Sections 52 and 53. The Army consulted with the DHR prior to proceeding. The DHR concurred with the Army's determination that the upgrades to Sections 52 and 53 will have an effect on historic resources but that the effect will not be adverse (Holma, 2022). The Army is consulting with the DHR for the remaining projects.

The Arlington Ridge Park Historic District, a portion of which is within the APE, is north of the proposed fence upgrade at Section 52. The boundary wall with added fence topper would be visible from the southern portion of Arlington Ridge Park. The fence would be more apparent during winter months when leaves fall from surrounding trees and other plants are not in bloom. Nevertheless, this minor change to the visual environment would have no effect on the character of the Arlington Ridge Park Historic District.

Effects to archaeological resources would not be anticipated. All construction would occur in areas of the APE that have been surveyed and found not to contain archaeological resources and/or have been disturbed through prior development of the cemetery or adjacent infrastructure. It would not be expected that undiscovered cultural resources would be found during implementation of Alternative 2. In the event of an inadvertent discovery during ground-disturbing operations, all work would cease, the ANC Cultural Resources Manager would be contacted immediately to notify the appropriate agencies (e.g., Virginia DHR), and standard procedures would be followed to protect the artifacts and determine their significance. Therefore, under Alternative 2, there would be no adverse effects on intact archaeological resources or the Arlington National Cemetery Historic District.

3.1.6 Environmental Consequences – Alternative 3

Alternative 3 would implement the Proposed Action with the environmental consequences as described in Sections 3.1.4.1 through 3.1.4.3. Under Alternative 3, the fence upgrade at Sections 52 and 53 would consist of a separate 8-foot-tall steel post-and-picket security fence placed as close to the existing masonry wall as possible, without leaving space between the wall and the fence for maintenance activities.

Under Alternative 3, no adverse effects to the Arlington National Cemetery Historic District or the Arlington Ridge Park Historic District would be anticipated from the fence and boundary wall upgrades. The proposed upgrades at the Ord & Weitzel Drive Gate and the 8-foot-tall steel post-and-picket fence at Sections 52 and 53, along Memorial Avenue, at the Visitor Parking Garage, and at Sections 70/71 through 76 would introduce a change to the visual environment. These changes would not constitute an adverse effect because the new gate and fencing would visually match existing 8-foot-tall black metal picket fencing in use at the Route 110 on-ramp immediately northeast of Memorial Avenue and along Marshall Drive directly west of Section 52, and the increase in the height of the sandstone piers at the Ord & Weitzel Drive Gate would be accomplished by adding new matching red sandstone and reutilizing the existing capstones, which would retain the appearance and character of the piers. The fence toppers proposed for Sections 69 and 70 would utilize existing fence attachments to the extent possible to keep intact the integrity of the design, workmanship, and materials of the historic masonry wall. These new fence toppers would match existing fence toppers nearby along the southern boundary of ANC, bordering Southgate Road. This minor change to the visual environment would have no effect on the character of the Arlington National Cemetery Historic District, as described for Alternative 1.

The Arlington Ridge Park Historic District, a portion of which is within the APE, is north of the proposed fence upgrade to Section 52. The boundary wall with added picket fence would be visible from the southern portion of Arlington Ridge Park. The fence would be more apparent during

winter months when leaves fall from surrounding trees and other plants are not in bloom. Nevertheless, this minor change to the visual environment would have no effect on the character of the Arlington Ridge Park Historic District.

Effects to archaeological resources would not be anticipated. All construction would occur in areas of the APE that have been surveyed and found not to contain archaeological resources and/or have been disturbed through prior development of the cemetery or adjacent infrastructure. It would not be expected that undiscovered cultural resources would be found during implementation of the Proposed Action. In the event of an inadvertent discovery during ground-disturbing operations, all work would cease, the ANC Cultural Resources Manager would be contacted immediately to notify the appropriate agencies (e.g., Virginia DHR), and standard procedures would be followed to protect the artifacts and determine their significance. Therefore, under Alternative 3, there would be no adverse effects on intact archaeological resources or the Arlington National Cemetery Historic District with implementation of this element of the Proposed Action.

3.1.7 Discovery of Human Remains – All Alternatives

In case of unanticipated discovery of human remains or funerary objects not associated with ANC during the Proposed Action, construction and cemetery personnel would follow established policy and procedures in accordance with Section 106 of the NHPA and ACHP guidance.

The policies and procedures are guides for treating burial sites, human remains, and funerary objects in a respectful and sensitive manner while acknowledging public interest in the past. The policies are designed to guide federal agencies in making decisions about the identification and treatment of burial sites, human remains, and funerary objects encountered in the Section 106 process in those instances where federal or state law does not prescribe a course of action.

If unanticipated human remains are discovered during the Proposed Action, equipment operators or inspectors would immediately stop excavation and flag off the area to protect and secure the site. The construction supervisor would contact the cultural resources manager, who would then contact local law enforcement to investigate and identify the remains. Removal of the remains or associated grave goods would require a permit from the Virginia DHR in accordance with the Virginia Antiquities Act [Code of Virginia §10.1-2305 (2016)].

All human remains would remain on-site until permitting and coordination processes are completed, including those of local law enforcement, the medical examiner, Virginia DHR, and affected tribal organizations, as appropriate.

3.2 Air Quality

3.2.1 Definition of Resource

Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the affected air basin, and the prevailing meteorological conditions. Pollutants such as ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, and particulate matter are considered criteria air pollutants for which an ambient air quality standard has been set.

The baseline standards for criteria pollutant concentrations are the National Ambient Air Quality Standards (NAAQS) and state air quality standards. These standards represent the maximum allowable atmospheric concentration that may occur and still protect public health and welfare. Based on measured ambient air pollutant concentrations, USEPA designates whether areas of the United States meet the NAAQS. Those areas demonstrating compliance with the NAAQS are considered "attainment" areas, while those not in compliance are known as "nonattainment" areas. Those areas that cannot be classified on the basis of available information for a particular pollutant are "unclassifiable" and are treated as attainment areas until proven otherwise.

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere. These emissions are generated by both natural processes and human activities. The accumulation of GHGs in the atmosphere regulates the Earth's temperature. Climate projections for the United States indicate continued warming in all seasons, higher heat indices, increased drought, and more intense hurricanes (IPCC, 2007). USEPA has determined that the combined emissions of six GHGs (carbon dioxide [CO_2], methane [CH_4], nitrous oxide [N_2O], hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and sulfur hexafluoride [SF_6]) in the atmosphere may "reasonably" be anticipated to endanger public health and welfare (USEPA, 2009) and, thus, should be considered pollutants covered under the Clean Air Act. Currently, there are no standards similar to the NAAQS for GHGs.

3.2.1 Existing Conditions

An air emissions inventory qualitatively and quantitatively describes the amount of emissions from a facility or within an area. Emissions inventories are designed to locate pollution sources, define the type and size of the sources, characterize emissions from each source, and estimate total mass emissions generated over a period of time, normally 1 year. Inventory data establish relative contributions to air pollution concerns by classifying sources and determining the adequacy as well as the necessity of air regulations.

For comparison purposes, Table 3-1 presents the USEPA's 2017 National Emissions Inventory (NEI) data for Arlington County, Virginia (USEPA, 2022). The county data include emissions from point, area, and mobile sources. Point sources are stationary sources that can be identified by name and location. Area sources are point sources whose emissions are too small to track individually, such as a home or small office building or a diffuse stationary source, such as wildfires or agricultural tilling. Mobile sources are any kind of vehicle or equipment with gasoline or diesel engine, an aircraft, or a ship. Two types of mobile sources were considered: on-road and nonroad. On-road mobile sources consist of vehicles such as cars, light trucks, heavy trucks, buses, engines, and motorcycles. Nonroad sources are aircraft, locomotives, diesel and gasoline boats and ships, personal watercraft, lawn and garden equipment, agricultural and construction equipment, and recreational vehicles.

Table 3-1. Baseline Emissions Inventory for Arlington County

County	Emissions (tons/year)						
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOCs	Pb
Arlington County	14,256	2,606	1,325	432	175	2,968	468

Source: (USEPA, 2022)
CO = carbon monoxide; NO_x = nitrogen oxides; Pb = lead; PM_{10} = particulate matter less than or equal to 10 micrometers in diameter; $PM_{2.5}$ = particulate matter less than or equal to 2.5 micrometers in diameter; SO_x = sulfur oxides; VOC = volatile organic compound

To provide for a more conservative analysis, Arlington County was selected as the ROI instead of the USEPA-designated Air Quality Control Region, which is a much larger area. To identify impacts, calculated air emissions were compared with the annual total emissions of the ROI as represented in the 2017 NEI. Arlington County is currently classified as being in nonattainment for 8-hour ozone [2015 standard (USEPA, 2021)]. Therefore, a General Conformity applicability assessment is required.

The six primary GHGs are carbon dioxide, methane, nitrous oxide, HFCs, PFCs, and sulfur hexafluoride. Only emissions of carbon dioxide, methane, and nitrous oxide are considered in this EA; the other constituents do not apply. Each GHG has an estimated global warming potential, which is a function of its atmospheric lifetime and its ability to absorb and radiate infrared energy emitted from the Earth's surface.

HFCs, PFCs, SF_6, and nitrogen trifluoride are generated in relatively very small quantities and most often by very specific niche industries, such as electronic component manufacturing. Therefore, CO_2, CH_4, and N_2O are the primary GHGs of concern. For the purposes of this EA, GHGs were calculated and analyzed in terms of carbon dioxide equivalent (CO_2e), which is a term that describes various GHGs in a common unit based on the amount of CO_2 that would have the equivalent warming potential.

Table 3-2 provides the current USEPA 2017 NEI GHG inventory for Arlington County. While there are currently no regulatory thresholds for GHGs, this provides a point of reference for evaluating the context and intensity of potential climate change impacts from implementation of the Proposed Action and alternatives within the scope of NEPA.

Table 3-2. Baseline Greenhouse Gas Emissions Inventory for Arlington County

County	Emissions (tons/year)			
	CO_2	CH_4	N_2O	CO_2e
Arlington County	1,213,174	51	19	1,220,208

CH_4 = methane; CO = carbon monoxide; CO_2e = carbon dioxide equivalent; N_2O = nitrous oxide

3.2.2 Environmental Consequences – No Action Alternative

Under the No Action Alternative, the security upgrades at Arlington National Cemetery would not be completed. Air emissions would remain at current baseline levels, and there would be no impact to air quality in the ROI.

3.2.3 Environmental Consequences – Alternative 1

Total net direct and indirect emissions associated with Alternative 1 were estimated using a DoD-developed software tool for assessing conformity (ACAM 5.0.17b) on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available including algorithms, emission factors, and methodologies (USAF, 2020a; USAF, 2020b).

Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady-state" (net gain/loss upon action fully implemented) emissions. Table 3-3 provides the net emissions for Alternative 1 compared against the *de minimis* levels. A comparison to the ROI baseline NEI emissions is also provided to give another point of comparison for the context and intensity of the potential impacts. There are currently no thresholds for GHGs, so GHG emissions are provided (as CO_2e) in comparison to regional baseline emissions only.

All criteria pollutant emissions would be well below the *de minimis* thresholds. General Conformity under the Clean Air Act, Section 1.76, has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B, and because total emissions are below *de minimis* levels, the General Conformity rule is not applicable. See Appendix B for the Record of Non-Applicability.

Table 3-3. Alternative 1 Emissions

	Annual Emissions (tons/year)							
	CO	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**SO_x**	**VOCs**	**Pb**	**CO_2e**
Alternative 1 emissions	3.61	2.38	0.19	0.09	0.01	0.45	0.00	824
***de minimis* threshold**	100	100	100	100	100	100	25	–
Exceedance?	No	No	No	No	No	No	No	–
ROI baseline emissions	14,256	2,606	1,325	432	175	2,968	468	1,220,208
Percentage of Baseline	*0.03%*	*0.09%*	*0.01%*	*0.02%*	*0.01%*	*0.02%*	*0.00%*	*0.07%*

– = not applicable; CO = carbon monoxide; CO_2e = carbon dioxide equivalent; NO_x = nitrogen oxides; Pb = lead; PM_{10} = particulate matter less than or equal to 10 micrometers in diameter; $PM_{2.5}$ = particulate matter less than or equal to 2.5 micrometers in diameter; SO_x = sulfur oxides; VOC = volatile organic compound

Emissions associated with security upgrades at Arlington National Cemetery would not generate significant quantities of any pollutant. Furthermore, these emissions would be temporary, only lasting the duration of the construction associated with upgrades. Once completed, emissions would return to baseline levels. Therefore, there would be no significant impacts to air quality under Alternative 1.

3.2.4 Environmental Consequences – Alternative 2

Air emissions are estimated based on the square footage of the footprint of construction. This is used to estimate the equipment used, hours of operation, and fuel consumption. Therefore, although there are minor differences in the proposed implementation under this alternative,

because the total footprint of construction/demolition would be the same, the emissions would be the same as under Alternative 1 and there would be no significant impacts to air quality.

3.2.5 Environmental Consequences – Alternative 3

Air emissions are estimated based on the square footage of the footprint of construction. This is used to estimate the equipment used, hours of operation, and fuel consumption. Therefore, although there are minor differences in the proposed implementation under this alternative, because the total footprint of construction/demolition would be the same, the emissions would be the same as under Alternative 1 and there would be no significant impacts to air quality.

3.3 Related Actions

The effects of actions that occur around the same time and place and that have a close causal relationship as the Proposed Action and alternatives are considered in this EA. These include Army actions located on and adjacent to ANC. Related actions selected for inclusion in this EA were completed within the past 5 years as well as those that have a reasonable probability of being completed in the next 5 years. Upcoming projects were identified from Army planning documents. Table 3-4 lists these projects, and Figure 3-2 depicts the location of these projects. Sections 3.3.1 and 3.3.2 analyze these projects for additive impacts in regard to the Proposed Action for cultural resources and air quality, respectively.

Because the Proposed Action would not impact other resource areas, no other resource areas were analyzed for additive impacts. Note that, similar to Proposed Action projects, impacts to water resources, geological resources, biological resources, utilities, infrastructure, land use, and the surrounding community from past actions at ANC were negligible to absent as the actions were small in scale and occurred on previously developed areas.

3.3.1 Additive Impacts of Related Actions – Cultural Resources

Projects under the Proposed Action would not result in adverse effects to cultural resources. Of the related actions listed in Table 3-4, 10 were determined to have no adverse effects to cultural resources, 2 of the associated actions were determined to have an adverse effect to cultural resources, and 18 are future projects or those with unknown effects. One past project, the security fence upgrade at JBM-HH resulted in an adverse effect on the Fort Myer Historic District and the Arlington National Cemetery Historic District from the removal of trees that contributed to the feeling and setting of these properties and the introduction of physical and visual elements (the security fence and associated gates) that are out of character with the properties. Section 106 consultation for this action resulted in a memorandum of agreement with the SHPO in 2018 to resolve the adverse effects.

A current project, the ANC Southern Expansion and Associated Roadway Alignment, will result in adverse effects from the removal of the boundary wall along Southgate Road and demolition of the Operations Complex. Section 106 consultation for this action resulted in a memorandum of agreement with the SHPO in 2019 to resolve the adverse effects.

Table 3-4. Related Actions

Map Reference Number	Past Actions	Brief Description	Cultural Resources Impacts	Air Quality Impacts
NA, installation-wide, not mapped for security purposes	Improve ANC CCTV Network	Installed closed-circuit television cameras along perimeter wall and associated infrastructure.	No adverse effects. NHPA Section 106 consultation completed.	None
1	Parking Garage Repair	Repaired nonhistorical ticketing booths and repaved parking area.	None. NHPA consultation not required.	None
2	Repair Perimeter Walls	Repaired perimeter walls in-kind along the southeast, north, and northeast sections of ANC.	No adverse effects. NHPA Section 106 consultation completed.	None
3	Retrofit Patton Gates with motorized hardware	Retrofit gates to facilitate motorized sliding operation.	None. NHPA consultation not required.	None
4	Gates 110, Selfridge and, Radar Replacement Project	Replaced 110 and Selfridge gates with automated vehicle gates and replaced radar gate with new manual gate.	None. NHPA consultation not required.	None
5	Welcome Center Doors	Changed opening direction of doors and safety rails (move from outside to inside).	None. NHPA consultation not required.	None
6	ANC Wi-Fi Expansion	Extended the coverage of wireless internet access on ANC to the Memorial Amphitheater and external surrounding area, Service Complex and Columbarium courts and surrounding areas.	No adverse effects. NHPA Section 106 consultation completed.	None
7	ANC Portable Guard Booth on Memorial Avenue	Emplaced a trailer-mounted, non-permanent guard booth on Memorial Avenue for security purposes.	Section 106 streamlined activity covered under Programmatic Agreement.	None
8	New Guard Booth and Pedestrian Access at the 123 (Contractor) Entrance	Installed a pre-manufactured guard booth and pedestrian gate, modified existing boundary wall, reconfigured traffic islands, and installed ADA-compliant curbs.	Section 106 streamlined activity covered under Programmatic Agreement.	None
9	ANC Memorial Avenue Crosswalk	Installed a new crosswalk apron at the north side of Memorial Avenue, repaired the existing Welcome Center crosswalk apron at the south side of Memorial Avenue, and removed the small pedestrian crosswalk at the vehicle entry point on Memorial Avenue.	No adverse effects. NHPA Section 106 consultation completed.	None

Table 3-4. Related Actions

Map Reference Number	Past Actions	Brief Description	Cultural Resources Impacts	Air Quality Impacts
10	Southgate Fence Upgrade	Installed approximately 221 linear feet of 8-foot-high, pre-finished steel security fence along Southgate Road.	None. NHPA consultation not required.	None
11	McClellan Drive Automobile and Pedestrian Traffic Control Device Upgrade	Replaced existing bicycle racks on McClellan Drive with black stanchions with black chain that are more aesthetically pleasing and easier to move.	No adverse effects.	None
12	Access Control Point Enhancements with Common Access Card Enabled Gates	Enhanced nonhistorical automated gates that require after-hours access with CAC-reading capabilities.	None. NHPA consultation not required.	None
13	North Boundary Security Fence	Installed 1,200 linear feet of 8-foot-tall black powder-coated steel picket fence along Marshall Drive, parallel and to the north of ANC's stone boundary wall.	No adverse effects. NHPA Section 106 consultation completed.	None
14	Northeast Fence Upgrade	Removed existing nonhistorical chain-link fence and installed approximately 780 linear feet of 8-foot-high, powder-coated steel security fence.	None. NHPA consultation not required.	None
15	Joint Base Myers – Henderson Hall Security Fence Upgrade (U.S. Army, 2018)[1]	Installed a 2-mile-long, 8-foot-tall ornamental security fence, five vehicle entry points, and an intrusion detection system along the JBM-HH and ANC perimeter.	Adverse effects. Memorandum of agreement developed and signed to minimize and mitigate impacts.	Temporary and localized changes to air quality as a result of fugitive dust and vehicle emissions. No significant impacts.

1

Table 3-4. Related Actions

Map Reference Number	Present and Future Actions	Brief Description	Cultural Resources	Air Quality
16	ANC Southern Expansion (U.S. Army, 2019)[1]	Includes the closure and removal of Southgate Road, the construction of a new access road for traffic to/from JBM-HH, the realignment of Columbia Pike, the modification of the Route 27 interchange at Columbia Pike, the development of the space for cemetery use including integration of the Air Force Memorial, and the conversion of Patton Drive—from South Gate to Eisenhower Drive—to a pedestrian trail. The new access road would include traffic control (signage, speed limits, etc.) to meet Arlington County and Virginia Department of Transportation design standards. The undertaking also involves land acquisitions to accomplish the project. Expansion includes security measures.	Adverse effects. Memorandum of agreement developed and signed to minimize and mitigate impacts.	Air quality impacts during construction would be short-term and minor. Construction emissions would be below major source thresholds. Future emissions would not exceed NAAQS and would conform to the State Implementation Plan.
17	Develop Mobile Vehicle Screening Area on Memorial Avenue[2]	Mobile guard shack and associated infrastructure to accommodate 100% undercarriage vehicle screening capability for buses and vehicles entering ANC via Memorial Avenue. Project includes pavement of pull-off lane, pop-up bollards, associated utility lines, and infrastructure. Long-term plan should organize space for a rejection lane.	Actions to be analyzed in future NEPA document and separate NHPA Section 106 consultation.	Action to be analyzed in future NEPA document. Negligible to minor impacts anticipated based on scale of projects.
NA – Facility Wide	Enhance Unobstructed Space During New Construction[2]	Install bollard and chain assemblies, selective vegetation, etc., with varying standoff distance depending on controlled/uncontrolled status.		
NA – Facility Wide	Install Unidirectional Communications[2]	Placement of hard-wired emergency call boxes with a carefully designed appearance to complement other site fixtures at ANC and the cemetery landscape as a whole (may be combined with Wayfinding project described below).		

1

Table 3-4. Related Actions

Map Reference Number	Present and Future Actions	Brief Description	Cultural Resources	Air Quality
18	Upgrading Security at Perimeter Walls[2]	Retrofitting remaining walls not directly abutting JBM-HH that do not meet security standards to allow a consistent 8-foot-high enclosure across the complete ANC perimeter.	Actions to be analyzed in future NEPA document and separate NHPA Section 106 consultation	Action to be analyzed in future NEPA document. Negligible to minor impacts anticipated based on scale of projects.
19	Construct Vehicle Screening Facility at Visitor Parking Garage Entry with Associated Circulation[2]	Structure and associated infrastructure to accommodate 100% undercarriage vehicle screening capability for buses and vehicles entering the parking garage. Project includes pavement of pull-off lane, pop-up bollards, return lane, associated utility lines, and infrastructure.		
20	Install Memorial Avenue Improvements[2]	Reconfigure pedestrian plaza adjacent to north side of Welcome Center, close existing entry to north side of Welcome Center, infill hedgerow just north of Welcome Center to provide continuous visual theme from Memorial Avenue, define pedestrian circulation from Memorial Avenue into security screening facility.		
21	Collaborate with WIMSA Memorial Foundation, Inc. to Elevate WIMSA's Role and Visibility as a Museum and Attraction[2]	Renovate interior as needed, to accommodate interpretive space that more effectively links the building with the ANC mission. Improve WIMSA's visibility through signage, organized events and ceremonies, and improved access to guest amenities.		
22	ADA Improvements to Memorial Amphitheater Exterior[2]	Improve ramp and seating to comply with ADA.		
23	Rehabilitate Historians' Offices and Restrooms on Lower Level of Amphitheater[2]	Interior renovation of administrative, interpretive, and storage space and guest amenities.		

1

Table 3-4. Related Actions

Map Reference Number	Present and Future Actions	Brief Description	Cultural Resources	Air Quality
24	Convert North Parcel into Permanent Service Satellite[2]	Convert north parcel into permanent service satellite laydown/storage yard, using a design that allows for potential relocation of perimeter wall to integrate the parcel with the rest of ANC.	Actions to be analyzed in future NEPA document and separate NHPA Section 106 consultation	Action to be analyzed in future NEPA document. Negligible to minor impacts anticipated based on scale of projects.
NA – Facility Wide	Upgrade Benches and Water Fountains to ADA Compatibility[2]	Replace existing benches with new benches that meet ADA requirements (installation wide).		
NA – Facility Wide	Install Wayfinding[2]	Install kiosk-type devices to aid visitor experience at ANC (installation-wide; may be combined with unidirectional communications project described above).		
25	Ord & Weitzel Gateway Rehabilitation	Rehabilitation of the gateway on the north side of the cemetery and focus on reassembly of historic stone columns. Includes proposed single-story 15-foot × 12-foot security guard house with a hipped roof and an 8-foot roof overhang inside the cemetery, south of the existing boundary wall and east of the vehicular and pedestrian entries.	No adverse effects. NHPA Section 106 consultation completed.	Negligible to minor impacts anticipated.

ADA = Americans with Disabilities Act; ANC = Arlington National Cemetery; CCTV = closed-circuit television; JBM-HH = Joint Base Myer – Henderson Hall; NA = not applicable; NAAQS = National Ambient Air Quality Standards; NEPA = National Environmental Policy Act; NHPA = National Historic Preservation Act; WIMSA = Women in Military Service for America

1. Analysis summarized from NEPA environmental assessment (U.S. Army, 2018; U.S. Army, 2019).
2. Project identified in 2020 ANC Real Property Master Plan update and will be analyzed in future NEPA document prior to execution.

1

Figure 3-2. Related Actions

All past, present, and reasonably foreseeable future actions would not be directly or indirectly affected by or cause an effect on the Proposed Action. Although there are past, present, and future adverse effects to cultural/historic properties, these effects are being or will be mitigated through the NHPA Section 106 consultation process. There would be no unmitigated or significant adverse additive impacts to historic properties.

3.3.2 Additive Impacts of Related Actions – Air Quality

The Proposed Action in combination with the related actions listed in Table 3-4 are not expected to contribute to significant effects to air quality or result in exceedances of the NAAQS. GHG emissions would occur under all Proposed Action alternatives. Approximately 824 CO_2e tons would be emitted temporarily during construction/installation activities. This represents approximately 0.07 percent of Arlington County's annual GHG emissions and a nominal increase in U.S. emissions.

Climate change impacts include weather and other natural events that could impact future ANC operations, such as increased extensive, violent storms (IPCC, 2014). While related actions and the Proposed Action would contribute GHGs to the atmosphere, these would be minor and temporary, only being emitted during construction and renovation due to operation of fossil fuel combusting equipment.

At this time, climate change presents a global problem caused by increasing concentrations of GHG emissions. While climate change results from the incremental addition of GHG emissions from millions of individual sources, the significance of an individual source alone is impossible to assess on a global scale beyond the overall need for global GHG emission reductions to avoid catastrophic global outcomes.

3.4 Other NEPA Considerations

3.4.1 Relationship of Short-Term Uses and Long-Term Productivity

NEPA requires an analysis of the relationship between a project's short-term impacts on the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing one development site reduces future flexibility in pursuing other options or that using a parcel of land or other resources often eliminates the possibility of other uses at that site.

Because the Proposed Action would occur in areas that are previously developed and would upgrade existing features at ANC, there would be no short-term impacts on the environment. The Proposed Action would not result in any impacts that would reduce environmental productivity or narrow the range of beneficial uses of the environment as the productivity and uses would remain the same.

3.4.2 Regulatory Compliance

Table 3-5 lists the environmental protection statutes and other environmental requirements and the Proposed Action's compliance with those.

Table 3-5. Proposed Action Compliance with Applicable Regulations

Federal Statute	Status of Compliance
Clean Air Act (42 U.S.C. section 7401 et seq.)	Compliant. See Section 3.2 (Air Quality) and Appendix B (Air Quality Supporting Information and Record of Non-Applicability).
Clean Water Act (33 U.S.C. section 1251 et seq.)	Compliant. See Chapter 3 (paragraph on water resources, page 3-1) and Appendix C (Coastal Consistency Determination).
Coastal Zone Management Act (16 U.S.C. section 1451 et seq.)	Compliant. Consistent to the maximum extent practicable. See Appendix C (Coastal Consistency Determination).
National Historic Preservation Act (54 U.S.C. section 300101 et seq.)	Compliant; no adverse effects. See Section 3.1 (Cultural Resources) and Appendix A (Cultural Resources Documentation and NHPA Section 6 Consultation).
Endangered Species Act (16 U.S.C. section 1531 et seq.)	Compliant. See Chapter 3 (paragraph on biological resources, page 3-2). The Proposed Action would not result in takes of listed species.
Migratory Bird Treaty Act (16 U.S.C. section 703 et seq.)	Compliant. See Chapter 3 (paragraph on biological resources, page 3-2). The Proposed Action would not result in takes of migratory birds.
EO 11988, Floodplain Management	Compliant. See Chapter 3 (paragraph on water resources, page 3-1). There are no FEMA-designated 100-year or 500-year floodplains within the Proposed Action areas.
EO 12088, Federal Compliance with Pollution Control Standards	Compliant. The Proposed Action would comply with all applicable pollutions control standards including the management of hazardous materials and wastes and stormwater pollution prevention.
EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations	Compliant. See Chapter 3 (paragraph on surrounding community, page 3-3). Proposed Action impacts are confined to ANC. The Proposed Action would have no impacts to minority or low-income populations.

ANC = Arlington National Cemetery; EO = Executive Order; FEMA = Federal Emergency Management Agency; U.S.C. = United States Code

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4 Agencies and Organizations Consulted

This chapter identifies the agencies and organizations consulted in the preparation and review of this EA. The table below lists the agencies contacted and the individuals within those agencies.

To be completed once consultations initiated/completed.

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5 Preparers

This EA was prepared collaboratively between Department of Defense and contractor staff.

U.S. Department of Defense

Name	Branch/Organization	Role
Stacey Rosenquist	Arlington National Cemetery	Environmental Manager
Caitlin Smith	Arlington National Cemetery	Cultural Resources Manager
Julie Darsie	Naval Facilities Engineering Command	Cultural Resources Program Manager
Brian Cleven	Naval Facilities Engineering Command	Regional Archaeologist
Nik Tompkins-Flagg	Naval Facilities Engineering Command	NEPA Program Manager/Environmental Assessment Project Manager

Contractors

Name	Role	Years of Experience	Degree(s)
LEIDOS			
Brad Boykin	Air Quality	17	M.S., Biotechnology B.S., Biomedical Science
Chris Calabretta, Ph.D.	Geographical Information Systems Analysis	20	B.S., Biology Ph.D., Oceanography
Jennifer Combs	Editor	30+	B.S., Communications, Journalism
Peggy Farrell, PMP, QEP, CHMM	Senior QA/QC	30+	M.S., Natural Sciences and Environmental Studies B.A., Biology and Environmental Studies
Joseph Jimenez, RPA	Cultural Resources	30+	M.A., Anthropology B.A., Anthropology
Andrew Lissner, Ph.D.	Senior Management Review	30+	Ph.D., Biology B.S., Biology
Vincent Passaro, QEP, CESM	Project Manager	21	M.S., Environmental Science B.S., Fisheries and Wildlife Science
Chris Wildt	Cultural Resources	24	B.S., Anthropology

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Appendix A
Cultural Resources Documentation and NHPA Section 6 Consultation

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This Appendix to Contain Results of Consultation When Completed.

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Appendix B
Air Quality Supporting Information and Record of Non-Applicability

1

General Information

- Action Location
Base: ARLINGTON NATIONAL CEMETARY
State: Virginia
County(s): Arlington
Regulatory Area(s): Washington, DC-MD-VA

- Action Title: Security Upgrades Arlington National Cemetery

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2023

- Action Purpose and Need:
The purpose of the Proposed Action is to upgrade security at ANC. The Proposed Action is needed to remedy deficiencies and improve the overall security posture at ANC. As an installation under the jurisdiction of the United States Army—and one of unparalleled meaning to the Nation—the safety and security of its resources and visitors are of upmost importance.

- Action Description:
The Proposed Action comprises the following projects described in The Environmental Assessment Sections 2.2.1 through 2.2.4. These projects were identified to address deficiencies in security that can be implemented within the next 5 years at ANC. Figure 2-1 shows the locations of these projects.

- Point of Contact
Name: Brad Boykin
Title: CTR
Organization: Leidos
Email: boykinb@leidos.com
Phone Number: 979-575-3552

- Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	Security Upgrades

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources. The purpose of these guides is to provide authoritative documentation for National Environmental Policy Act and General Conformity analyses.

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location
County: Arlington
Regulatory Area(s): Washington, DC-MD-VA

- Activity Title: Security Upgrades

- Activity Description:
Total ground disturbance 843.77 square feet for fence upgrades.

- Activity Start Date
Start Month: 1
Start Month: 2023

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2023

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.451649
SO_x	0.008632
NO_x	2.377562
CO	3.604709
PM 10	0.188547

Pollutant	Total Emissions (TONs)
PM 2.5	0.090374
Pb	0.000000
NH_3	0.001689
CO_2e	823.5

2.1 Demolition Phase

2.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2023

- Phase Duration
Number of Month: 6
Number of Days: 0

2.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 843.77
Height of Building to be demolished (ft): 7

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

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

2.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0382	0.0006	0.2766	0.3728	0.0127	0.0127	0.0034	58.549
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.282	000.002	000.220	003.283	000.007	000.006		000.023	00323.276
LDGT	000.358	000.003	000.388	004.597	000.009	000.008		000.024	00417.298
HDGV	000.706	000.005	001.021	015.119	000.022	000.019		000.045	00770.239
LDDV	000.112	000.003	000.133	002.524	000.004	000.004		000.008	00313.527
LDDT	000.253	000.004	000.380	004.330	000.007	000.006		000.008	00445.483
HDDV	000.493	000.013	004.921	001.743	000.169	000.155		000.028	01496.485
MC	002.436	000.003	000.747	012.951	000.027	000.024		000.054	00397.607

2.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD} = (0.00042 * BA * BH) / 2000$

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

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$

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

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

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

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

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

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

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

2.2 Trenching/Excavating Phase

2.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2023

- Phase Duration
Number of Month: 12
Number of Days: 0

2.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 843.77

Amount of Material to be Hauled On-Site (yd^3): 8.12
Amount of Material to be Hauled Off-Site (yd^3): 8.12

- Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

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

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

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

2.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.634	000.007	000.676	005.626	000.017	000.015		000.033	00364.981
LDGT	000.819	000.010	001.163	008.688	000.019	000.017		000.034	00487.852
HDGV	001.292	000.015	002.999	025.303	000.045	000.040		000.045	00760.330
LDDV	000.265	000.003	000.321	003.488	000.007	000.006		000.008	00370.175
LDDT	000.567	000.005	000.859	007.093	000.008	000.008		000.008	00577.145
HDDV	000.970	000.014	009.604	003.036	000.373	000.343		000.031	01589.614
MC	002.482	000.008	000.828	015.260	000.029	000.026		000.051	00398.308

2.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD) / 2000$

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

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

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

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

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

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

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

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

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

2.3 Building Construction Phase

2.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1

Start Year: 2023

- Phase Duration
Number of Month: 12
Number of Days: 0

2.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 843.77
Height of Building (ft): 8
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

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

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

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

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

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

2.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0754	0.0013	0.5027	0.3786	0.0181	0.0181	0.0068	128.79
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**

Emission Factors	0.0258	0.0006	0.1108	0.2145	0.0034	0.0034	0.0023	54.454
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.282	000.002	000.220	003.283	000.007	000.006		000.023	00323.276
LDGT	000.358	000.003	000.388	004.597	000.009	000.008		000.024	00417.298
HDGV	000.706	000.005	001.021	015.119	000.022	000.019		000.045	00770.239
LDDV	000.112	000.003	000.133	002.524	000.004	000.004		000.008	00313.527
LDDT	000.253	000.004	000.380	004.330	000.007	000.006		000.008	00445.483
HDDV	000.493	000.013	004.921	001.743	000.169	000.155		000.028	01496.485
MC	002.436	000.003	000.747	012.951	000.027	000.024		000.054	00397.607

2.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

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

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

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

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

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

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

- Worker Trips Emissions per Phase

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

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

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

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

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

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

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

1. General Information: The Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the General Conformity Rule (GCR, 40 CFR 93 Subpart B). ACAM is a computer model developed by the U.S. Air Force that is used in the determination of General Conformity applicability for proposed actions in nonattainment or maintenance designated areas. This report provides a summary of the ACAM analysis.

a. Action Location:

Base: ARLINGTON NATIONAL CEMETARY
State: Virginia
County(s): Arlington
Regulatory Area(s): Washington, DC-MD-VA

b. Action Title: Security Upgrades Arlington National Cemetery

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2023

e. Action Description:

The Proposed Action comprises the following projects described in The Environmental Assessment Sections 2.2.1 through 2.2.4. These projects were identified to address deficiencies in security that can be implemented within the next 5 years at ANC. Figure 2 1 shows the locations of these projects.

f. Point of Contact:

Name: Brad Boykin
Title: CTR
Organization: Leidos
Email: boykinb@leidos.com
Phone Number: 979-575-3552

2. Analysis: Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are: _____ applicable
__X__ not applicable

Conformity Analysis Summary:

2023

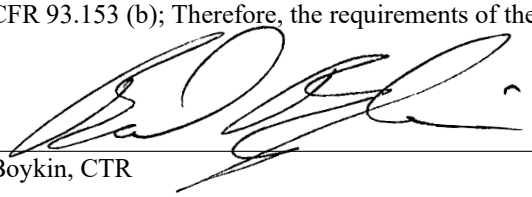
Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Washington, DC-MD-VA			
VOC	0.452	50	No
NOx	2.378	100	No
CO	3.605	100	No
SOx	0.009		
PM 10	0.189		
PM 2.5	0.090		
Pb	0.000		
NH3	0.002		

CO2e	823.5		

2024 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Washington, DC-MD-VA			
VOC	0.000	50	No
NOx	0.000	100	No
CO	0.000	100	No
SOx	0.000		
PM 10	0.000		
PM 2.5	0.000		
Pb	0.000		
NH3	0.000		
CO2e	0.0		

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.



Brad Boykin, CTR

27 JAN 2022
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Appendix C
Coastal Zone Management Act
Coastal Consistency Determination

1

This Appendix to Contain Record of Coastal Consistency Determination Consultation When Completed.

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Appendix D
Public Involvement

1

This Appendix to Contain Record of Public Involvement When Completed.

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