



Rehabilitation of Arlington House, Outbuildings & Grounds



Environmental Assessment

For the

Arlington House, The Robert E. Lee Memorial

(An Administrative Unit of the George Washington Memorial Parkway)

Arlington, Virginia

EXECUTIVE SUMMARY

BACKGROUND

Arlington House, the Robert E. Lee Memorial, is located in Arlington, Virginia and bordered on the north, south and east by Arlington National Cemetery and on the west by Fort Myer. Formerly the home of Robert E. Lee, Arlington House was designated as a Memorial to the General by Congress in 1955. The property includes Arlington House, the North and South Slave Quarters, the Flower Garden, and the Kitchen Garden with a 1880s Potting Shed (Museum) and 1920s Comfort Station located nearby. Arlington House and Arlington Cemetery attracts many visitors, with approximately 500,000 tourists in 2005. Administration for Arlington House falls under the authority of the George Washington Memorial Parkway, National Park Service (NPS).

The NPS proposes to rehabilitate Arlington House, its outbuildings, and grounds in a manner that would not impact the integrity of the elements for which it was founded. To accomplish this, the NPS must complete an environmental analysis in accordance with the National Environmental Policy Act (NEPA). Alternatives for rehabilitation are addressed in this Environmental Assessment (EA).

PURPOSE OF THE ACTION

The purpose for taking this action is to rehabilitate Arlington House, its outbuildings, and the historic grounds in a manner that protects and maintains the cultural resources and values for which the Robert E. Lee Memorial was established. Furthermore, it benefits the visiting public by providing a safe environment where people can interpret the history and significance of the site through a more accurate representation of the 1861 historic landscape.

NEED FOR THE ACTION

The need for rehabilitation results from several issues that affect the proper management and interpretation of the memorial site. These issues include:

- Previous reconstructions of the North and South Slave Quarters are now known to be inaccurate, based on recent research
- The lack of a fire protection system to safeguard historic buildings and the museum collections housed within those structures
- A deficient mechanical system not capable of preserving the historic buildings and collections
- The presence of the non-contributing 1921 Comfort Station in the historic Kitchen Garden
- The inappropriate interpretation and recreation of the 1861 Work Yard and Kitchen Garden
- The deteriorated foundations of Arlington House due to previous drainage problems

ALTERNATIVES CONSIDERED

The NPS explored and objectively evaluated two (2) alternatives: the No Action Alternative and the Action Alternative – The Rehabilitation of Arlington House, Outbuildings and Grounds.

No Action Alternative

Under the No Action Alternative, the NPS would continue with its current maintenance protocols within Arlington House, its outbuildings, and grounds. There would be no historic rehabilitation work on any of the Slave Quarters or Kitchen Garden. The park would continue to strive to protect resources to the extent possible under existing policy requirements and guidelines. Furthermore, visitors would continue to have access to the site and to tour Arlington House under current park operational policies.

Rehabilitation of the Arlington House, Outbuildings, and Grounds

Under this alternative, the NPS proposes the following:

- Rehabilitate the North and South Slave Quarters
- Install a new fire suppression and detection system within Arlington House and its outbuildings
- Install a new climate management system
- Construct a new Mechanical Bunker to support these systems
- Remove the existing 1921 Comfort Station and replace it with a modern handicap accessible facility in a different location on the site
- After the Comfort Station is removed, the Kitchen Garden would be rehabilitated to its original configuration and would more accurately depict the historic significant period
- Improve site accessibility and stabilize soils within the historic area
- Stabilize the foundation and improve the drainage around Arlington House

Furthermore, during construction, visitors would have access to the Museum in the Potting Shed, the path on the east side of the Kitchen Garden, the Portico of the Mansion, and the grounds east and south of the Mansion. A more detailed description of these rehabilitation efforts can be found later in this document.

ENVIRONMENTAL CONSEQUENCES

Impacts of the rehabilitation alternative were assessed in accordance with *Director's Order 12: Conservation Planning, Environmental Impact Analysis, and Decision-making*. The *Director's Order 12 Handbook* requires that impacts to park resources be analyzed in terms of their context, duration, and intensity. It is important for the public and decision-makers to understand the implications of those impacts in the short- and long-term, cumulatively, and within context, based on an understanding and interpretation by resource professionals and specialists.

To determine impacts, methodologies were identified to measure the change in park resources that would occur with the implementation of the Arlington House rehabilitation project. Thresholds were established for each impact topic to help understand the severity and magnitude of change in resource conditions, both adverse and beneficial.

The alternative was compared to the baseline to determine the context, duration, and intensity of resource impacts. The baseline, for the purpose of impact analysis, is the current condition of Arlington House, its outbuildings and grounds. Table A on the following page summarizes the results of the impact analysis for the impact topics assessed for this EA.

Note to Reviewers and Respondents:

If you wish to comment on the EA, you may mail or e-mail comments to the addresses listed below. NPS practice is to make public comments, including names and home addresses of respondents available for review during regular business hours. Individual respondents may request that their names and home address be withheld from the record, which will be honored to the extent allowable by law. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be available for public inspection in their entirety.

Mailed comments can be sent to:

Superintendent, George Washington Memorial Parkway
c/o Turkey Run Park
McLean, Virginia 22101

Comments can be sent by Email by following the appropriate links at:

<http://parkplanning.nps.gov/gwmp>

Table A: Summary of the Impact Analysis

Impact Topic	Alternative A No Action Alternative	Alternative B (NPS Preferred): Rehabilitation of Arlington House, Outbuildings, and Grounds
Soils	Implementation of the No Action Alternative would result in no direct, indirect, or cumulative beneficial or adverse impacts to soil characteristics in the study area. The No Action Alternative would not result in impairment of soils.	Implementation of Alternative B would result in adverse short-term minor impacts to soils due to the necessary disturbance, excavation, potential placement of fill, and the compaction of soils in and around the sites for the new Mechanical Bunker and Comfort Station. There would be no beneficial or adverse cumulative impacts associated with this alternative. Alternative B would not result in impairment of soils.
Vegetation	Implementation of the No Action Alternative could result in adverse long-term negligible impacts to vegetation due to some maintenance activities. Adverse long-term minor cumulative impacts to vegetation would also occur because of the expansion of Arlington National Cemetery. Impairment of vegetation resources would not occur under this alternative.	Implementation of Alternative B would result in adverse short-term negligible and long-term minor impacts to vegetation due to construction-related disturbance. Adverse long-term minor cumulative impacts to vegetation would also occur because of the expansion of Arlington National Cemetery. Impairment of vegetation resources would not occur under this alternative.
Archeology^{1, 2}	Implementation of the No Action Alternative would result in no direct, indirect, or cumulative beneficial or adverse impacts to archeological resources in the study area. The No Action Alternative would not result in impairment of archeological resources.	Activities associated with the implementation of Alternative B that would require subsurface excavation or ground disturbing activities could have adverse long-term negligible impacts to archeological resources. However, these impacts would be fully mitigated through archeological monitoring and documentation of significant finds. There would be no cumulative impacts to archeological resources associated with Alternative B. Alternative B would not result in impairment of archeological resources.
Museum Collections	Implementation of the No Action Alternative would likely result in adverse long-term minor impacts to the museum collections due to the lack of effective climate (humidity) controls. As there is no existing fire suppression system (sprinklers) in place, the collections are vulnerable to catastrophic loss, which could range from moderate to severe, depending on the extent of damage to the objects in the collection. No cumulative impacts or impairment to museum collections would occur under this alternative.	Implementation of Alternative B would result in a beneficial long-term minor impact to the museum collections, due to the implementation of climate (humidity) controls and fire suppression systems (sprinklers). The collections would be at some short-term risk of accidental damage during transport prior to construction activities, which could result in adverse long-term minor impacts. Precautions would be undertaken to fully mitigate these risks. There would be no cumulative impacts and no impairment of museum collections under this alternative.

Impact Topic	Alternative A No Action Alternative	Alternative B (NPS Preferred): Rehabilitation of Arlington House, Outbuildings, and Grounds
Historic Districts and Structures¹	The No Action Alternative would result in adverse long-term negligible impacts to the Arlington House National Register property because of NPS maintenance protocols. There would not be any cumulative impacts and no impairment of historic districts and structures associated with the No Action Alternative. No impairment to historic districts or structures would occur under the No Action Alternative.	Implementation of Alternative B would result in adverse short-term minor impacts to the Arlington House National Register property. During construction and rehabilitation activities adverse long-term minor impacts would occur to the National Register property because of the new Comfort Station. Beneficial long-term minor impacts would occur because of stabilization of the Arlington House, and beneficial moderate long-term impacts would occur because of the rehabilitation of the Kitchen Garden to its 1861 appearance. These impacts would result in no adverse effect under Section 106. There would be no cumulative impacts and no impairment of historic districts and structures under this alternative.
Cultural Landscapes¹	As there would not be any construction activities associated with the No Action Alternative, no impacts to cultural landscapes (no adverse effect in terms of Section 106) would occur. There would not be any cumulative impacts or impairments to cultural landscapes under this alternative.	Implementation of Alternative B would result in result in adverse short-term minor impacts to the Arlington House cultural landscape during construction. Adverse long-term minor impacts to the cultural landscape would occur from actions related to the Mechanical Bunker and the new Comfort Station. Beneficial long-term minor impacts to the cultural landscape would occur from the stabilization of the Arlington House, and moderate long-term beneficial impacts related to the rehabilitation of the Kitchen Garden and installation of new fire and climate management systems into contributing buildings. Under Section 106, no adverse effect would occur because of these actions. There would be no cumulative impacts and no impairment of cultural landscapes in this alternative.
Visitor Use and Experience	Implementation of the No Action Alternative would result in adverse long-term minor to moderate impacts to visitor use and experience from the current lack of an adequate climate management system, the continued degradation of Arlington House, its outbuildings, and collection, and lack of an ADA compliant Comfort Station. Adverse long-term minor cumulative impacts to visitor use and experience would be expected as a result of implementing this alternative the No Action Alternative.	Implementation of Alternative B would result in adverse short-term minor to moderate impacts to visitor use and experience during construction. While there would be adverse short-term impacts as a result of construction activities associated with this alternative, the installation of a new fire suppression and climate management system and fully ADA compliant Comfort Station would result in beneficial long-term minor impacts. Beneficial long-term minor cumulative impacts to visitor use and experience would be expected as a result of implementing Alternative B.

Impact Topic	Alternative A No Action Alternative	Alternative B (NPS Preferred): Rehabilitation of Arlington House, Outbuildings, and Grounds
Health and Safety	Implementation of the No Action Alternative would result in adverse long-term minor impacts to health and safety due to lack of an adequate climate management and fire suppression system. Cumulative impacts would be adverse minor long-term because, during the summer, visitors to the cemetery who also find themselves visiting Arlington House would find no relief from the heat and humidity and could become more susceptible to heat related illnesses.	Implementation of Alternative B could result in adverse short-term negligible to minor short-term impacts to human health and safety resulting from construction activities. Beneficial long-term minor impacts to public health and safety would occur as a result of updating the climate management and fire suppression systems. Beneficial long-term minor cumulative impacts would also occur because of these facility improvements.
Park Operations and Management	Implementation of No Action Alternative would result in minor long-term adverse impacts to park operations and management as increased maintenance to park structures and infrastructure would be required as drainage problems continue and the Memorial would continue to operate without an adequate climate management system. Adverse long-term minor cumulative impacts to park operations and management would result from the potential increase in visitation due the current and future planned expansion of Arlington Cemetery.	Implementation of Alternative B would result in adverse short-term minor impacts to park operations and management during rehabilitation activities. By resolving drainage problems and installing new and modern mechanical systems less future maintenance would be required, resulting in beneficial long-term minor impacts. Adverse long-term minor cumulative impacts to park operations and management would result from the potential increase in visitation due the current and future planned expansion of Arlington Cemetery.

¹The descriptions of effects on cultural resources that are presented are intended to comply with the requirements of both NEPA and Section 106 of the NHPA. In accordance with the Advisory Council's regulations implementing Section 106 (36 CFR Part 800, *Protection of Historic Properties*), impacts on cultural resources were identified and evaluated by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that are either listed in or eligible to be listed in the National Register; (3) applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and (4) considering ways to avoid, minimize, or mitigate adverse effects. .

² A Phase I archeological survey has been completed that examined the Areas of Potential Effect. As a result, some areas have been cleared for construction, and some archeological resources have been identified that will be avoided during construction and preserved. Monitoring of construction was recommended in some areas. If unexpected archeological resources are identified during construction, ground disturbing activities will cease and the newly identified resources will be evaluated and documented. Changes or to the construction program that result in an expansion of the Area of Potential Effect will require additional archeological investigations.

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PURPOSE AND NEED FOR ACTION

Arlington House, The Robert E. Lee Memorial, one of the most visited house museums in the United States, is located in the center of Arlington National Cemetery, Arlington, Virginia, and is administered under the authority of the George Washington Memorial Parkway, National Park Service (NPS). Arlington House was constructed in three phases between 1802 and 1817 by George Washington Parke Custis. Arlington House was the home of Robert E. Lee, from his marriage to Mary Custis in 1831 until his resignation from the U.S. Army in 1861 to assume command of Virginia's military forces in the Civil War. Arlington House also has two Slave Quarters, constructed c.1818, which was in use until the property was seized by the U.S. Army in 1861. The War Department transferred Arlington House to the National Park Service in 1933. Congress designated Arlington House as a Memorial to Robert E. Lee in 1955, with direction to restore the historic site to circa 1861. The 1861 historic grounds of the property encompass Arlington House, the North and South Slave Quarters, the Flower Garden, and Kitchen Garden. The Potting Shed, built in the 1880's by the U.S. Army, is within the northern extent of the circa 1861 Kitchen Garden and currently is used as a museum. A Comfort Station with mechanical basement, constructed in 1921 by the War Department is directly next to North Slave Quarters and is within the southern portion of the historic Kitchen Garden. Since the period of significance is during Robert E. Lee's residency, the Comfort Station and Potting Shed are not considered contributing structures.

The National Park Service proposes to rehabilitate Arlington House, its outbuildings, and grounds. This environmental assessment (EA) evaluates two (2) alternatives concerning this rehabilitation, which include the Action and No Action Alternative.

The EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations, 40 CFR Parts 1500-1508, and National Park Service Director's Order #12 and Handbook, *Conservation Planning, Environmental Impact Analysis, and Decision-making* (DO-12). Compliance with Section 106 of the National Historic Preservation Act of 1966 is occurring simultaneously with the NEPA process.

PURPOSE OF THE ACTION

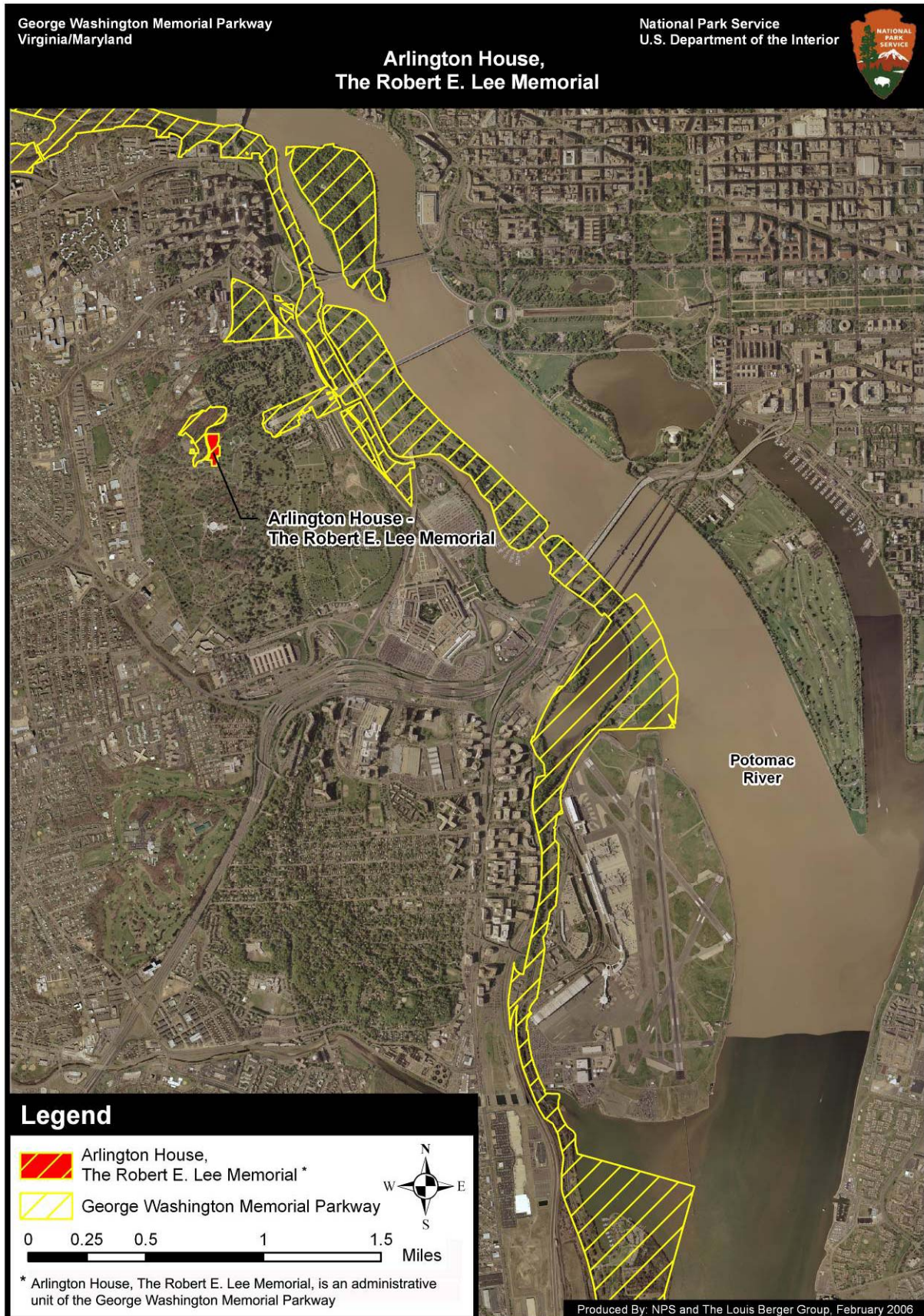
The purpose for taking this action is to rehabilitate Arlington House, its outbuildings, and the historic grounds in a manner that protects and maintains the cultural resources and values for which the Robert E. Lee Memorial was established. Furthermore, it benefits the visiting public by providing a safe environment where people can interpret the history and significance of the site through a more accurate representation of the 1861 historic landscape.

NEED FOR THE ACTION

The need for action is a result of long-standing problems including:

- Previous reconstructions of the North and South Slave Quarters are now known to be inaccurate, based on recent research
- The lack of a fire protection system to safeguard historic buildings and the museum collections housed within those structures
- A deficient mechanical system not capable of preserving the historic buildings and collections
- The presence of the non-contributing 1921 Comfort Station in the historic Kitchen Garden
- The inappropriate interpretation and recreation of the 1861 Work Yard and Kitchen Garden
- The deteriorated foundations of Arlington House due to previous drainage problems

FIGURE 1: GENERAL VICINITY OF ARLINGTON HOUSE



PURPOSE AND SIGNIFICANCE OF THE GEORGE WASHINGTON MEMORIAL PARKWAY

National Park System units are established by Congress to fulfill specified purposes. A park's purpose is the fundamental building block for its decisions to conserve resources while providing for the "enjoyment of future generations." Arlington House, the Robert E. Lee Memorial is administered as a unit of the George Washington Memorial Parkway.

Establishment — In 1924, Public Law 202 established the National Capital Park Commission and broadly mandated the commission to "...prevent pollution of Rock Creek, and the Potomac and Anacostia Rivers, to preserve forests and natural scenery in and about Washington." In 1930, the Capper-Cramton Act (Public Law 284) authorized the funding and conditions for the Park and National Capital Commission to acquire properties for its designated purpose. The Capper-Cramton Act appropriated funds for "acquiring and developing...in accordance with the provisions of the Act of June 6, 1924, entitled 'An Act providing for a comprehensive development of the park and playground system of the National Capital,' as amended, such lands in the States of Maryland and Virginia as are necessary and desirable for the park and park-way system of the National Capital."

The Capper-Cramton Act defined the boundaries of the park "to include the shores of the Potomac, and adjacent land, from Mount Vernon to a point above Great Falls on the Virginia side, except within the City of Alexandria, and from Fort Washington to a similar point above the Great Falls on the Maryland side, except within the District of Columbia." The Act also provided for preservation of forests and scenery.

Purpose — As stated in the Capper-Cramton Act of 1930, the purpose of the George Washington Memorial Parkway and said lands, including the Mount Vernon Memorial Highway, is to:

- Protect and preserve the natural scenery of the Gorge and the Great Falls of the Potomac River; and
- Preserve the historic Patowmack Canal.

According to the Statement for Management (NPS 1992), the purpose of the George Washington Memorial Parkway is to:

- Preserve the Potomac River shoreline from pollution and private development;
- Provide for a variety of recreational needs of the Washington Metropolitan area; and
- Provide a scenic Memorial roadway to the Nation's Capital and Mount Vernon Estate.

Additional purposes of the parkway and its administered units, as stated in the 2001-2005 Strategic Plan, are to:

- Construct and maintain a suitable Memorial highway with trees and landscaping;
- Function as a part of the comprehensive park and playground system of the Nation's Capital;
- Serve as a memorial to George Washington between Mount Vernon and Great Falls;
- Pay honor to Robert E. Lee and recognize his military accomplishments and his contributions to reuniting the Nation after the Civil War;
- Tell the early story of the American Red Cross through the interpretation of the life and times of its founder, Clara Barton;
- Provide a memorial to honor President Theodore Roosevelt and a natural park for the recreation and enjoyment of the public;
- Preserve the area designated as Dyke Marsh so that fish and wildlife development and wetland habitat are paramount; and
- Honor military and civilian organizations and those Americans whose contributions have influenced and continue to shape our Nation's history, with monuments such as the U.S. Marine Corps War Memorial and the Lyndon Baines Johnson Memorial Grove.

Significance — Park significance statements capture the essence of a park's importance to the nation's natural and cultural heritage. Understanding park significance helps managers make decisions that preserve the resources and values necessary to the park's purpose. The following significance statements recognize the important features of the George Washington Memorial Parkway (NPS 1997).

- The parkway is a gateway to the Nation's Capital and Mount Vernon, linking important sites associated with the life and activities of President George Washington and includes historic and cultural sites associated with the development of the Federal City.
- The parkway has a role of protecting approximately 40 miles of the Potomac River shoreline including the gorge and significant portions of the 16 tributaries to the river leading into the Chesapeake Bay. From the Great Falls of the Potomac to Mount Vernon, the parkway preserves several examples of natural ecosystems with a diverse habitat ranging from upland forest to tidal marsh. These areas contain important habitat to many species and contribute to the health of the Potomac River watershed and the Chesapeake Bay (NPS 1997).
- The parkway links two historic military parks (Fort Hunt Park and Turkey Run Park) and memorials to Presidents George Washington, Theodore Roosevelt, and Lyndon Baines Johnson.
- The Parkway preserves the viewshed of the Potomac River shoreline and vistas of the Nation's Capital, its monuments, and memorials.
- The parkway is a major provider of recreational opportunities for local, national, and international visitors that are inherent to park resources.
- The mainline parkway is an identified element of the regional transportation system.

ARLINGTON HOUSE ENABLING LEGISLATION

The enabling legislation for Arlington House defined the period to which the Memorial was to be restored and interpreted, how it should be furnished, and why the American people thought the house should be restored and preserved for future generations.

In March 4, 1925, Congress passed legislation (Public Resolution – NO. 74) that authorized the restoration of the Lee Mansion in the Arlington National Cemetery, Virginia. As stated:

“Whereas the era of internecine strife among the States having yielded to on better understanding, of common loyalty, and a more perfect Union; And

Whereas, now honor is accorded Robert E. Lee as one of the great military leaders of history, whose exalted character, noble life, and eminent services are recognized and esteemed, and whose manly attributes of percept and example were compelling factors in cementing the American People in bonds of patriotic devotion and action against common external enemies in the war with Spain and in the World War, thus consummating the hope of a reunited country that would again swell the chorus of the Union: Therefore be it,

Resolved...that the Secretary of War be, and he is hereby, authorize and directed, as nearly as may be practicable, to restore the Lee Mansion in the Arlington National Cemetery, Virginia, to the condition in which it existed immediately prior to the Civil War and to procure, if possible, articles of furniture and equipment which were then in the Mansion and in use by the occupants thereof. He is also authorized, in his discretion, to procure replicas of the furniture and other articles in use in the Mansion during the period mentioned, with a view to restoring, as far as may be practicable, the appearance of the interior of the Mansion to the condition of its occupancy by the Lee family.”

For several years after the 1925 legislation was passed, when the War Department was responsible for managing the house and grounds, the enabling legislation was largely ignored. In direct violation of the

enabling legislation, the War Department, largely at the insistence of Commission of Fine Arts director Charles Moore, decided to furnish and interpret to “the first half of the republic.” This decision was based, in part, on the popularity of the Colonial Revival movement which was still popular in 1925. The Mansion was restored to the period of George Washington Custis, and no furniture manufactured after 1830 was accepted. This approach utterly negated Lee’s role and presence at Arlington. Even after the National Park Service assumed control of the Mansion in 1933, the “Custis” interpretation continued for many years.

In 1955, Public Law 107 officially designated Arlington House as a permanent Memorial to Robert E. Lee. Gradually the house was furnished and interpreted to the period of Robert E. Lee as specified in the original legislation. The law reads:

“Whereas of the two great figures therein involved, one, General Ulysses S. Grant, has been highly honored by becoming the President of the United States, but the other, Robert E. Lee, has never been suitably Memorialized by the National Government; and

Whereas Robert E. Lee had graduated by West point, dedicated himself to an Army career, and became the colonel in the United States Army, then the commander of the Confederate forces, attained world renown as a military genius, and after Appomattox fervently devoted himself to peace, to the reuniting of the Nation, and to the advancement of youth education and the welfare and progress of mankind, becoming president of the Washington and Lee University at Lexington, Virginia; and

Whereas the desire and hope of Robert E. Lee for peace and unity within our Nation has come to pass in the years since his death, and the United States of America now stands united and firm, indivisible, and unshakable; and whereas Public Resolution Numbered 74, Sixty-eight Congress, approved March 4, 1925, provided for the physical restoration of the Lee Mansion but did not dedicate the same as a permanent Memorial to Robert E. Lee: Now therefore be it

Resolved...That the Congress of the United States, at this anniversary time, does hereby pay honor and tribute to the everlasting memory of Robert E. Lee, whose name will ever be bright in our history as a great military leader, a great educator, a great American, and a truly great man through the simple heritage of his personal traits of high character, his grandeur of soul, his unfailing strength of heart...”

Although many changes have been made to adhere to the enabling legislation since that time, the process of restoring Arlington to the “period immediately prior to the Civil War” continues. In recent years, the staff of Arlington has increased its efforts to remain faithful to the spirit and dictates of the enabling legislation.

PROJECT BACKGROUND AND RELATED PLANS

In 1955 Congress designated Arlington House as “The Robert E. Lee Memorial” and mandated restoration to 1861 conditions. In 1966, the National Park Service adopted a Master Plan, which calls for restoration to circa 1861 of the “Mansion, South Servants Quarters, Flower Garden, North Servants Quarters, and Kitchen Garden”. The Master Plan called for demolition of both the existing “Comfort Station and Museum, construction of a new Interpretive and Control Facility with a Comfort Station, at north end of historic Kitchen Garden, and relocation of Sherman Drive northwest of the historic restoration area. The 1966 Master Plan has been partially implemented; and the Arlington House Site Manager has worked on a plan revision, that has not been approved by the Superintendent of George Washington Memorial Parkway.

The Potting Shed, constructed in the 1880s by the Army, is a two-story brick structure. A greenhouse, since demolished, that covered the east half of the Kitchen Garden was attached to the Potting Shed. Potting was performed below with quarters above. The Potting Shed currently houses museum exhibits

on the first floor and archival fabric storage on the second floor and is generally referred to as the "Museum". The Army also constructed a Comfort Station circa 1925 just north of the North Slave Quarters within the Kitchen Garden.

A Cultural Landscape Report drafted in 2001 depicts the full extent of the historic Kitchen Garden. Based on an 1865 topographic survey, it was suggested that the Kitchen Garden may have considerable fill and originally sloped to the east and west from the north-south central path. However, an archeological investigation of the garden concluded that this area has generally maintained its nineteenth-century contours, and that it was originally about 120 feet wide (O'Neill and LeeDecker 2005). The Cultural Landscape Report defines the Comfort Station as a non-contributing structure within the historic 1861 Kitchen Garden. A Historic Structures Report on the Slave Quarters indicates that the north elevation of the North Slave Quarters was a day-lighted, two-story structure, with the kitchen on lower level and cooks quarters above on the east end. It was indicated within the report that demolition of the existing 1921 Comfort Station is thus critical to rehabilitation of the North Slave Quarters and the Kitchen Garden to the 1861 condition (NPS 2004a).

The 1880s Potting Shed is remote from Arlington House and the Slave Quarters at the northern end of the Kitchen Garden, and the Cultural Landscape Report considers it as contributing to the overall cultural landscape as part of the Army's occupation of the Arlington Estate and development of Arlington National Cemetery after the Civil War. Treatment alternatives for the Kitchen Garden were developed by the National Park Service in 2005 that provides the basis for the alternatives in this environmental assessment. Additional archaeological compliance work was also done in 2003. The 1966 Master Plan called for demolition of the Museum (Potting Shed) and construction of an Interpretive and Contact Facility to include a Comfort Station at northern end of the circa 1861 Kitchen Garden. The Arlington House Site Manager has drafted a revision of the 1966 Master Plan (not approved), that retains and rehabilitates the Potting Shed for a proposed new use for park rangers and docents.

The rehabilitation of Arlington House, its outbuildings, and grounds was originally proposed and component costs estimated in 1998. The appropriation was partially funded in 2002 and fully funded in 2003. A Historic American Buildings Survey (HABS) documentation of Arlington House, the Slave Quarters and Grounds was started in 2002 and not completed until 2004. A Historic Structures Report for the Slave Quarters was started in 2002 with selective demolition for investigative purposes. The east end of the North Slave Quarters is now a temporary interpretive exhibit for illustrating building construction history. Archaeological compliance investigation inside and outside of the Slave Quarters of Arlington House was undertaken in the fall of 2003 and uncovered evidence of a dairy under the South wing (NPS 2004a).

In 2002-2003 discussions between the Site Manager, curator, historical architect, and interpretive staff and the Museum Resource Center on both Fire Suppression and a replacement HVAC system for Arlington House lead to:

- A fire suppression report from Fire Life Safety Network recommending both fire suppression alternatives and more fully addressable fire detection alternatives.
- A proposed climate management system for Arlington House and the Slave Quarters in accordance with NPS objectives that would permit retention of the artifacts and collections on site without destroying the structures, and which would eliminate/minimize electrical risks to the structures. Furthermore, it would remove mechanical equipment and bulky ductwork from basement of Arlington House, freeing the space for interpretation.

These objectives were incorporated into the scope of work for architect and engineering services, and the contract was awarded in March of 2004 (NPS 2004a).

NATIONAL PARK SERVICE PLANS, POLICIES, AND ACTIONS

The purpose, need, and objectives for projects proposed at Arlington House, the Robert E. Lee Memorial need to be consistent with the planning documents of the George Washington Memorial Parkway. These documents include the *2000 George Washington Memorial Parkway FY 2001-2005 Strategic Plan*, the *1992 Statement for Management for the George Washington Memorial Parkway*, the *2000 George Washington Memorial Parkway Government Performance Results Act (GPRA) Plan*, and various cultural and natural resource management documents (NPS 1997).

The *George Washington Memorial Parkway FY 2001-2005 Strategic Plan* (2000b) details the specific mission and goals to achieve Service-wide objectives as required by the Government Performance Results Act of 1993. Goals set forth in the Strategic Plan are measured by the Annual Performance Plan which shows the yearly progression toward successfully achieving the goals and mission of the park and NPS. Broad goal categories include disturbed lands, exotic vegetation, historic structures, and cultural landscapes. Each of these goals has objectives with results that are measurable.

The *Statement for Management for George Washington Memorial Parkway* (1992) states the purpose and significance of the park and sets forth a series of management objectives. General objectives under this plan include: maintain a safe park; create a barrier-free park; maintain forest health; maintain a high standard of interpretive/visitor service; continue to seek private sector involvement in maintaining and operating the parkway; encourage the improvement of concession services; integrate the Park's multi-use trails with regional bicycle trails; maintain the integrity of historic planting plans; and preserve and upgrade items of cultural value.

The *George Washington Memorial Parkway GPRA Plan* (NPS 1997) documents the purpose and significance of the numerous areas that comprise the parkway.

NPS management policy, *Director's Order #28, Cultural Resource Management Guideline* requires that "...pending planning decisions, all cultural resources will be protected and preserved in their existing conditions." In reaching decisions about resource treatment, moreover, preservation should always receive first consideration. Data recovery, rehabilitation, restoration, and reconstruction may sometimes serve legitimate management purposes. However, these treatments cannot add to and will likely subtract from the finite material, and sometimes even data sources, remaining from the past. Decisions about them should be based on awareness of long-range preservation goals and the interests and concerns of traditionally associated groups" and NPS cultural resource staff from National Capital Region.

NPS management policy, *Director's Order #42, Accessibility for Visitors with Disabilities in National Park Service Programs and Services* approaches the issue of accessibility in a comprehensive, organized way, rather than on a project-by-project basis (NPS 2000c). The primary goal of the program is to develop and coordinate a system-wide, comprehensive approach to achieving the highest level of accessibility that is reasonable, while ensuring consistency with the other legal mandates of conservation and protection of the resources NPS manages. Since 1980, the NPS has been working with accessibility coordinators in each regional office, and in parks and program offices, to: (1) assess the level of accessibility of various parks; (2) identify the barriers to accessibility; (3) develop policies and guidelines regarding appropriate methods and techniques for improving access; and (4) provide technical assistance and in-service training on effective approaches and program implementation.

There are two primary reasons why the NPS has initiated its present accessibility efforts: (1) there are various legal mandates that require all government agencies to make facilities and programs accessible; and (2) it simply makes good sense to employ principles of "universal design" in providing facilities for everyone, rather than for only a portion of the population. While there are sanctions that can be brought for non-compliance with the legal requirements, it is the second reason that, in the long term, is the most significant for accessibility in the parks. It is estimated there are over 54 million persons in our country today who meet the legal definition of a person with a disability. This includes those who have significant degrees of mobility, sensory, or cognitive limitations. Further, a majority of our nation's population can benefit from accessible facilities and programs given the growing percentage of our population that is age

65 or older; those with invisible disabilities, such as cardiac and respiratory problems; those who have temporary disabilities, such as broken arms or legs; parents with strollers and wheeled devices; and the families and friends who will be traveling with these individuals.

NPS management policy, *Director's Order #58: Structural Fire Management* sets forth the operational policies and procedures necessary to establish and implement structural fire management programs throughout the national park system. It states that NPS will enforce as minimum standards, the most current version of the National Fire Protection Association (NFPA)'s Fire Prevention Code (NFPA 1), Life Safety Code (NFPA 101), and all other associated codes and standards. The purpose of these codes is to prescribe minimum requirements necessary to establish a reasonable level of fire safety and to protect property from the hazard created by fire (NPS 2000c).

OTHER FEDERAL AGENCY PLANS, POLICIES, AND ACTIONS

The NPS is governed by laws, regulations, and management plans before, during, and following any management action related to the developed NEPA document.

National Environmental Policy Act, 1969, as Amended

The National Environmental Policy Act is implemented through regulations of the Council on Environmental Quality (40 CFR 1500-1508). The NPS has in turn adopted procedures to comply with the act and the CEQ regulations, as found in *Director's Order #12: Conservation Planning, Environmental Impact Analysis, and Decision Making* (2001), and its accompanying handbook.

National Parks Omnibus Management Act of 1998 (NPOMA)

NPOMA (16 U.S.C. 5901 et seq.) underscores NEPA in that both are fundamental to NPS park management decisions. Both acts provide direction for articulating and connecting the ultimate resource management decision to the analysis of impacts, using appropriate technical and scientific information. Both also recognize that such data may not be readily available and provide options for resource impact analysis should this be the case.

NPOMA directs the NPS to obtain scientific and technical information for analysis. The NPS handbook for *Director's Order 12* states that if "such information cannot be obtained due to excessive cost or technical impossibility, the proposed alternative for decision will be modified to eliminate the action causing the unknown or uncertain impact or other alternatives will be selected" (NPS 2001).

Redwood National Park Act of 1978, as Amended

All National Park System units are to be managed and protected as parks, whether established as a recreation area, historic site, or any other designation. This act states that the NPS must conduct its actions in a manner that will ensure no "derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress."

Americans with Disabilities Act of 1990s

This Act states, "Public accommodations must comply with basic nondiscrimination requirements that prohibit exclusion, segregation, and unequal treatment. They also must comply with specific requirements related to architectural standards for new and altered buildings; reasonable modifications to policies, practices, and procedures; effective communication with people with hearing, vision, or disabilities; and other access requirements. Additionally, public accommodations must remove barriers in existing buildings where it is easy to do so without much difficulty or expense, given the public accommodation's resources."

National Historic Preservation Act of 1966, as Amended

Section 106 of this act requires Federal agencies to consider the effects of their undertakings on properties listed or potentially eligible for listing on the National Register of Historic Places. All actions affecting the parks' cultural resources must comply with this legislation.

Historic Sites Act of 1935

This act declares as national policy the preservation for public use of historic sites, buildings, objects, and properties of national significance. It authorizes the Secretary of the Interior and the Director of the National Park Service to restore, reconstruct, rehabilitate, preserve, and maintain historic or prehistoric sites, buildings, objects, and properties of national historical or archaeological significance.

Director's Order #28: Cultural Resource Management

Director's Order #28 calls for the NPS to protect and manage cultural resources in its custody through effective research, planning, and stewardship and in accordance with the policies and principles contained in the NPS Management Policies (NPS 1998). This order also directs the NPS to comply with the substantive and procedural requirements described in the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. Additionally, the NPS will comply with the 1995 Servicewide Programmatic Agreement with the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers. The accompanying handbook to this order addressed standards and requirements for research, planning, and stewardship of cultural resources as well as the management of archeological resources, cultural landscapes, historic and prehistoric structures, museum objects, and ethnographic resources.

Executive Order 11593 - Protection and Enhancement of the Cultural Environment

This executive order directs the NPS to support the preservation of cultural properties and to identify and nominate to the National Register cultural properties within the park and to "exercise caution" to assure that any NPS-owned property that might qualify for nomination is not inadvertently transferred, sold, demolished, or substantially altered.

SCOPING

NEPA requires Federal agencies to seek outside suggestions and other input about what should be considered in the EA. This process, called "scoping," involves contacting other Federal, State, local agencies, and other stakeholders that might have an interest in the proposed action. During the scoping process, in early June of 2004, Arlington House staff met with representatives of Arlington National Cemetery, the George Washington Memorial Parkway, and staff from NPS at the National Capital Regional Office and participated in a Value Analysis Workshop, in order to come up with the most technically feasible and cost effective alternative for rehabilitating Arlington House, its outbuildings and grounds as determined by the overall purpose and need for the project. NPS DO #90, Value Analysis, established the value analysis program to analyze the functions of facilities, processes, systems, equipment, services, and supplies for the purpose of achieving essential functions at the lowest life-cycle cost consistent with required performance, reliability, quality, safety, and achievement of NPS mission priorities, such as resource protection, sustainability, and quality visitor experience (NPS, 2002).

In June and August of 2004, and February 2005, an interdisciplinary project team (IDT) conducted a series of mini-value analysis workshops to identify the preferred alternative to best meet the overall purpose and need of the proposed action. Location for a new comfort station was limited to the historic area because of restricted NPS land ownership within Arlington Cemetery, space limitations within existing NPS buildings outside the historic area, and to maximize convenience for visitors. Participants considered the 1966 Master Plan, the 2001 Cultural Landscape Report, and the Site Manager's proposed draft Master Plan revisions in the Value Analysis, especially in regards to the Potting Shed, location of Comfort Station and Mechanical Bunker, and extent of Kitchen Garden. During the workshop, the park

developed several design and layout alternatives for the proposed support facilities. Each alternative was ranked based on how well it met the following evaluation factors:

1. Protects and maintains park resources (Arlington House, outbuildings, the collection, and Historic Core areas);
2. Best restores the 1861 historic landscape;
3. Improves visitor experience;
4. Protects employee health and safety; and
5. Provides other advantages to the NPS.

The alternative that received the highest overall value rating was identified as the preferred alternative. Details of the preferred alternative and alternatives dismissed from further analysis are discussed in the “Alternatives” chapter.

Because it was determined that the proposed project was not likely to be controversial and that only limited resource impacts would result, the team determined that no initial public scoping would be required prior to the development of the Draft EA.

IMPACT TOPICS

The following impact topics are discussed in the “Affected Environment” chapter and analyzed in the “Environmental Consequences” chapter. These topics are resources of concern that could be beneficially or adversely affected by the actions proposed under each alternative and are developed to ensure that the alternatives are evaluated and compared based on the most relevant topics.

Soils

The proposed construction of a new Comfort Station and Mechanical Bunker could create earth disturbance which could lead to soil erosion and loss of topsoil. Therefore, soils are addressed as an impact topic in this EA.

Vegetation

The proposed construction of a new Comfort Station and Mechanical Bunker would likely necessitate the removal of up to six evergreen trees located on the side slopes on the western and northern edge of the site. Rehabilitation of the Kitchen Garden would require removal of 1930s plantings of holly hedges and ornamental trees. Therefore, vegetation will be addressed as an impact topic in this EA.

Visitor Use and Experience

Arlington House, the Robert E. Lee Memorial is visited by roughly 500,000 people per year and is one of the most visited house museums in the United States. Activities associated with the proposed Action Alternative would cause certain sections of the house, along with its outbuildings, to be closed to visitors during certain portions of the project. Activities associated with proposed Action Alternative would have short-term direct adverse impacts to the overall enjoyment and use of the site. However, because of the improved representation of the 1861 historic landscape, and the improved protection of the structures and artifacts housed within those structures, there would also be long-term beneficial impacts to visitor use and experience. Therefore, impacts to visitor use and experience are addressed as an impact topic in this EA.

Cultural Resources

Archeology. Ground disturbing activities associated with the proposed Action Alternative could potentially impact archeological resources found throughout the grounds of Arlington House. A Phase I Archeological Survey was conducted to identify the potential presence and location of such resources to ensure these resources are not disturbed by potential development. Therefore, impacts to archeological resources are addressed as an impact topic in this EA.

Impacts to Museum Collections. The proposed rehabilitation of Arlington House, its outbuildings, and grounds would necessitate the removal and safe storage of park's museum collection. Therefore, impacts to museum collections are addressed as an impact topic in this EA.

Impacts to the Historic Structures and the Cultural Landscape –The activities associated with the proposed alternative would directly impact Arlington House, the outbuildings and grounds through alterations of the historic fabric. Arlington House, the North and South Slave Quarters are historic structures that are part of the overall cultural landscape. Therefore both Historic Structures and Cultural Landscapes will be addressed as impact topics in this EA.

Health and Safety

While Arlington House and its outbuildings use a fire detection system (smoke detectors tied to a zoned fire detection and alarm system), there are no sprinkler systems installed. The only fire protection system includes three yard fire hydrants for the fire department to connect into. The lack of a fire suppression system creates safety concerns for both the visiting public and staff.

The excessive heat and humidity currently experienced by park visitors and staff during the summer months within Arlington House and its outbuildings has the potential to impact human health. In addition, the current Comfort Station is not compliant with the American Disabilities Act (ADA). The proposed improvements to the fire suppression and climate management systems at Arlington House, and the addition of an ADA compliant Comfort Station would likely have long-term beneficial impacts to the overall health and safety of park visitors and staff. Therefore, impacts to health and safety are addressed as an impact topic in this EA.

Park Operations and Management

Park operations include day-to-day operation and long-term management of resources. Because activities proposed under the Action Alternative would close down portions of Arlington House, responsibilities would be required of park staff to provide additional interpretation and respond to public inquiries regarding the activities occurring on the ground. Key park staff would be tasked with cataloging, protecting, packaging, and transporting the Collections. Park staff would also be required to ensure that the visiting public does not enter areas of the house closed due to construction. Therefore, impacts to park management and operations are addressed as an impact topic in this EA.

IMPACT TOPICS ELIMINATED (OR DISMISSED) FROM FURTHER ANALYSIS AND CONSIDERATION

The following impact topics were eliminated from further analysis in this EA. A brief rationale for dismissal is provided for each topic. With mitigation, potential impacts to these resources would be negligible, localized, and most likely immeasurable.

Water Quality

The 1972 Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, is a national policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters and to enhance the quality of water resources and to prevent, control, and abate water pollution. The NPS *2001 Management Policies* provides direction for the preservation, use, and quality of water originating, flowing through, or adjacent to park boundaries (NPS 2000a). The NPS seeks to restore, maintain, and enhance the quality of all surface and groundwaters within the parks consistent with the 1972 Federal Water Pollution Control Act, as amended, and other applicable Federal, State, and local laws and regulations.

Should the Action Alternative be selected, adverse impacts to local surface and subsurface water resources would be negligible. The nearest surface water to Arlington House is the Potomac River, which is located roughly one mile to the east and is separated by a mostly vegetated landscape (Arlington National Cemetery). The majority of work that would be conducted under the Action Alternative would occur within Arlington House and its outbuildings, and would not likely have any adverse or beneficial

impacts to the areas surface waters or water quality in general. Activities associated with the construction of a new Comfort Station and Mechanical Bunker would cause some ground disturbance, which could potentially lead to impacts to surface waters and water quality; however silt screens or other methods of erosion and sedimentation control would diminish any impact to surface and subsurface water resources. Surface rehabilitation and revegetation of disturbed land following construction would reduce soil erosion. With mitigation, implementation of the proposed Action Alternative would only have negligible adverse impacts to water quality and stream flows throughout construction and during post-construction revegetation activities. Adverse impacts to water quality as a result of the current management at Arlington House, which represents the No Action Alternative, would also be negligible as a result of surface runoff during storm events; therefore, this impact topic was dismissed from further analysis in this EA.

Wildlife and Wildlife Habitat

Activities associated with the project would disturb only previously developed areas that currently support little to no vegetation and are of low habitat value to wildlife. In areas adjacent to the site, wildlife has been habituated to human activity through years of close association with the Arlington National Cemetery and attendant human activity, vehicles, and noise reducing the overall value of this habitat within the general vicinity. In addition, almost all rehabilitation would be done in areas that have been generally disturbed to some degree by impacts from vehicles, heavy visitor use, and traffic from the adjacent road. These disturbances have further degraded any habitat value to wildlife.

Wildlife that does frequent the areas surrounding the site, particularly small mammals and reptiles, could be temporarily displaced during activities associated with the rehabilitation of Arlington House. Some individual animals could be forced to relocate outside the construction limits and would be susceptible to increased levels of predation or competitive stress. This displacement could result in a slight population depression adjacent to the site, but following project completion and successful revegetation efforts, wildlife would again reoccupy restored portions of the project area. Implementing the No Action Alternative would represent the current condition, and would have no beneficial or adverse impacts to wildlife or wildlife habitat. Implementing the Action Alternative would be expected to result in localized negligible adverse impacts on wildlife throughout the duration of the construction, rehabilitation, and operation of the site. Due to these limited impacts, this impact topic was dismissed from further analysis in this EA.

Threatened, Endangered, and Other Special Concern Species

The Endangered Species Act (1973), as amended, requires an examination of impacts on all Federally listed threatened or endangered species. NPS policy also requires examination of the impacts on Federal candidate species, as well as state-listed threatened, endangered candidate, rare, declining, and sensitive species. The NPS initiated informal consultation with the U.S. Fish and Wildlife Service (USFWS) in a letter dated March 07, 2006 regarding the presence of Federally listed or candidate species or critical habitat within or near the project area and the potential for such species or habitat to be impacted by the project. The USFWS responded on March 27, 2006 stating that there are no listed species found within or adjacent to the proposed project area, as a result, this impact topic was dismissed from further analysis in this EA.

Geology and Topography

The rehabilitation of Arlington House, its outbuildings and grounds would not create earth disturbance which would result in a loss of geologic and topographic resources. Implementing the No Action Alternative would represent the current conditions, and would not impact geology or topography. Therefore, this impact topic was dismissed from further analysis in this EA.

Paleontological Resources

No known paleontological resources occur within the project vicinity. Therefore, this impact topic was dismissed from further analysis in this EA.

Wild and Scenic Rivers

The Potomac River is not designated as a National Wild and Scenic river; therefore, this impact topic was dismissed from further analysis in this EA.

Geohazards

There are no known geohazards within the project area; therefore, this impact topic was dismissed from further analysis in this EA.

Prime Farmland

Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses. The soil qualities, growing season, and moisture supply are those needed for a well-managed soil to produce a sustained high yield of crops in an economic manner. The land can be cropland, pasture, rangeland, or other land, but not urban built-up land or water. Prime farmland is protected under the Farmland Protection Policy Act of 1981 to minimize the extent to which Federal programs contribute to the unnecessary or irreversible conversion of farmland to nonagricultural uses. Arlington National Cemetery and the portion of the George Washington Memorial Parkway where the Arlington House is located are not to be considered prime farmland; therefore, this impact topic was dismissed as an impact topic in this EA.

Marine or Estuarine Resources

There are no marine or estuarine resources within Arlington National Cemetery or the portion of the George Washington Memorial Parkway where the Arlington House is located. Therefore, this impact topic was dismissed as an impact topic in this EA.

Wetlands

Wetlands include areas inundated or saturated by surface or groundwater for a sufficient length of time during the growing season to develop and support characteristic soils and vegetation. The NPS classifies wetlands based on the U.S. Fish and Wildlife Service (USFWS) *Classification of Wetlands and Deepwater Habitats of the United States*, also known as the Cowardin classification system (Cowardin et al. 1979). Based on this classification system, a wetland must have one or more of the following attributes:

- The habitat at least periodically supports predominately hydrophytic vegetation (wetland vegetation);
- The substrate is predominately undrained hydric soil; or
- The substrate is non-soil and saturated with water, or covered by shallow water at some time during the growing season.

Based on field investigations, no wetlands were located within the proposed project area; therefore, this impact topic was dismissed from further analysis in this EA.

Floodplains

The portion of the George Washington Memorial Parkway where the Arlington House is located high above the Potomac River and is not located within the regulatory floodplain as defined in NPS guidelines (NPS 2003). Proposed rehabilitation activities would not impact floodplains in the vicinity of the Arlington House. Therefore, this impact topic was dismissed from further analysis in this EA.

Air Quality

The 1963 Clean Air Act, as amended (42 U.S.C. 7401 et seq.), requires Federal land managers to protect park air quality. The George Washington Memorial Parkway is located in the Washington Metropolitan Area moderate non-attainment zone for ozone. Should the No Action Alternative be selected there would be no impacts to air quality as this alternative represents the park's current condition. With the Action

Alternative, temporary increases in air pollution could occur during the construction of the new Comfort Station and the Mechanical Bunker, primarily from operation of construction equipment. However, due to the relatively small scope of the proposed construction, the impacts to air quality would be localized and negligible, lasting only as long as reconstruction activities occurred. The park's current level of air quality would not be affected by the proposed project; therefore, this impact topic was dismissed from further analysis.

Soundscapes

In accordance with NPS *Management Policies 2001* and DO-47, Sound Preservation and Noise Management, an important part of the NPS mission is preservation of natural soundscapes associated with National Park units. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and duration of human-caused sound considered acceptable varies among NPS units, as well as throughout each park unit, being generally greater in developed areas and less in undeveloped areas. Noise associated with the activities related to the rehabilitation activities of the Action Alternative would be of short duration and localized, and would not result in a measurable increase in the overall noise that currently occurs at Arlington House and Arlington National Cemetery, such as traffic noise from Sherman Drive, George Washington Memorial Parkway, Ronald Reagan National Airport, and noise associated with their daily operation. Therefore, this impact topic was dismissed from further analysis.

Traffic and Transportation

Arlington House is accessed from Sherman Drive via Memorial Drive, which is used both by park visitors and local commuter traffic. Under the Action Alternative, the road would remain open during rehabilitation activities; however, there could be some negligible short-term impacts to traffic with the increased truck traffic that would haul materials to and from the site and potentially cause slight delays in traffic on Memorial and Sherman Drive, there could be negligible adverse impact to the overall transit times through the area. Because traffic impacts along Memorial Drive would be negligible during construction under any of the proposed alternatives, this impact topic was dismissed from further analysis in this EA.

Land Use

The rehabilitation of Arlington House is on Federal property with Federal adjacent uses and would not impact occupancy, property values, ownership, or any type of land use; therefore, this impact topic was dismissed from further analysis in this EA.

Unique Ecosystems, Biosphere Reserves, World Heritage Sites

There are no known biosphere reserves, World Heritage sites, or unique ecosystems listed within or adjacent to Arlington National Cemetery or within or adjacent to the portion of the George Washington Memorial Parkway where Arlington House is located; therefore, this impact topic was dismissed from further analysis in this EA.

Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of Interior agencies be explicitly addressed in environmental documents. The Federal Indian Trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of Federal law with respect to American Indian tribes and Alaska Native entities. There are no Indian Trust resources in, near, or associated with Arlington House. The lands comprising the park

are not held in Trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Therefore, this impact topic was dismissed from further analysis in this EA.

Environmental Justice

On February 11, 1994, President Clinton issued Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.” This order directs agencies to address environmental and human health conditions in minority and low-income communities so as to avoid the disproportionate placement of any adverse effects from Federal policies and actions on these populations. Local residents may include low-income populations, but these populations would not be particularly or disproportionately affected by activities associated with the rehabilitation of Arlington House; therefore, this impact topic was dismissed from further analysis in this EA.

Socioeconomic Resources

NEPA requires an analysis of impacts to the human environment, which includes economic, social, and demographic elements in the affected area. The current conditions at Arlington House, as represented by the No Action Alternative, would not have any impacts to the socioeconomic resources of the surrounding area. Activities associated with the Action Alternatives may bring a short-term need for additional personnel in the park, but this addition would be minimal and would not affect the neighboring community’s overall population, income, and employment base.

The proposed action would neither change local and regional land use nor appreciably impact local businesses or other agencies. Implementation of the proposed action could provide a negligible beneficial impact to the nearby surrounding economies from short-term minimal increases in employment opportunities for the construction workforce and revenues for local businesses and government generated from construction activities. Since the impacts to the socioeconomic resources associated with the facility would be negligible, this impact topic was dismissed as an impact topic in this EA.

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ALTERNATIVES

Federal agencies are required by NEPA to explore a range of reasonable alternatives. The alternatives under consideration must include the No Action Alternative as prescribed by 40 CFR 1502.14. Project alternatives may originate from the proponent agency, local government officials, or members of the public, at public meetings, or during the early stages of project development. Alternatives may also be developed in response to comments from coordinating or cooperating agencies. The alternatives analyzed in this document, in accordance with NEPA, are the result of design scoping and internal scoping.

The NPS explored and objectively evaluated a range of alternatives; two (2) alternatives were carried forward for further analysis:

Alternative A — No Action Alternative

Alternative B — Rehabilitation of Arlington House, Outbuildings, and Grounds (NPS Preferred)

ALTERNATIVE A: NO ACTION ALTERNATIVE

The No Action Alternative serves as the baseline by which to compare all other alternatives. Under Alternative A (No Action Alternative), the NPS would continue with its current maintenance protocols within Arlington House and its outbuildings and grounds. Therefore, no historic rehabilitation work would be undertaken to any of the Slave Quarters or Kitchen Garden. The historic buildings would continue to operate without a modern climate management system, subjecting the structures and artifacts housed in the buildings to wide ranges in humidity and temperature. The current fire protection system does not include fire suppression (sprinklers) and consists of obtrusive fire alarms, smoke detectors, and fire extinguishers in every room, and would remain unchanged under this alternative, continuing the risk of a catastrophic loss by fire. The existing non-ADA accessible, non-contributing, 1920's Comfort Station would remain within the historic Kitchen Garden area. No efforts would be taken to either address the current foundation problems or improve the existing subsurface drainage in and around Arlington House. Despite the constraints associated with inadequate systems, under the No Action Alternative, the park would continue to strive to protect resources to the extent possible under existing policy requirements and guidelines. In addition, visitors would continue to have access to the site and to tour Arlington House under current park operational policies.

ALTERNATIVE B: ACTION ALTERNATIVE – REHABILITATION OF ARLINGTON HOUSE, OUTBUILDINGS & GROUNDS (NPS PREFERRED)

The NPS proposes the Rehabilitation of Arlington House, its outbuildings and grounds. Under Alternative B, the following work items would be included:

- Rehabilitate the North and South Slave Quarters
- Install new fire protection systems within Arlington House, both the North and South Slave Quarters, and the Potting Shed
- Install a new climate management system within Arlington House and both the North and South Slave Quarters
- Construct a new Mechanical Bunker to support the new systems
- Remove the existing 1921 Comfort Station and replace it with a modern ADA compliant facility at a different location on the site
- Improve site accessibility and stabilize soils within the historic area
- Stabilize the foundation of Arlington House
- Rehabilitate the Kitchen Garden

The proposed project area can be defined as that portion of the Memorial Site, located east of Sherman Drive, north of (but including) the South Slave Quarters (see Figure 2 on the following page), and extending to the northern boundary (NPS 2004a). During construction, the museum in the Potting Shed, the path on the east side of the Kitchen Garden, the Portico of the Mansion and the grounds east and south of the Mansion would remain open to visitors. This is the NPS preferred Action Alternative.

FIGURE 2: PROJECT AREA



REHABILITATION OF THE NORTH AND SOUTH SLAVE QUARTERS

NPS proposes the rehabilitation of the North and South Slave Quarters (see Figures 3 & 4) back to the 1861 condition for interpretation of African-American heritage. The rehabilitation would also maintain the structural integrity of the buildings by restoring the 1861 appearance of the brick masonry and provide an appropriate period appearance. Administrative use of east room of South Slave Quarters (storeroom for African American slavery exhibit), and west room of North Slave Quarters (upper and lower quarters for bookstore) would continue until other more appropriate space can be found.



FIGURE 3: CURRENT SOUTH SLAVE QUARTERS



FIGURE 4: CURRENT NORTH SLAVE QUARTERS

Specifically, the park proposes the following actions to occur at the North and South Slave Quarters:

Exterior Treatments:

- Remove the existing 1880s and 1960s era roof structural system including all non-original joists. Replace these with joists and rafters based on dimensions of surviving timbers above the North and South Slave Quarters.
- Replace the existing 1960s cement tile roof with a new wood shingle roof to match the 1860s appearance (simulated wood shingles may be used for fire resistance and sustainability).
- Rebuild the east chimney and west chimney above the roof level in the North Slave Quarters.

- Replace the gutters with larger half round gutters and install additional round drop downspouts on both sides of the east end of the roof to help address moisture problems in the North Slave Quarters.
- Remove the deteriorated, delaminated, and inappropriately patched smooth stucco and rough cast stucco finish on all elevations. Replace this with new materials that match nearest historic material in appearance and composition. Adopt a strict conservation plan for the surviving historic stucco that ensures the preservation of as much historic finish as possible in both Slave Quarters.
- Except for the center window of North Slave Quarters, existing window sashes would be removed and stored in the park collection, new restoration sash fabricated for four upper window openings based on surviving center window in the North Slave Quarters.
- Stabilize fresco plaques over doors.
- Replace the strap hinge hardware with hardware appropriate to the period and re-establish drip function of sills in both Slave Quarters.
- Reopen the north elevation window openings on the lower level and install six over three sashes in the North Slave Quarters.
- Replace inappropriate woodwork including plank water table on east elevation with two piece molding to match that on west elevation in the North Slave Quarters.
- Repair or replace deteriorated fascia board and other trim as necessary in both Slave Quarters.
- Employ a conservator to undertake the stucco restoration work since it involves significant historic material in both Slave Quarters.
- Paint exterior stucco in both Slave Quarters.
- Perimeter drainage and finish grade modified for accessibility in both Slave Quarters.
- Grades on both west and east sides of doorways would step down 6-inches to original grades.
- Replace doors from the 1860s based on historical drawings.
- Address the road at west elevation. Move road away from building and or add bollards.
- Replace soffit beneath north and south eaves with flush boards in the South Slave Quarters.
- Re-secure the vent/niche assembly in the center of the south elevation in the South Slave Quarters.
- Adjust grade at West Room (Selina Grey) to make accessible in the South Slave Quarters.
- Lower earth floor close to original grade to expose original hearth and reveal raised door threshold; provide viewing platform inside doorway for public interpretation.

Interior-West Room (Selina's) (South Slave Quarters):

- Selectively remove 1950s NPS plaster at east and west walls and fireplace breast to confirm current loft position and determine whether evidence of the original ceiling finish survives.
- Rebuild the chimney breast removing the step in the vertical plane and install a reproduction fireboard according to Historic Structures Report drawings.
- If no new evidence is revealed, retain joists in their current position, remove the current plaster ceiling from the joists, and install a new wood lath and plaster ceiling.
- Remove select areas of 1959 plaster and select areas of later fireplace alterations to determine historic dimensions and configuration. If no additional information is revealed, the firebox should be kept square and the dimensions of the opening altered to approximately 36-inches by 36-inches.

Interior Center Room (Smokeroom) (South Slave Quarters)

- Remove and salvage existing brick floor. Raise dirt floor level to door threshold.
- Create a basin-shaped hearth in the center of room with stones found during archeological investigations.
- Reinstall three reproduction center beams with meat hanging hooks in existing original pockets.

Interior-East Room (Summer Kitchen low, Cooks Quarters above) Treatments (North Slave Quarters):

- Remove by hand, the 1964 chimney and 1929 fireplace (below current NPS floor) from the east wall, documenting any new discoveries of historic plaster, finishes, evidences of flues or fireboxes, nailing blocks, or other features.
- Remove the existing 1964 NPS floating floor and ceiling.
- Install floor joists, bulkhead, and floor planks to divide summer kitchen and upper level living space.
- Install a landing and stairway along south wall descending into summer kitchen floor level and bulkhead. Provide peel back wall (opening) into upper level.
- Apply relatively rough lime plaster finish that matches period of significance finish that was uncovered during recent physical investigation to all exposed wall surfaces and to rebuild summer kitchen ceiling up to roof structure.
- Consolidate and preserve representative areas of original plaster and finish, and consider protective measures such as vented Plexiglas covering on select areas for interpretive purposes.
- Remove existing chimney and fireplace remnants and reconstruct the historic chimney along east wall based on measurements obtained during physical investigation, install a fireplace in the summer kitchen, document any new discoveries of historic plaster, finishes, evidence of flues or fireboxes, and nailing blocks or other features.
- Rebuild arch reinforcing buttress on north wall shoulder adjacent to west interior wall.
- Repair the 5-inch baseboard on north wall at upper level.
- Repair brick floor in kitchen, basket weave pattern, particularly around temporary columns. (1/3 of floor)

Interior – Center Room (Mammy's Room) Treatments:

- Remove infill from historic door openings to the east and west room upper level living spaces.
- Reconstruct vertical plank partition wall with door opening and plank door dividing space into forward entrance vestibule and rear living space in same position as historic wall.
- Install a reproduction ship's ladder below each opening to provide access from the vestibule floor level.
- Install new plank floor and baseboards using existing floating floor structure.
- Remove deteriorated or delaminated areas of earlier plaster layers to the nearest sound lay/area and patch these areas as well as areas of exposed brick with lime-based plaster, blending with the later NPS layer.
- Cover new patches with lime-based whitewash to blended with historic finish; note scoring in elect areas of original plaster finish should be duplicated when making repairs to these locations
- Remove board from ledge on back wall, historically, the feature had a plaster surface.

INSTALL FIRE SUPPRESSION SYSTEM WITHIN ARLINGTON HOUSE, SLAVE QUARTERS, POTTING SHED, AND NEW MECHANICAL BUNKER

The NPS proposes to provide a new wet pipe sprinkler system, in combination with a dry pipe system, for non-heated attic spaces and the Slave Quarters, along with an addressable fire alarm system in Arlington

House (Mansion), the Slave Quarters, the Potting Shed (Museum), and the new Mechanical Bunker in order to minimize the chance of a catastrophic loss of historic structures and collections by fire.

A wet pipe sprinkler system would offer fixed fire protection using piping filled with pressurized water. The dry pipe sprinkler system would be used in unheated attics of the structures subject to freezing temperatures. The dry system piping is charged with compressed air instead of water. Closed heat sensitive automatic sprinklers would be located in accordance with recognized installation standards and used to detect a fire. Upon operation, the sprinklers would distribute the water over a specific area to control or extinguish the fire. As the water flows through the system, an alarm would be activated to indicate that the system is operating. Only those sprinklers immediately over or adjacent to the fire would operate, minimizing water damage.

The entire system would be designed to permit quick, easy maintenance. In order to minimize intrusion into the historic fabric, a great deal of coordination would be taken to install the sprinkler piping in accordance with the National Fire Protection Association's (NFPA) 13 requirements. NFPA 13 provides industry standards for the installation and maintenance for indoor sprinkler systems. Additionally, sprinklers would be recessed into non-ornate plaster ceilings.

A remote central fire pump room in the proposed new Mechanical Bunker would contain the sprinkler equipment including a fire pump, control valves, and backflow preventor. Arlington House, North and South Slave Quarters, and Potting Shed would be tied into the central sprinkler system in the Mechanical Bunker. Compressors for the dry pipe sprinkler zones would be located in the basement of Arlington House and crawl spaces of the Slave Quarters.

In addition, a proposed new addressable fire alarm system would be installed in Arlington House, the Slave Quarters, the Potting Shed and the Mechanical Bunker. The fire detection system would have conventional smoke detectors with concealed wiring, except for laser sensors in any high risk areas (i.e. attics, basements and crawl spaces with electrical/mechanical equipment, compressors). The fire detection and alarm would be a microprocessor based addressable system to pinpoint the location of a fire with monitors located both in the proposed new Mechanical Bunker and the Old Administration Building.

INSTALL CLIMATE MANAGEMENT SYSTEM AND ASSOCIATED MECHANICAL BUNKER

The NPS proposes to replace the existing forced-air heating system in Arlington House, with a remote Climate Management System serving Arlington House and Slave Quarters. This would be necessary for preserving the artifacts and collections in place at Arlington House and the Slave Quarters, as well as the historic structures by tempering ventilation for seasonal relative humidity control and allowing for seasonal drifts in the interior temperature. Under this alternative, the relative humidity within the house would range between 30 percent and 70 percent. Each central system would produce a variable air volume (VAV) of conditioned air through medium pressure ductwork to VAV air terminal units (ATU), and each ATU would serve a single zone—one zone per Slave Quarters, and four zones for Arlington House. Duct work would be hidden from public view by running them through the floorboards, closets, or risers. The duct vents would be small, and placed inconspicuously within attics, under second floor of Arlington House and behind non-ornate plaster ceilings.

Under this alternative, the park proposes to install a VAV double wall modular air handling unit (AHU), air cooled chiller and condenser, gas-fired boiler, humidifier, VAV return fan and system pumps. The air cooled condenser would be shielded from view. This system would provide precise temperature and humidity controls over the tempered air. The system would also be the most energy efficient and use gas for heat and electric power for pumps and fans, and the bulk of the machinery would be located within the proposed Mechanical Bunker. The new Mechanical Bunker would be built along the western edge of the Kitchen Garden, cut into the slope facing Sherman Drive, outside the historic area. The Mechanical Bunker would be built underground with a "green roof", and would not be visible from Kitchen Garden. This proposed bunker would also house the mechanical systems necessary to run the proposed fire suppression and alarm system. The routing and placing of all new mechanical, electrical and plumbing

utilities underground has been investigated and cleared by archeologists. The existing utilities trench would be reused. Utilities would enter historic buildings underneath the building foundations and would not go through historic foundation walls.

DESIGN / CONSTRUCT NEW COMFORT STATION

Under this alternative, the park proposes to demolish the existing non-contributing 1921 Comfort Station (see Figure 5) along with its obsolete mechanical basement, remove the temporary accessible port-a-toilet, and construct a new Comfort Station, along with a separate underground Mechanical Bunker outside the historic grounds. The current Comfort Station provides six toilets for women, and three toilets and four urinals for men, but is not ADA accessible. Making the structure accessible would involve major entry alterations, extensive ramps, and a 50% reduction in number of fixtures. It is located directly north of the North Slave Quarters, and is considered a non-contributing structure within the 1861 historic grounds and an intrusion preventing proper restoration and interpretation of both the Kitchen Garden and North Slave Quarters. The existing mechanical basement below provides restricted mechanical space for gas-fired boiler and hot water pumps, and the electrical panels. Presently, continued water penetration through the basement wall into the electrical room poses a safety hazard.

FIGURE 5: EXISTING COMFORT STATION



Under this alternative, the existing Comfort Station would be removed due to its location adjacent to the North Slave Quarters, and a new Comfort Station would be constructed in the northwest corner of the site, outside of the core historic management zone of Arlington House (see Figure 6). The facilities would be ADA accessible and maximize sustainability practices to the greatest extent possible. The design of this structure could accommodate up to 4 water closets/urinals in each restroom (see Figure 7).

The proposed Comfort Station would be set outside of the north boundary of the historic

Kitchen Garden grounds as defined by the NPS 1966 Master Plan. The location of this non-contributing structure would be at the edge of the historic zone and would be less visible and would allow a more accurate interpretation of the 1861 Kitchen Garden. The footprint of the building would be angled, departing from the grid of the historic structures (See Figure 6).

There are two options for the Comfort Station. The first option would be a newly constructed building designed with a service life of 25 years. The second option, due to budget limitations, may be mobile Comfort Station trailer units (one for men and one for women) (see Figures 8 & 9). These units would be installed on or near the proposed footprint of the new Comfort Station. These units measure 10 feet by 36 feet (combined would equal 720 square feet). The men's unit contains one handicap accessible stall, five urinals, two standard stalls and five sinks. The women's unit contains one handicap accessible stall, seven standard stalls and five sinks. In both units there is lighting, heated water, HVAC and one electric hand dryer/blower. Drinking fountains could be added to either or both units. The units would be transported by a tractor truck and can be towed to the desired location without any adverse impacts to the historic structures on the site. The units would be plumbed with potable water via an extension from the existing fire line and plumbed with sewer through the addition of a new sewer line running generally west to Sherman Drive where it would tie into the existing sewer system via an existing manhole. Both units may be painted and/or screened with lattice or informal screen planting to mitigate their impact on the viewshed of site.

FIGURE 6: SITE PLAN FOR THE PROPOSED COMFORT STATION

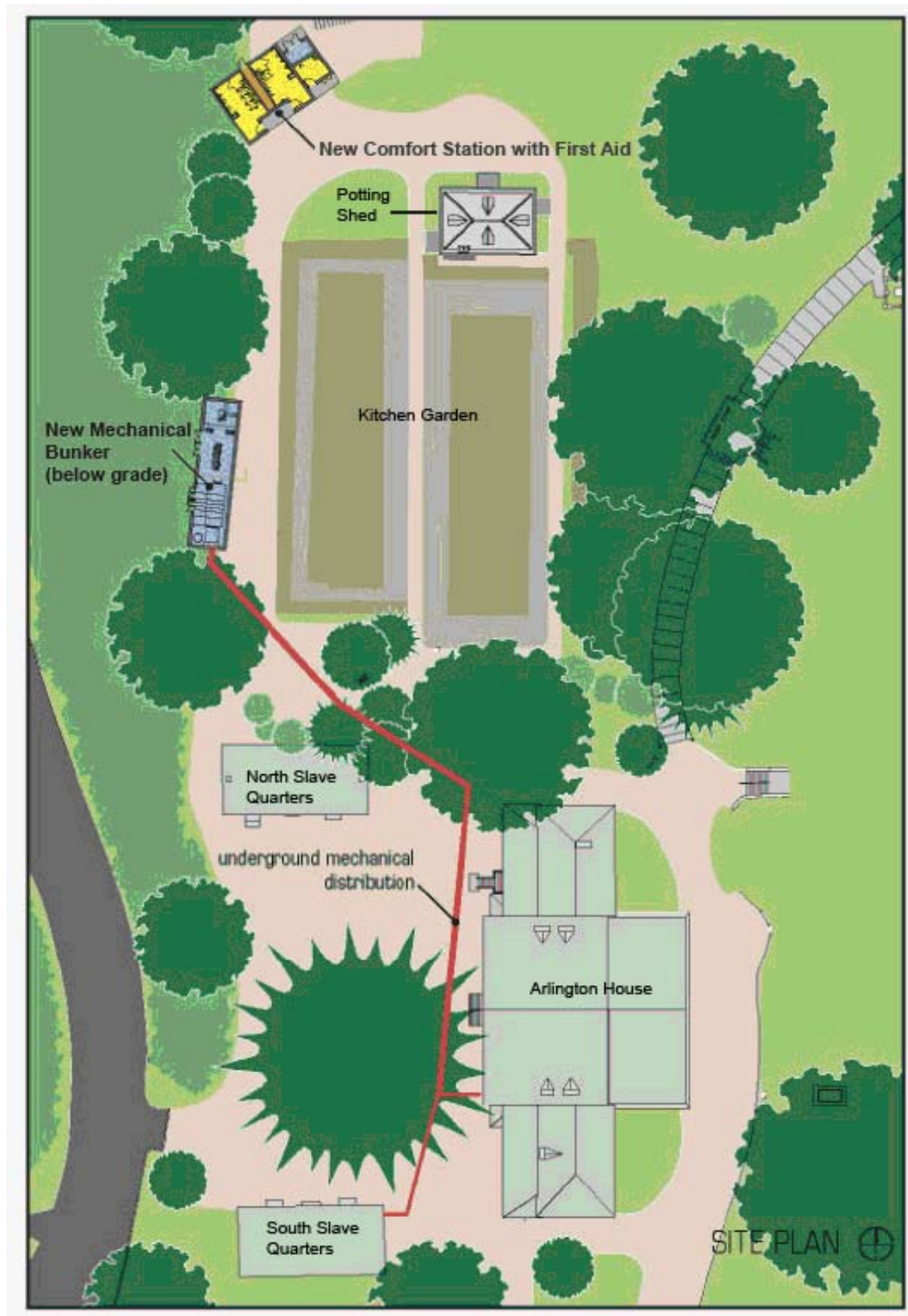


FIGURE 7: PRELIMINARY DESIGN FOR THE PROPOSED MECHANICAL BUNKER AND COMFORT STATION

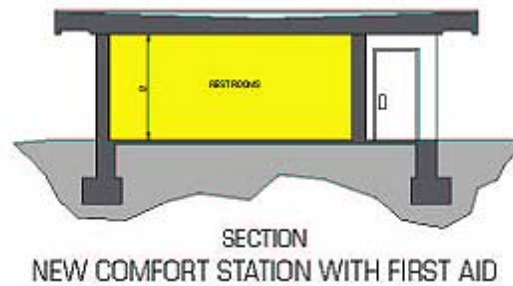
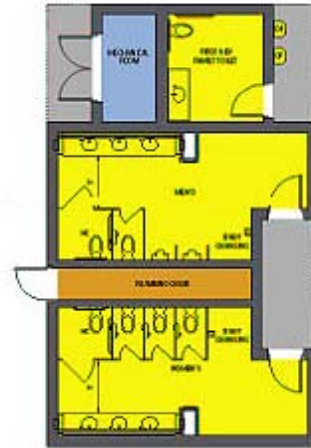
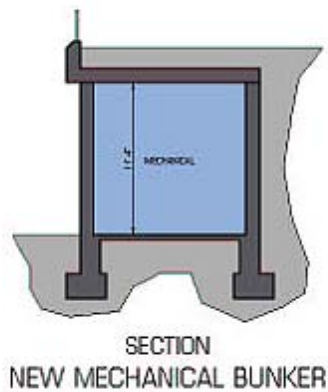
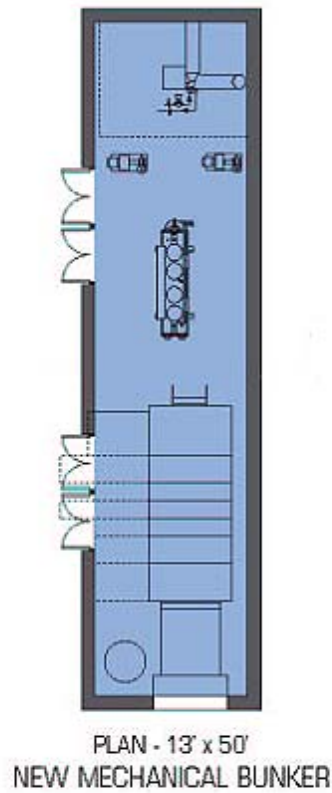


FIGURE 8: EXAMPLE OF MOBILE COMFORT STATION TRAILER UNITS EXTERIOR



FIGURE 9: EXAMPLE OF MOBILE COMFORT STATION TRAILER UNITS INTERIOR



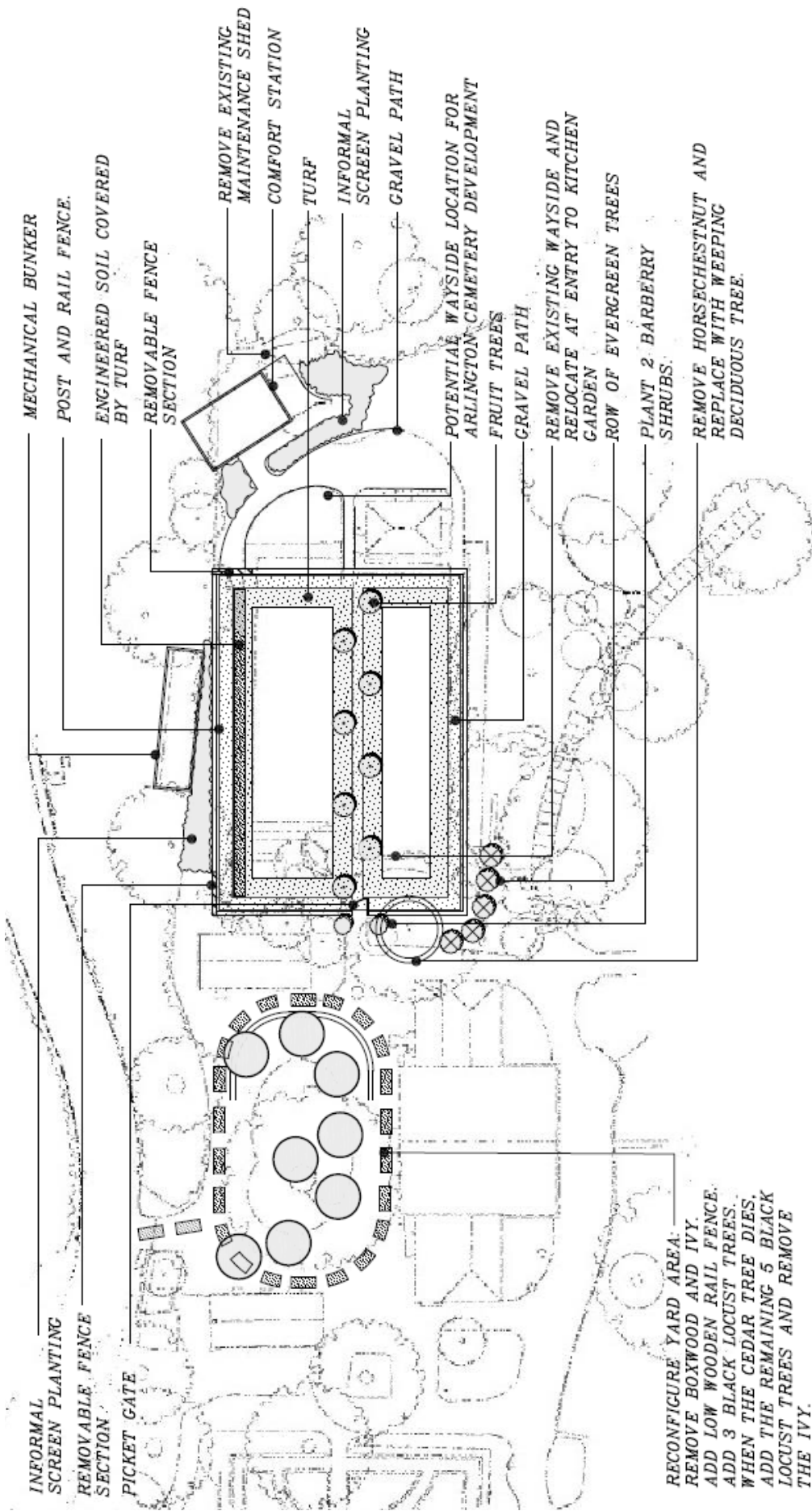
KITCHEN GARDEN, GROUNDS AND SITE ACCESS REHABILITATION

Under this alternative, NPS proposed to make changes to the Kitchen Garden and Work Yard that would more closely reflect the primary period of significance (1802-1861) while recognizing that changes made in a later period have historic significance in their own right.

Within the constraints of the northern boundary as defined by the Potting Shed, the eastern, western and southern boundaries would be expanded to better represent the Kitchen Garden's relationship with the North Slave Quarters, the Work Yard, and the wooded slope along Sherman Drive. The following is proposed (see Figure 10):

- Remove the 1921 Comfort Station and adjacent 20th-century vegetation.
- Remove the 1950s era English holly (*Ilex aquifolium*) hedge, except along the eastern and northern boundaries.
- Remove the existing maintenance shed.
- Remove the existing wayside at the entry to the Kitchen Garden.
- Reconfigure the Kitchen Garden to create a larger rectangular space. The boundaries would be:
 - Southern boundary: parallel to the North Slave Quarters and offset approximately 10-feet.
 - Western boundary: would be located 120-feet from the eastern boundary as outlined in the Archeological Investigations.
 - Northern boundary: the southern edge of the Potting Shed.
 - Eastern boundary: would be along the existing holly hedge as cited in the Archeological Investigations and extended to the southern boundary.
- A row of evergreen trees (*Juniperus virginiana* or *Ilex* sp.) would extend from the southern edge of the holly hedge along the eastern boundary wrapping around the southeast corner of the Kitchen Garden.
- Replace the common horsechestnut (*Aesculus hippocastanum*) located between the Mansion and the Kitchen Garden with a deciduous tree with weeping form similar to Weeping Willow (*Salix babylonica*).
- The Kitchen Garden would be surrounded by a post and rail fence with a picket gate and two barberry bushes flanking the gate. There would be two removable sections (one at the southwest corner and one at the northwest corner) to allow for occasional vehicular access to the Comfort Station and Potting Shed.
- A 5-foot wide gravel path would surround the Kitchen Garden, just inside the rail fence. A central path would align axially with that of the Flower Garden.
- The two planting beds formed by the gravel paths would be wrapped by a 5-foot wide turf strip. The strip that runs north and south along the western boundary would lie above engineered soil to allow for occasional vehicular traffic to the Comfort Station and Potting Shed.
- Plant a row of fruit trees on either side of the central path in the turf strip. Dwarf varieties of cherry, pear, plum, and apricot would be used.
- Add informal screen plantings east of the Mechanical Bunker and on the south side of the proposed Comfort Station.
- Add a new wayside outside the northern boundary of the Kitchen Garden to interpret the early cemetery development including the Potting Shed.
- Remove the boxwood and ivy; black locust (*Robinia pseudoacacia*) would be planted. The area would be re-graded and surfaced to match the surrounding gravel area, and a low wooden rail fence would be added on the north side of the Work Yard. When the 131-year-old Deodar cedar (*Cedrus deodara*) dies, five black locust trees would be planted.

FIGURE 10: PROPOSED GROUNDS AND ACCESS REHABILITATION ACTIVITIES



FOUNDATION STABILIZATION AND DRAINAGE (ARLINGTON HOUSE)

Arlington House has patches of eroding historic brick masonry on interior of foundation walls where approximately half of the exposed inner wythe has been lost. This erosion threatens the foundation's structural support of first floor joists, especially in the south wing on east foundation wall. The eroding bricks (See Figure 11) are historic fabric dating from the original 1802-1817 construction and were made on site by slave labor (See Figure 11). Exterior foundation drainage lines were installed along the north, east and, south perimeter in 1997 to arrest the problem, but erosion continues. Once the harder outer protective surface of the brick is lost, the softer interior of the brick erodes rapidly from seasonal rising damp in the foundations followed by cyclic drying above grade, with the eroded brick above grade offering the path of least resistance for moisture. Repointing of some areas of foundation with Portland Cement mortar in 1960s has accelerated erosion of the brick. Foundation drainage on the west perimeter would help by reducing the rising damp problem along these foundation walls; but once the protective surface faces of the soft historic brick are lost, erosion would continue despite abatement of rising moisture.

FIGURE 11: PHOTOGRAPHS OF ERODING HISTORIC BRICK AND OF MODERN BRICK SET IN WIDE PORTLAND CEMENT JOINTS IN FOUNDATION WALLS OF ARLINGTON HOUSE



Under this alternative, NPS would replace badly deteriorated historic brick masonry, mostly in the east foundation of the South wing of Arlington House. The brick units would be custom sized reproduction brick matching historic brick set in 3/8-inch lime mortar joints to match. Mortar color and striking of the joints would be considered in an effort to match the original appearance. The repointing done in some areas using Portland Cement would be cut out and replaced with custom sized bricks and lime mortar.

CONSTRUCTION STAGING

Under this alternative, the existing Work Yard entrance off Sherman Drive, at the west site of the Mansion, would be the point where construction equipment would enter and exit the grounds. For the demolition of the existing Comfort Station, and the construction of the new Mechanical Bunker and Comfort Station, the staging area used for construction equipment, stock piling of dirt, and storage of materials would be located within the western portion of the Kitchen Garden. Prior to the use of the Kitchen Garden as a staging area, the area would be covered with an approved filter fabric, and gravel would be placed on top to harden the surface to minimize damage to the Kitchen Garden. Both would be removed prior to project closeout and the soils would be tilled in order to mitigate any compaction that took place during staging. To protect the public safety and to screen staging area, the existing hedgerow would remain, and the perimeter would be enclosed with a locked chain link fence supported on temporary concrete blocks, and snow fences would be placed around the staging and construction areas for pedestrian control and tree protection.

The contractor's primary staging area for work being conducted in the interiors of Arlington House and the North and South Slave Quarters would be located in the existing Work Yard area between the large cedar tree and the North Slave Quarters. The perimeter would be enclosed with a locked chain link fence supported on temporary concrete blocks. Jersey barriers would be installed at the corners of the Slave Quarters. A locked and screened toilet facility for construction workers may be provided in this area. A construction dumpster and a trailer would also be necessary and would be located in the Work Yard area, southwest of the cedar tree. Contractor parking would be in the parking lot adjacent to the NPS Administration Building and would be limited to five spaces.

GENERAL CONSTRUCTION SCHEDULE AND COSTS

The proposed activities, as detailed under this alternative, have been broken down into two phases. The first phase is currently budgeted at \$1,833,000 and would include the installation of the new fire suppression and climate management system and Mechanical Bunker to support these systems, the removal of the existing 1921 Comfort Station and replace it with a modern facility at a different location on the site. The second phase of the project is budgeted at \$1,085,270 and includes activities associated with the rehabilitation of the grounds, Kitchen Garden, site access stabilization, the stabilization of the foundation, and improvements to the drainage around Arlington House. Work associated with the first phase of this proposed project would most likely begin in the summer of 2006, while phase two work would likely be scheduled for Fiscal Year 2009.

MITIGATION MEASURES OF THE ACTION ALTERNATIVE

The NPS places a strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. To help ensure the protection of natural and cultural resources and the quality of the visitor experience, the following protective measures would be implemented as part of either the No Action or Action Alternative. The NPS would implement an appropriate level of monitoring throughout the construction process to help ensure that protective measures are being properly implemented and to achieve their intended results.

SOILS

Minimize the square footage of earth disturbance to the amount necessary to accomplish the project, and limit the area and duration of disturbed soil exposure to rainfall.

Use erosion containment controls such as silt fencing and sediment traps to contain sediment on site where necessary.

Cover disturbed soil or soil stockpiles with plastic sheeting, jute matting, erosion netting, straw, or other suitable cover material.

Inspect erosion and sediment control best management practices (BMPs) on a regular basis and after each measurable rainfall, to ensure that they are functioning properly, and maintain BMPs (repair, clean, etc.) as necessary to ensure that they continue to function properly.

Sequence BMP installation and removal in relation to the scheduling of earth disturbance activities.

Phase clearing to coincide with construction at a given location to minimize the amount of area exposed to erosion at a given time.

Stabilize and replant exposed soils with native vegetation immediately following completion of construction activities, or during temporary cessation of the earth disturbance activities.

SURFACE WATERS

Implement erosion and sediment controls and stormwater best management practices as discussed under Natural Physical Resources to minimize potential impacts to waters both in and downstream of the project area. Implement BMPs described under the mitigation measures for soils.

Minimize adverse effects of fuel spills:

- Locate construction staging areas away from surface water features.
- Locate activities such as refueling well away from surface water features.
- Designate areas where refueling or construction vehicle and equipment maintenance would be performed and have containment features such as temporary earth berms around these areas.
- Have absorbent pads available to clean up spills.

VEGETATION

Prior to clearing and grading, clearly mark on the ground the area to be cleared to minimize the amount of cleared area.

Clear only those areas necessary for construction.

Prior to clearing, assess vegetated areas to determine if there are trees in the area of the proposed area that need protection from construction activities. Any trees selected for protection would be marked and fenced.

Monitor vegetation in areas replanted following construction to ensure successful establishment of native species. Remove any exotic invasive species that appear in the replanted areas.

CULTURAL LANDSCAPES

In the event that the Action Alternative is chosen, and a new Comfort Station is constructed along the north end of the site, a screening device would be installed (e.g., hedgerow, wooden lattice or informal screen planting fence) to minimize the visual impacts to the historic setting of Arlington House. Mechanical Bunker would be built underground with a “green roof”, and would not be visible from Kitchen Garden.

ARCHEOLOGICAL RESOURCES

A Phase I Archeological Investigations was completed and examined the proposed construction zones within the area of potential effect. This survey did not locate significant resources that would be impacted by construction (as proposed in the plans at the time), but identified some resources, such as a dry well for dairying purposes, that should be protected/preserved, or identified resources to be protected/preserved. Therefore, certain zones have been “cleared” for construction work. However, should any significant archeological resources be identified during construction, work would stop

until evaluation of the resources by an archeologist and appropriate measures undertaken to document the finds or mitigate impacts. In addition, any changes to construction proposals, postdating the investigations, would need additional archeological investigations.

The NPS would require that underground ductwork and piping to the other structures of the building would follow previously disturbed trench areas associated with existing lines and alongside or under roadways.

Construction in areas outside locations of significant, previously documented archeological resources would be preceded by shovel testing and/or archeological monitoring to ensure no irreparable adverse impacts to significant, newly-discovered archeological resources in these areas occur.

Equipment would be staged within the Work Yard or west half of the Kitchen Garden to reduce potential impacts on archeological resources.

HISTORIC STRUCTURES

Preservation craftsmen would perform preparatory preservation work, such as removing floorboards within Arlington House's interior, and painting and replastering following installation of fire suppression system. While the floor boards are up, the floor joists would be documented and inspected. Any necessary repairs would be made and strengthening measures performed. Exposing the floor structure should provide considerable historical information about the construction of the house.

Sprinkler heads would be hidden to the greatest extent possible by recessing the units into non-ornate plaster ceilings.

Park staff would oversee every stage of the installation to ensure that most of the original plaster and historic fabric is not unduly disrupted by the contractors, that Arlington House is restored to its preconstruction condition, and that the Slave Quarters are rehabilitated according to the Historic Structures Report. During construction, interior finishes would be protected using various methods, including:

- Floors and stairs would be covered with protective building paper or fiber mats
- Handrails and newel posts would be protected with blanket padding
- Balusters, wood wainscot, doorways and windows would be covered with protective clear polyethylene film
- Plaster wall and wood trim corners would have Styrofoam or blanket padding for edge protection.

There would be no "down time" with regard to fire and security protection for Arlington House. Temporary fire detection and suppression systems would be in place during construction and would be the responsibility of the contractor.

All work would be carried out in conformance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties for Rehabilitation* (Birnbaum 1996).

MUSEUM COLLECTIONS

Prior to construction, park curatorial staff and fine arts specialists would pack museum collections and transport them to a climate-controlled secured storage facility, in accordance with the DO-24, *NPS Museum Collections Management (NPS 2000d)*, and the park's *Collection Storage Plan*.

Immovable objects, such as any fixtures and paintings, would be protected as a part of the initial preparatory preservation work to be performed by park staff.

Collections would be returned and reinstalled in Arlington House only after construction documents indicate that all fire protection, electrical and mechanical systems are complete, operating, and have been tested.

All museum collections handling would be performed by qualified, trained personnel, using proper equipment and tools, and collections would be protected at all stages of transport from potential environmental threats including water damage, rapid fluctuations in temperature and/or humidity, theft, excessive vibration, predicted storms, or other as noted by NPS museum standards.

HUMAN HEALTH AND SAFETY

The NPS would close sections of Arlington House and the entire North Slave Quarters to the public for the duration of the installation of the proposed systems. During the first phase of construction, the following areas would remain open during the entire extent of construction: the front portico of the Mansion, the Flower Garden, the South Slave Quarters, the Potting Shed, and the east side of the Kitchen Garden. A temporary tent with bookstore and interpretive displays immediately south of South Slave Quarters would help orient visitors to site and mitigate construction activity. Limited ranger led tours of the first floor only may be available on a first come, first serve basis or limited to school groups. Tours and schedules would be coordinated with the rehabilitation activities.

The NPS would require the construction contractor to follow to follow OSHA and NPS construction contract standards during construction. These standards include, but are not limited to: training and instruction for handling and use of hazardous materials, designation of a hardhat area, and implementation of an accident prevention program. The construction contractor would be required to post construction warning signs at the construction site and along nearby roads to notify employees and park visitors of the construction site and dangers at the site. The construction contractor would also install and maintain construction fences around the construction sites to prevent non-contractors and the public from entering the construction areas.

ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

Council of Environmental Quality (CEQ) regulations for implementing NEPA require that Federal agencies explore and objectively evaluate all reasonable alternatives to the Preferred Alternative, and to briefly discuss the rationale for eliminating any alternatives that were not considered in detail. This section describes those alternatives that were eliminated from further study and documents the rationale for their elimination.

During the course of internal scoping, several options were considered as part of the Preferred Alternative, but were deemed to be unreasonable and were not carried forward for analysis in this EA. Justification for eliminating these options from further analysis was based on the following factors:

- lack of technical feasibility
- inability to meet the project's purpose and need
- economic infeasibility

The following elements were considered for inclusion into the park's Preferred Alternative, however were dismissed for the listed reasons.

ALTERNATIVES CONSIDERED FOR FIRE SUPPRESSION SYSTEM

Pre-Action Dry Pipe Sprinkler

A pre-action dry pipe sprinkler could protect museum artifacts/collections from accidental water damage. However, with this system there is up to a 60 second delay after a fire is detected before the sprinkler discharges. This lag time would allow the fire a longer time to cause damage prior to being extinguished. The system would also require an air compressor to be located within the historic buildings. In addition, there is not sufficient space within the floorboards to allow for sufficient slope to drain the pipes in the heated spaces, which would greatly increase the amount of visual intrusions within the historic interiors.

High Pressure Mist System

This alternative was considered but dismissed for several reasons. High pressure mist systems are designed to smother a fire with humidity and work best in tight, compartmented spaces. The system in a historic Mansion like Arlington House, with large window openings, high ceilings, interconnected spaces and open stairs has not been proven effective. The system is wet and under high pressure, and damage to the heads is possible could result in accidental discharge (recessed concealed heads are not available). A high pressure mist system would be more suitable for a confined archival storage area. The system requires installation of both water and nitrogen tanks and special equipment within the historic structure. The number of heads that can discharge is limited. The system does not protect fire responders and the fire may reignite when windows are broken. As the system is wet, it cannot be installed in areas not heated to above a minimum of 40 degrees Fahrenheit without glycol protection or dry pipe sections isolated by check valves. Furthermore, the cost of a high pressure mist system is at least 50% more than a conventional wet pipe sprinkler system. The system also requires that the pipes have sweeping pipe bends, large knuckle couplings and frequent brackets, which would greatly increase the amount of visual intrusions within the historic interiors.

ALTERNATIVES CONSIDERED FOR THE CLIMATE MANAGEMENT SYSTEMS AND PLACEMENT OF MECHANICAL BUNKER

Water Source Heat Pump

Under this alternative, the water source heat pump would require a cooling tower, which would be a visual intrusion on the cultural landscape and would need to be shielded from view. The two pipe heating and cooling system would provide moderate temperature and humidity control over tempered (cooled & dehumidified or heated & humidified) air. However, the system is not energy efficient and uses electric power for circulating pumps and fans. It has less plant equipment (heat exchanger, condenser circulating pumps, and fans), requires a smaller bunker, and involves less maintenance. While this alternative would have the lowest construction costs, this alternative was dismissed because of the visual intrusions it would cause and also because it has the highest operation cost (energy) of all alternatives considered.

Geothermal Heat Pump

This system would not require a cooling tower, and the two pipe system provides limited temperature and humidity control over tempered (cooled & dehumidified or heated & humidified) air. The system is energy efficient, and uses electric power for pumps and fans. It has the least plant equipment (pumps and fans), requires the smallest bunker and requires the least maintenance. However it requires a geothermal field for heat and cooling source, which makes it the most expensive system for construction. The high construction cost is somewhat offset by lower operational cost.

Placement of Mechanical Bunker North of Potting Shed

Under this alternative, the Mechanical Bunker would be an above grade mechanical structure that would be located immediately in front of the Potting Shed. If the bunker were located at this site, it would be an intrusion on cultural landscape. The location is too remote from Arlington House and Slave Quarters to serve its intended use efficiently with the increased underground utility installation and life cycle operating costs. There would be access and egress problems if located below grade, and the structure would detract from public visitation to existing museum exhibit in Potting Shed.

Placement of Mechanical Bunker within the Existing basement of existing Comfort Station

The placement of the Mechanical Bunker under this alternative would be within the historic Kitchen Garden and basement that is partly above existing grades. This alternative was dismissed because the existing Comfort Station is considered a non-contributing structure within the 1861 historic grounds and an intrusion that is preventing proper restoration and interpretation of both the Kitchen Garden and North

Slave Quarters. In addition, the existing basement space is too restricted for climate management mechanical equipment.

ALTERNATIVES CONSIDERED FOR THE DESIGN AND PLACEMENT OF THE NEW COMFORT STATION

Rehabilitate 1st Floor of Potting Shed for Comfort Station

This alternative would have avoided introducing another structure in the cultural landscape. However it was dismissed because it would have displaced the existing museum exhibit space from the Potting Shed, and disrupted the existing park operations and alternative draft plans for the Potting Shed.

Rectangular Comfort Station on West Edge of Historic Kitchen Garden

Under this alternative the rectangular comfort station would be sited on a steep slope and designed to sit atop of the proposed Mechanical Bunker. While this location would encourage pedestrians to use the maintenance path; placing the Comfort Station at this location would have visually intruded on historic Kitchen Garden and the overall cultural landscape of Arlington House.

Old Administration Building (west of historic area)

After presentation of possible Master Plan revisions by Arlington House Site Manager, the location for a new comfort station was refocused on the historic area because of restricted NPS land ownership within surrounding Arlington Cemetery, space limitations within existing NPS buildings outside the historic area, and Arlington Cemetery's continued use of other buildings outside the historic area. The Value Analysis considered any possible public restrooms within the Old Administration Building as too far removed from immediate needs of visitors to the historic area to be a viable alternative.

Addition of a Comfort Station to the Potting Shed

This alternative called for the Comfort Station to be added on north (front) elevation of Potting Shed. This alternative was considered but dismissed because it would detract from exterior integrity of historic 1880's Potting Shed, (but would be screened from view of the 1861 cultural landscape by the circa 1880s Potting Shed). This alternative also would have disrupted the existing museum exhibit in the Potting Shed and existing park operations and alternative draft plans for the Potting Shed.

Existing Comfort Station

Continued use of the existing Comfort Station would require making the structure ADA accessible, which would involve major entry alterations, extensive ramps, and a 50% reduction in number of fixtures. The existing Comfort Station is considered a non-contributing structure within the 1861 historic grounds and an intrusion, preventing proper restoration and interpretation of both the Kitchen Garden and North Slave Quarters.

GROUND AND SITE ACCESS REHABILITATION

The Custis-Lee Garden, 1861

Under this alternative, the Kitchen Garden would be reconstructed to the elements and overall design of the Kitchen Garden for the year 1861. At the end of the Custis-Lee period in 1861, the size, shape and design elements of the Kitchen Garden remained intact. The design of the Kitchen Garden at this time was an essential part of the overall spatial organization of the site. This alternative would also eliminate potential vehicular damage to the North Slave Quarters. It would rehabilitate the pre-Civil War circulation patterns, and also reinforce the functionality of the Kitchen Garden by being large enough to support the household. This alternative was dismissed because it would not result in the construction of a proposed Comfort Station within the footprint of the original Kitchen Garden, which occupied the entire northern plateau. In addition, the 1880 Potting Shed would also be removed under this alternative, losing its current interpretive and functional value.

Refinements of the Kitchen Garden to 1861

Under this alternative, features from subsequent periods of the early cemetery development would remain within the original boundaries of the Kitchen Garden. For over 120 years, the Potting Shed and service road (1880-1889) have remained in this area to serve the needs of the cemetery and the National Park Service staff. Treatment plans implemented in the 1930s and 1940s for the Kitchen Garden created an interpretation of the Custis-Lee era and integrated these features into their plans. Within the constraints of the existing boundary as defined by the holly hedges on the west, north and east sides, the southern boundary is expanded to better represent the Kitchen Garden's relationship with the North Slave Quarters and Work Yard area. While this alternative would provide the opportunity to place a proposed new Comfort Station outside the boundaries of the Kitchen Garden, the original Custis-Lee period spatial organization would be compromised by retaining elements from the cemetery development. As a result this alternative was dismissed because, by not restoring the Kitchen Garden to its pre-1880s size, the symmetry of the Custis layout of the grounds would be compromised.

THE ENVIRONMENTALLY PREFERRED ALTERNATIVE

In accordance with DO-12, the NPS is required to identify the "environmentally preferred alternative" in all environmental documents, including EAs. According CEQ guidelines (1978), the environmentally preferred alternative is the alternative that will promote the national environmental policy, as expressed in Section 101 of NEPA, to (1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations; (2) assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings; (3) attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences; (4) preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice; (5) achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and (6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources. The following paragraphs discuss how each alternative meets the first 5 policy criteria. The sixth criteria is not applicable because this project does not involve the management of renewable resources.

The environmentally preferred alternative is Alternative B. Alternative B would most closely satisfy the policy goals detailed above. Through the rehabilitation of Arlington House, its outbuildings, and grounds as proposed under this alternative, criteria 1 and 2 would be fulfilled. By rehabilitating the North and South Slave Quarters; installing a new fire suppression system within Arlington House and its outbuildings; installing a new climate management system and Mechanical Bunker to support these systems; removing the non-contributing 1921 Comfort Station and replacing it with a modern facility at a different location on the site; and conducting activities associated with grounds and site access stabilization, stabilizing the foundation, and improving drainage, Arlington House would more closely recreate the 1861 historic landscape, and protect these resources for succeeding generations. Alternative B would fulfill criteria 3 by protecting public health, safety, and welfare by improving fire prevention systems, and providing an ADA compliant Comfort Station. Criteria 4 would be fulfilled as the important historic and cultural aspects of Arlington House, the Robert E. Lee Memorial are preserved and protected through activities proposed under this alternative. Finally, criteria 5 would be fulfilled with the construction of a fully ADA compliant Comfort Station, while enhancing the overall visitor experience with the rehabilitated Arlington House, outbuildings, and grounds.

The No Action Alternative represents the existing condition at Arlington House, the Robert E. Lee Memorial. The No Action Alternative would not meet criteria 1 and 2 as fully as would Alternative B. While the park is currently meeting its trustee responsibilities, and would continue to meet these responsibilities under the No Action Alternative, this alternative would not provide the additional benefits to succeeding generations by not fully protecting Arlington House, its collection, and outbuildings from climate extremes, and lack of a modern fire suppression system. While the No Action Alternative fulfills

criteria 3 by providing adequate fire prevention systems and by ensuring that existing maintenance maintains a safe environment for visitors and staff, maintenance activities would not fully address and the park's Comfort Station would continue to lack ADA compliance. Criteria 4 would not be met as fully as under Alternative B. While the park does an adequate job at preserving its cultural resources, it would not restore the North and South Slave Quarters and grounds back to the 1861 historic landscape, as mandated by its enabling legislation. The No Action Alternative would not meet criteria 5 as fully as would Alternative B, because the current comfort station is not ADA compliant.

TABLE 1: SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Impact Topic	Alternative A No Action Alternative	Alternative B (NPS Preferred): Rehabilitation of Arlington House, Outbuildings, and Grounds
Soils	Implementation of the No Action Alternative would result in no direct, indirect, or cumulative beneficial or adverse impacts to soil characteristics in the study area. The No Action Alternative would not result in impairment of soils.	Implementation of Alternative B would result in adverse short-term minor impacts to soils due to the necessary disturbance, excavation, potential placement of fill, and the compaction of soils in and around the sites for the new Mechanical Bunker and Comfort Station. There would be no beneficial or adverse cumulative impacts associated with this alternative. Alternative B would not result in impairment of soils.
Vegetation	Implementation of the No Action Alternative could result in adverse long-term negligible impacts to vegetation due to some maintenance activities. Adverse long-term minor cumulative impacts to vegetation would also occur because of the expansion of Arlington National Cemetery. Impairment of vegetation resources would not occur under this alternative.	Implementation of Alternative B would result in adverse short-term negligible and long-term minor impacts to vegetation due to construction-related disturbance. Adverse long-term minor cumulative impacts to vegetation would also occur because of the expansion of Arlington National Cemetery. Impairment of vegetation resources would not occur under this alternative.
Archeology ^{1, 2}	Implementation of the No Action Alternative would result in no direct, indirect, or cumulative beneficial or adverse impacts to archeological resources in the study area. The No Action Alternative would not result in impairment of archeological resources.	Activities associated with the implementation of Alternative B that would require subsurface excavation or ground disturbing activities could have adverse long-term negligible impacts to archeological resources. However, these impacts would be fully mitigated through archeological monitoring and documentation of significant finds. There would be no cumulative impacts to archeological resources associated with Alternative B. Alternative B would not result in impairment of archeological resources.
Museum Collections	Implementation of the No Action Alternative would likely result in adverse long-term minor impacts to the museum collections due to the lack of effective climate (humidity) controls. As there is no existing fire suppression system (sprinklers) in place, the collections are vulnerable to catastrophic loss, which could range from moderate to severe, depending on the extent of damage to the objects in the collection. No cumulative impacts or impairment to museum collections would occur under this alternative.	Implementation of Alternative B would result in a beneficial long-term minor impact to the museum collections, due to the implementation of climate (humidity) controls and fire suppression systems (sprinklers). The collections would be at some short-term risk of accidental damage during transport prior to construction activities, which could result in adverse long-term minor impacts. Precautions would be undertaken to fully mitigate these risks. There would be no cumulative impacts and no impairment of museum collections under this alternative.

Impact Topic	Alternative A No Action Alternative	Alternative B (NPS Preferred): Rehabilitation of Arlington House, Outbuildings, and Grounds
Historic Districts and Structures¹	The No Action Alternative would result in adverse long-term negligible impacts to the Arlington House National Register property because of NPS maintenance protocols. There would not be any cumulative impacts and no impairment of historic districts and structures associated with the No Action Alternative. No impairment to historic districts or structures would occur under the No Action Alternative.	Implementation of Alternative B would result in adverse short-term minor impacts to the Arlington House National Register property (no adverse effect under Section 106). During construction and rehabilitation activities adverse long-term minor impacts would occur to the National Register property because of the new Comfort Station (no adverse effect under Section 106). Beneficial long-term minor impacts would occur because of stabilization of the Arlington House, and beneficial moderate long-term impacts would occur because of the rehabilitation of the Kitchen Garden to its 1861 appearance. These impacts would result in no adverse effect under Section 106. There would be no cumulative impacts and no impairment of historic districts and structures under this alternative.
Cultural Landscapes¹	As there would not be any construction activities associated with the No Action Alternative, no impacts to cultural landscapes (no adverse effect in terms of Section 106) would occur. There would not be any cumulative impacts or impairments to cultural landscapes under this alternative.	Implementation of Alternative B would result in result in adverse short-term minor impacts to the Arlington House cultural landscape during construction. Adverse long-term minor impacts to the cultural landscape would occur from actions related to the Mechanical Bunker and the new Comfort Station. Beneficial long-term minor impacts to the cultural landscape would occur from the stabilization of the Arlington House, and moderate long-term beneficial impacts related to the rehabilitation of the Kitchen Garden and installation of new fire and climate management systems into contributing buildings. Under Section 106, no adverse effect would occur because of these actions. There would be no cumulative impacts and no impairment of cultural landscapes in this alternative.
Visitor Use and Experience	Implementation of the No Action Alternative would result in adverse long-term minor to moderate impacts to visitor use and experience from the current lack of an adequate climate management system, the continued degradation of Arlington House, its outbuildings, and collection, and lack of an ADA compliant Comfort Station. Adverse long-term minor cumulative impacts to visitor use and experience would be expected as a result of implementing this alternative the No Action Alternative.	Implementation of Alternative B would result in adverse short-term minor to moderate impacts to visitor use and experience during construction. While there would be adverse short-term impacts as a result of construction activities associated with this alternative, the installation of a new fire suppression and climate management system and fully ADA compliant Comfort Station would result in beneficial long-term minor impacts. Beneficial long-term minor cumulative impacts to visitor use and experience would be expected as a result of implementing Alternative B.

Impact Topic	Alternative A No Action Alternative	Alternative B (NPS Preferred): Rehabilitation of Arlington House, Outbuildings, and Grounds
Health and Safety	Implementation of the No Action Alternative would result in adverse long-term minor impacts to health and safety due to lack of an adequate climate management and fire suppression system. Cumulative impacts would be adverse minor long-term because, during the summer, visitors to the cemetery who also find themselves visiting Arlington House would find no relief from the heat and humidity and could become more susceptible to heat related illnesses.	Implementation of Alternative B could result in adverse short-term negligible to minor short-term impacts to human health and safety resulting from construction activities. Beneficial long-term minor impacts to public health and safety would occur as a result of updating the climate management and fire suppression systems. Beneficial long-term minor cumulative impacts would also occur because of these facility improvements.
Park Operations and Management	Implementation of No Action Alternative would result in minor long-term adverse impacts to park operations and management as increased maintenance to park structures and infrastructure would be required as drainage problems continue and the Memorial would continue to operate without an adequate climate management system. Adverse long-term minor cumulative impacts to park operations and management would result from the potential increase in visitation due the current and future planned expansion of Arlington Cemetery.	Implementation of Alternative B would result in adverse short-term minor impacts to park operations and management during rehabilitation activities. By resolving drainage problems and installing new and modern mechanical systems less future maintenance would be required, resulting in beneficial long-term minor impacts. Adverse long-term minor cumulative impacts to park operations and management would result from the potential increase in visitation due the current and future planned expansion of Arlington Cemetery.

¹The descriptions of effects on cultural resources that are presented are intended to comply with the requirements of both NEPA and Section 106 of the NHPA. In accordance with the Advisory Council's regulations implementing Section 106 (36 CFR Part 800, *Protection of Historic Properties*), impacts on cultural resources were identified and evaluated by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that are either listed in or eligible to be listed in the National Register; (3) applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and (4) considering ways to avoid, minimize, or mitigate adverse effects. .

² A Phase I archeological survey has been completed that examined the Areas of Potential Effect. As a result, some areas have been cleared for construction, and some archeological resources have been identified that will be avoided during construction and preserved. Monitoring of construction was recommended in some areas. If unexpected archeological resources are identified during construction, ground disturbing activities will cease and the newly identified resources will be evaluated and documented. Changes or to the construction program that result in an expansion of the Area of Potential Effect will require additional archeological investigations.

AFFECTED ENVIRONMENT

This chapter of the EA describes existing environmental conditions in the areas potentially affected by the alternatives evaluated. This section will describe the following resource areas: soils; vegetation; cultural resources; visitor use and experience; health and safety; and park management and operations. Potential impacts to these same resources are discussed in the “Environmental Consequences” chapter following the same order.

SOILS

Arlington House occupies an upland position overlooking the Potomac River, across from Washington, D.C. Surface elevations at the site range from 208 to 212 feet above mean sea level. The local native soils within the general vicinity of the study area are mapped as the Sassafras soil series, which are characterized as very deep, well-drained gravelly sandy loam found on the Coastal Plain uplands and derived from marine or alluvial deposits with strong brown, very gravelly, sandy loam subsoil (Heidel and Gerst 1999). However, most of the site, which was sampled during a June 2005 archeological investigation, consists of soils that can be described as Udorthents. Udorthents usually include materials that have been reworked by machinery in the past and consist of loamy materials that have been placed over soils of varying drainage classes on terraces and floodplains. Udorthents may also include relatively undisturbed alluvial soils that have been shaped to some extent. The permeability of Udorthents is highly variable (LeeDecker 2005). The soils on the site are well vegetated and do not exhibit signs of serious erosion. At Arlington House, and within the Arlington National Cemetery, the soils have been previously modified by human activity during occupation and development of the site over the past 200 years.

The overall topography of the site is relatively flat and likely has been previously graded to create level foundations. The Kitchen Garden area was most likely built up with the addition of soils to improve fertility of the Kitchen Garden, putting it on grade with the Arlington House and its other structures. The slope that occurs along the western and northern boundaries of Arlington House’s boundary is relatively steep. Along the western boundary, adjacent to the Kitchen Garden, the slope drops roughly 10 to 15 feet until it meets Sherman Drive. Along the northern boundary, the wooded slope is steep to moderate, and continues onto Arlington National Cemetery property. There are no noticeable significant geologic features found within the site.

VEGETATION

Arlington Woods is roughly 12-acres in size and is located on the western edge of Sherman Drive, and carries over to the eastern edge of Sherman Drive, on the outer boundaries of the historic landscape is made up mostly of mixed hardwood forest. The oldest trees in the woods, about 250 years old, are located in the area identified as mixed hardwood forest. This area, according to a forestry study conducted in 1996, is comprised of mixed hardwoods including white oak (*Quercus alba*), northern red oak (*Quercus rubra*) chestnut oak (*Quercus prinus*) and tulip poplar, (*Liriodendron tulipifera*), with scattered beech (*Fagus grandifolia*), and red maple (*Acer rubrum*) in the understory. This forest type reflects roughly the same composition as it did in the period of significance for Arlington House, except for invasive species growth (Hanna 2001a).

Within several disturbed areas in this forest, which includes the western and northern sloped boundaries of the project area, the canopy contains black locust (*Robina pseudoacacia*), sweetgum (*Liquidambar styraciflua*), tree of heaven (*Ailanthus altissima*), and other disturbance-response species. This area of the forest retains the least integrity to the period of significance. Trees located within the grassy depression between Arlington House and the Administrative Building are approximately 100 years old. Originally this area was much more wooded. Around 1900, before the Dutch Elm Disease and Chestnut Blight killed many of the trees (Hanna 2001b).

CULTURAL RESOURCES

For the purpose of compliance with Section 106 of the National Historic Preservation Act (NHPA), as amended, cultural resources include recorded or potential historic and prehistoric archeological sites, buildings, structures, objects, districts, cultural landscapes, or museum objects eligible for or listed on the National Register of Historic Places. The consideration of these resources by the National Park Service meets pertinent requirements of the NHPA, NEPA, and related legislation and implementing regulations.

For this study, efforts to identify cultural resources included a review of existing information provided by the park supplemented by interviews with park staff, and Commonwealth of Virginia, and Federal cultural resource survey data. For historic structures and cultural landscapes, the principal sources reviewed were Virginia Department of Historic Resources Data Sharing System on-line survey files, National Register of Historic Places registration forms, and previously completed cultural resource reports (Hanna 2001a; Hanna 2001b).

ARCHEOLOGICAL RESOURCES

There have been two major programs of archeological investigation at Arlington House, as well as a few smaller studies. As a result, the archeological record of the site is fairly well known. The first major study (Pousson 1983) was completed in the early 1980s in conjunction with preparation of a Historic Structures Report and planning for structural stabilization and restoration of the main house. The second major study was completed during 2003-2004 (O'Neill and LeeDecker 2005) and focused specifically on areas that would be affected by the rehabilitation program that is the subject of this EA. Other archeological studies have included a survey of Section 29 (the wooded area to the west of Sherman Drive), occasional test excavations, and monitoring of construction (Millis et al. 1998; Sonderman 2003; Virta 1999, 2001).

Under the direction of NPS archeologist John Pousson, the 1980 program was focused in and around the Mansion and was designed to obtain information for a Historic Structures Report and to inform future structural stabilization and restoration of the main house. Excavations focused on the winter kitchen and lower loggia walkway of the north wing, the wine cellar, the central basement room, the south wing basement, the conservatory, and the front, side, and rear yard areas immediately adjacent to the house. Pousson's study documented: kitchen features, including a hearth; stairways leading from the north side of the loggia; remains of a 1850s heating system; and a series of historical grades interpreted as early nineteenth-century surfaces and landscaping events around the house, including deposits associated with the initial construction period of 1803-1804. In the basement of the south wing, historically referred to as the dairy, Pousson identified two areas with distinct patterns of brick flooring. Excavations in the north wing identified the remains of fireplaces and an oven, as well as interior foundation walls and support footings for the original loggia (Pousson 1983).

The 2003-2004 study (O'Neill and LeeDecker 2005) focused on selected areas of the Mansion, the North and South Slave Quarters, the Kitchen Garden, courtyard or Work Yard, and the area of potential effect associated with the proposed Mechanical Bunker, utility corridor, and Comfort Station. The investigations were intended not only for compliance with Section 106 of the NHPA but also (i) to provide information that would inform the Historic Structures Report, (ii) to understand of the developmental history of the landscape, and (iii) to obtain information relevant to the interpretation of slave life. This program demonstrated that the landscape around the site has been greatly altered, not only during the site's historic occupation period (1802 - 1861), but also during subsequent restoration campaigns carried out during the periods of ownership by the War Department and the NPS. In the main house, the most significant discovery was a deep drywell that was historically used for storage and butter churning. In the South Slave Quarters, excavations in Selina Gray's room revealed a complex archeological record, beginning with a buried natural landscape surface and culminating with features and deposits associated with the 1959-era NPS restoration. Investigations in the smokehouse found a twentieth-century reconstructed hearth over a larger hearth and wall trench that may date to the

Custis/Lee period (1802-1861). Limited testing in the storehouse room identified evidence only of a modern fireplace reconstruction and a live electrical line.

Much of the work in the North Slave Quarters focused on the areas adjacent to doorways. Previous restoration campaigns have significantly altered the interior and exterior grades in these areas, virtually obliterating the physical record of nineteenth-century occupation in the summer kitchen and the center room. In the coachman's room, evidence of a possible early to mid-nineteenth-century floor was found, along with rubble deposits from the 1871 and 1929 War Department reconstruction campaigns.

Testing in the Kitchen Garden area showed that this area has generally maintained its nineteenth-century contours, although the ground surface appears to have been raised slightly by the addition of topsoil, presumably introduced as a soil amendment. The archeological record in the courtyard (Work Yard) is perhaps as difficult to interpret as any area of the site, as this area has witnessed a complex sequence of landscaping events over the past 200 years. Over the past 100 years, when the site has been actively interpreted as a house museum, there have been multiple episodes of surface treatment (concrete, granolithic paving, and gravel), not to mention the installation of many subsurface utility lines. Archeological survey of the planned new facilities (Comfort Station, Mechanical Bunker, and utility corridor) did not identify any significant archeological resources; however, some midden areas may be present along the utility corridor.

Monitoring of the removal of an underground fuel tank in the late 1990s allowed a brief exposure of the subsurface conditions between the North Slave Quarters and the existing Comfort Station. Major modifications to the landscape have occurred in that area, as a 1920s-era pavement was exposed beneath three feet of fill (Virta 1999). Test excavations along the west side of the Mansion were also completed in 2001, to document possible builder's trenches, foundation conditions, and the general stratigraphy in that area. These units did reveal a trench along the main house foundation, but it was not clear whether the trench was associated with the initial construction period or a later repair/rehabilitation episode, such as a repointing of the brickwork.

MUSEUM COLLECTIONS

Arlington House currently has more than 20,000 objects in its museum collection, ranging from period furniture to fine art to everyday household objects and archeological collections. Objects recovered as a result of archeological investigations account for the largest portion of the collections, and these are stored at the National Capital Region's Museum Resource Center in Landover, Maryland. The collection also includes a large number of historical objects and archival material as well as a few natural history objects. Arlington House was built in part as a showcase for the many objects collected by George Washington Parke Custis that had been associated with George Washington and Mount Vernon. Since that time, the museum collection has expanded through gifts, loans, purchases, transfers, and project field collecting. There are many significant objects in the collection, including china used by the Washingtons at Mount Vernon, Custis and Lee family silver and jewelry, a globe, original family letters, and daguerreotypes of some of the Arlington House slaves (NPS 2004c).

Currently, the Park devotes a significant portion of its resources to maintenance of its collections. The fluctuating temperature and humidity levels within the Mansion and Slave Quarters threaten to deteriorate the collections, especially furniture. Storage conditions within these buildings do not meet NPS museum standards (climate, fire suppression, etc.) as outlined in the NPS Museum Handbook and DO-24, *NPS Museum Collections Management* (NPS 2000d). The Park has a Collection Management Plan, a Collection Storage Plan, and a Housekeeping Plan that have been developed in accordance with DO-24, *NPS Museum Collections Management* and the American Institute for Conservation standards.

HISTORIC STRUCTURES & DISTRICTS

The proposed activities have the potential to affect only one National Register listed or eligible historic structure, Arlington House.

Although a nomination was not completed until 1980, Arlington House, also known as the Robert E. Lee Memorial, and its related property under the management of the National Park Service was listed on the National Register of Historic Places in 1966. Built between 1803 and 1818 by George Washington Parke Custis, the step-grandson and adopted son of George Washington, Arlington House stands as an excellent example of early Greek Revival architecture in the United States. Thought to have been designed by George Hadfield, second architect of the Capitol, Arlington House consists of two one-story wings flanking a central two-story gable-front structure featuring a large prominent portico comprised of eight large Doric columns supporting a massive pediment. Robert E. Lee married Custis' daughter Mary at Arlington House in the early 1830s and lived at the estate when not serving at various military posts while an officer in the U.S. Army. Lee resigned his commission in the U.S. Army at Arlington House in April 1861 at the beginning of the Civil War. After offering his military services to his native state of Virginia, Lee and his family left the Arlington estate, never to return. Since the house stood atop Arlington Heights, a strategic location overlooking the United State's capital city, the U.S. Army occupied the Arlington House estate soon thereafter and later established what became Arlington National Cemetery. The U.S. Army transferred the house and a portion of the estate's former grounds to the National Park Service in 1933. The NPS now maintains the property as a memorial to Robert E. Lee pursuant to Congressional mandate.

The Arlington House building and grounds currently under the management of the NPS are significant under National Register Criteria A and C in the areas of Architecture and the Military for the period 1803 to 1861. In addition to the Mansion, integral contributing elements of the National Register property include the Mansion's museum collection as outlined in the institution's museum catalog. The museum collection encompasses "furniture, paintings, ceramics, glassware, silver, books, and textiles in use in the house prior to 1861." The North and South Slave Quarters also comprise contributing elements to Arlington House's National Register property. The National Register listed property encompasses the nearly 17 acres of landscaped and natural grounds currently under NPS jurisdiction associated with the Custis and Lee families' occupation of the estate. The National Register nomination identifies two post-1861 buildings on the NPS grounds as non-contributing elements to the Arlington House historic property. Both buildings were constructed during the US Army's tenure after the Civil War. The two-story Potting Shed, built in the 1880s, stands on the north side of the Kitchen Garden. The Comfort Station, erected in 1921 atop the foundations of an earlier building dating to around 1890, stands immediately north of the North Slave Quarters (Seagraves et al. 1980).

CULTURAL LANDSCAPES

Cultural landscapes, as defined by *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* (Birnbaum 1996), consist of "a geographic area (including both cultural and natural resources and the wildlife or domestic animals therein) associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values." The proposed actions have the potential to affect the Arlington House cultural landscape.

In 2001 the National Park Service circulated a draft Cultural Landscape Report analyzing and evaluating Arlington House's cultural landscape (Hanna 2001a). The draft Cultural Landscape Report found the Arlington House cultural landscape eligible for listing on the National Register under all four National Register criteria. The Arlington House estate served as the Army of the Potomac's headquarters during the Civil War, and evolved into the central core of Arlington National Cemetery during the late nineteenth century, thus meeting Criterion A for its association with significant historic events or broad patterns. Owned and developed by the Custis and Lee families, the Arlington House landscape also meets Criterion B for its association with persons making a significant contribution to United States history. The estate incorporates early nineteenth century landscape design theories as demonstrated through the Mansion's commanding eastward views of the capital city. Alternately, views of the house on its hilltop site from the city are heightened by the dark canopy trees of the 12-acre Arlington Woods located immediately to the west of the house. Attributed to the second architect of the Capitol, George Hadfield, the house

comprises one of the first temple form Greek Revival residences built in the United States and meets Criterion C as the work of a master architect and the noteworthy example of an architectural style. The grounds are also likely to yield information important to our understanding of history and prehistory (Criterion D), related to Native American land use of the relatively unspoiled Arlington Woods portion of the property and to the Custis and Lee families' and their servants' occupation of the grounds prior to the Civil War. While the National Register nomination for Arlington House identifies one period of significance for the property, the draft Cultural Landscape Report recognizes the period of the Custis and Lee families tenure, 1802-1865, as the primary period of significance in conjunction with two additional periods. The Civil War period, 1861-1865, witnessed further layers added to the Arlington House landscape related to the Union Army's occupation of the former Custis-Lee estate, while the immediate post-war period, 1865-1880, reflects the integration of the house and grounds into a nationally prominent military cemetery landscape (Hanna 2001b:5-8).

Cultural landscapes are comprised of two principal organizational elements, spatial organization and land patterns, and several other character-defining landscape features including buildings and structures, vegetation, circulation, views and vistas, topography, archaeology, cluster arrangement, water features, and small scale features (archaeology at Arlington House is discussed separately in this environmental assessment). The paramount attribute of the organizational elements and the character-defining features is their interrelationships in space. Individual features of the landscape are never examined alone but only in relationship to the overall landscape. The arrangement and interrelationship of a cultural landscape's organizational elements and character-defining features provide the key to determining the potential impacts and effects of the proposed improvements to the cultural landscape (Birnbaum 1996). Although much of the former Custis-Lee Arlington estate now comprises Arlington National Cemetery and does not form part of the Arlington House National Register property, the draft Cultural Landscape Report took into account the evolution of the cemetery landscape as it contributed to the significance and integrity of the Arlington House cultural landscape and its component features under the NPS's jurisdiction. The draft Cultural Landscape Report described the organizational elements and other character-defining features of the Arlington House landscape in great detail.

The Arlington House cultural landscape features six unique areas of spatial organization based upon their historic development and their current existing conditions: the Flower Garden, the Kitchen Garden, the Work Yard, the woodland, the cemetery memorial area, and the east slope of the Arlington House. The Flower Garden encompasses that area under the NPS management south of the South Slave Quarters. The Kitchen Garden includes that area north of the North Slave Quarters that contained the domestic garden during the Custis and Lee families' ownership, an area that now contains both the Potting Shed and the Comfort Station. The Work Yard area includes land between the South and North Slave Quarters that historically functioned as the Mansion's exterior domestic work space. The woodland area consists of the 24-acre woodlot located on the west side of Sherman Drive. The cemetery Memorial area located to the south and west of the Flower Garden and the eastern slope of the Arlington House are both situated outside of the NPS management area.

The cultural landscape's land use patterns display different levels of integrity related to the period of significance. Except for the Flower and Kitchen Gardens, land use patterns related to the Custis and Lee ownership period possess very low integrity due to the cessation of residential and agricultural activities at the estate and subsequent land uses. The site's cemetery and tourism functions, begun during the post-Civil War period, has continued until modern day and thus possess higher integrity. The woodland area continues to serve that purpose, a function it provided from the beginning of the Custis and Lee tenure.

Buildings and structures contributing to the Arlington House cultural landscape include the Mansion and the North and South Slave Quarters on the NPS-managed property, and the Tomb of the Unknown Soldier and the Memorial Amphitheater located outside of the NPS property.

Except for the woodland area, the landscape's ante-bellum vegetation features possess poor integrity due to the numerous changes made since the Civil War. Vegetation related to the 1865-1880 period displays somewhat higher integrity compared to the earlier periods.

Elements of the circulation system contributing to the cultural landscape include Sherman Drive, Lee Avenue, the central paths through both the Kitchen Garden and the Flower Garden, and the path linking the Tomb of the Unknown Civil War Soldier with the Flower Garden. These features follow their original alignments in most cases and possess good integrity of location, feeling, and setting, but do not possess their historic materials, design, and workmanship.

Views and vistas comprised an important aspect of the Arlington estate's development from its inception. Not only were principal vistas created overlooking Washington, D.C., to the east, but the house, the North and South Slave Quarters, and the Flower and Kitchen Gardens were placed to create unimpeded views from one end of the domestic complex to the other. Views were also created linking the Flower Garden with the "woodland grove" that once occupied the area west of the Flower Garden upon which the Memorial Amphitheater now stands. Additional views were purposefully created or limited by vegetative plantings, topography, and man-made landscape features, both at the domestic complex and other portions of the estate. Vistas were also manipulated during the cemetery period to emphasize or screen views of particular memorials. Views and vistas contributing to the Arlington House cultural landscape include the principal vistas eastward between Arlington House and Washington, D.C. (especially the vista overlooking Memorial Bridge and the Lincoln Memorial), the view between the Kitchen and Flower Gardens through the Work Yard, north-south views along Lee Avenue (the former carriage drive along the east side of the Mansion), and views eastward into the cemetery from the southern end of the Flower Garden.

Construction of Arlington House atop Arlington Heights required leveling the ridge's natural topography in order to accommodate the domestic complex and gardens. Most other areas of the estate, such as the woodland area, the slope east of the house, and the agricultural lands located to the east along the Potomac River remained in their natural formations. Although the Union Army's occupation of the estate during the Civil War resulted in the construction of earthworks, trenches, and ditches throughout parts of the estate, impacts to the Arlington House's topography were mostly limited to soil erosion in areas south and east of the Mansion. Modifications of the estate's circulation systems during the war generally followed the natural topography. During the cemetery period, the grounds surrounding the house and the North and South Slave Quarters were altered as well, mostly through additional terracing and the raising of the terraces' grade with fill. Despite these modifications, the cultural landscape generally possesses good overall integrity, with the woodland area displaying very good integrity in relation to all three periods of significance.

Cluster arrangement considers the locations and patterns of buildings, structures, and related spaces within the landscape, and is typically defined by common land use and integrated landscape design. Historically, the Arlington estate featured a number of clusters during its evolution during the Custis and Lee tenure, and through the Civil War and early cemetery periods. Only two clusters remain with any integrity: the domestic cluster comprised of the Mansion, the North and South Slave Quarters, the Potting Shed, and the Comfort Station; and the Administrative Center cluster located west of the domestic cluster, comprised of the NPS Administration Building, the archives and library building, and the cemetery's administrative staff buildings. The domestic cluster, despite the introduction of more recent buildings and the loss of other structures that once defined the domestic space, possesses good integrity of location and orientation.

Water features consist of man-made structures that provide aesthetic or utilitarian functions in the landscape. The Arlington estate once possessed two major water features, the Arlington Spring and the Alexandria and Georgetown Canal. Both features, located on the eastern portion of the estate near the Potomac River shore, were destroyed in the late nineteenth century. Two minor water features remain in

the woodland area of the NPS-managed property, a brick-lined drain and a tombstone-lined drainage swale. Both features are considered non-contributing elements to the cultural landscape.

Small-scale features help to provide “detail and diversity for both functional needs and aesthetic concerns” of the Arlington House cultural landscape. Examples of small-scale features that historically existed at Arlington House during the landscape’s three periods of significance include fences around the Flower and Kitchen Gardens, benches along paths, family grave sites, wells, hitching posts, telegraph and flagpoles, flower urns, and monuments. Most small-scale features related to the Custis and Lee period do not survive. Numerous features that do remain post-date the cemetery’s period of significance. Small-scale features of the Arlington House cultural landscape that contribute to its significance include the graves surrounding the Flower Garden, the flagpole located east of the Mansion, a brick drainage ditch along the eastern side of the Kitchen Garden, a stone bench or mounting stone located in graveled yard northeast of the Mansion (Hanna 2001b).

VISITOR USE AND EXPERIENCE

NPS Management Policies 2001 states that the enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all parks and that the NPS is committed to providing appropriate, high-quality opportunities for visitors to enjoy the parks (NPS, 2000a). While NPS places a high priority on maintaining Arlington House as it existed in 1861 immediately prior to the Civil War, it also seeks to ensure that visitors safely enjoy and are satisfied with availability and accessibility and appropriate interpretive and recreational opportunities.

Arlington House, the Robert E. Lee Memorial is open all year from 9:30 a.m. to 4:30 p.m. daily. The nearby Robert E. Lee Museum (located within the Potting Shed) and bookstore (located within the North Slave Quarters) is open from 8:00 a.m. to 4:30 p.m. Arlington House grounds are open from 8:00 a.m. to 7:00 p.m. between April 1 and September 30, and from 8:00 a.m. to 5:00 p.m. between October 1 and March 31. Nearly 500,000 visitors experienced Arlington House and its nearby facilities in 2005. This visitor count is based on the Mansion; with an unknown number visiting the grounds, Slave Quarters, or Museum only. The average visitor spent approximately 30 minutes in the house and its nearby facilities, or on the surrounding site. Brochures with a self-guided map describing the house as it was used by Robert E. Lee and his family are available. Rangers and volunteers are also stationed in the house to answer questions and provide information. The bookstore is also staffed, as is the museum at times. Special events and daily guided tours are programmed throughout the year. Tours are generally limited to 25 persons per tour, due to second floor weight limitations (NPS 2006).

Currently, Arlington House has a forced-air heating system that warms the structures to approximately 55 degrees Fahrenheit during the winter months. There is no air conditioning, and during the summer months, temperatures within the buildings can reach in excess of 100 degrees in the upper floors, with high humidity. During these times of high heat and humidity, the park staff place box fans throughout the buildings to keep the air circulating, to protect the collection and also to provide some comfort to the Memorial’s visitors. In addition, the 1921 Comfort Station located behind the South Slave Quarters is non-compliant with the 1990 Americans with Disabilities Act. An ADA compliant temporary toilet compartment has been made available behind the current Comfort Station.

HEALTH AND SAFETY

The NPS is committed to providing appropriate, high-quality opportunities for visitors and employees to enjoy the parks in a safe and healthful environment. The NPS strives to protect human life and provide for injury-free visits. One of the core values of the NPS, as stated in the *Management Policies 2001* and Director’s Order 50B, Occupational Safety and Health Program (NPS 1999), is the safety and health of its employees, contractors, volunteers, and the visiting public. It is the policy of the NPS to provide a safe and healthful place of employment to protect Federal and private property from accidental damage or

loss, and to meet or exceed all applicable statutory, regulatory, and policy requirements relating to safety, health, and the environment (NPS 2000).

In terms of fire protection, the NPS is required to follow all National Fire Protection Association (NFPA) standards, as well as NPS policies, including Life Safety Code® (NFPA 101®), National Fire Alarm Code (NFPA 72®), NPS Management Policies 2001 (NPS, 2000a), NPS DO-58, Structural Fire Management, and NPS Reference Manual #50B and DO-50B, Occupational Safety and Health Program (NPS 1999). Currently, Arlington House meets the minimum fire safety standards by providing hard-wired smoke detectors and fire extinguishers in every room, which are tested monthly to assure that they are functioning properly. In the event of a fire, the fire alarm system only provides a general warning that a fire is occurring within seven zones that include all the buildings within the historic area, however, it does not differentiate between structures or rooms.

Currently, first response to a fire at Arlington House and its outbuildings is the responsibility of park staff, whose main responsibility is to ensure the safe egress of visitors and staff. Second response is provided by the Arlington County fire department, whose current response time is roughly three to five minutes.

In addition, park visitors and staff can be affected by the high heat (85 degrees and higher) and humidity in the summer months and a general lack of ventilation within the Arlington House, especially in the upper floors. The house has no fresh air make-up or forced air heating system and no ventilation system; the only fresh air comes in through open windows and open front entry door, and the only hot air exhaust is an attic fan in the center block. This excessive heat and humidity currently experienced by park visitors and staff in the summer months, within Arlington House has the potential to exacerbate heat-related illnesses. Box fans are placed in the Mansion temporarily to provide circulation during the hottest months of the year.

PARK OPERATIONS AND MANAGEMENT

Arlington House, The Robert E. Lee Memorial is an administrative unit of the National Park System and is an administrative unit of the George Washington Memorial Parkway. Arlington House staff offices are located in the Old Administrative Building (the former stable) on the western side of Sherman Drive, across the street from the Memorial. Currently the Memorial is staffed by about a dozen full-time employees and is supported by staff from the George Washington Memorial Parkway and also volunteers. Park staff assigned to Arlington House are responsible for conducting interpretative programs, managing the Memorial's bookstore, maintaining and cataloging the Memorial's vast museum collection, general maintenance of the grounds and structures, coordinating volunteers, and management of the site.

Overall management decisions concerning Arlington House are the responsibility of the Superintendent of the George Washington Memorial Parkway, while an on-site site manager coordinates the daily operations of the Memorial and staff. Interpretative services provided by staff at Arlington House includes answering questions, guiding tours, hosting special holiday events, and selling books focused on the era of Robert E. Lee. The park currently employs a full-time museum curator and technician who are tasked with maintaining the Memorial's collection and assuring that every piece is documented and cataloged appropriately. The Memorial's maintenance staff is responsible for the general upkeep of the grounds (including the two historic gardens, and natural resources management of woodlands), maintaining the lawns and hedges, trash removal, snow removal, and general maintenance of Arlington House and the outbuildings. In addition, volunteers at Arlington House help out in many different ways including interpretation, writing, and maintenance.

ENVIRONMENTAL CONSEQUENCES

GENERAL METHODOLOGY FOR ESTABLISHING IMPACT THRESHOLDS AND MEASURING EFFECTS

This chapter addresses the potential impacts to each of the resource areas (e.g. impact topics) discussed under the “Affected Environment” chapter for each of the alternatives. The Action Alternative is compared to the No Action Alternative, or baseline condition of Arlington House, to determine resource impacts. In the absence of quantitative data, best professional judgment was used. In general, impacts were determined through consultation and collaboration with a multidisciplinary team of NPS and other professional staff. Other existing data sources such as park planning documents and the NPS website were also used to assess the potential impact of each alternative.

Potential impacts of all alternatives are described in terms of type (beneficial or adverse); context; duration (short- or long-term); and intensity (negligible, minor, moderate, major). Definitions of these descriptors include:

Beneficial: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.

Adverse: A change that declines, degrades, and/or moves the resource away from a desired condition or detracts from its appearance or condition.

Context: Context is the affected environment within which an impact would occur, such as local, park-wide, regional, global, affected interests, society as whole, or any combination of these. Context is variable and depends on the circumstances involved with each impact topic. As such, the impact analysis determines the context, not vice versa.

Duration: The duration of the impact is described as short-term or long-term. Duration is variable with each impact topic; therefore, definitions related to each impact topic are provided in the specific impact analysis narrative.

Intensity: Because definitions of impact intensity (negligible, minor, moderate, and major) vary by impact topic, intensity definitions are provided separately for each impact topic analyzed.

CUMULATIVE IMPACTS

NEPA regulations require an assessment of cumulative impacts in the decision-making process for Federal projects. Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.7). Cumulative effects can result from individually minor, but collectively moderate or major actions that take place over a period of time.

Cumulative impacts are considered for all alternatives, including the No Action Alternative. Cumulative impacts were determined by combining the impacts of the alternative being considered with other past, present, and reasonably foreseeable future actions. The following projects were identified as having the potential for impacts to the resources that are evaluated in this environmental assessment. These projects include present and reasonably foreseeable projects within the national recreation area and in the surrounding area. No past projects were considered applicable.

On-going Funeral Services at Arlington National Cemetery

Currently the cemetery holds an average of 27 funerals a day, which results in more than 6,400 burials a year in 2,000 new sites. The majority of these burials are held in the Columbarium or in existing gravesites. More than 300,000 people are currently buried at Arlington Cemetery.

Arlington National Cemetery Annual Visitation

More than four million people visit the cemetery annually, many coming to pay final respects at graveside services, of which, over 100 are conducted each week, Monday through Friday. Visitor facilities at the cemetery include the visitor's center, the Memorial Amphitheater, the Tomb of the Unknowns, and dozens of different monuments. Located by the cemetery entrance, the visitor center provides maps, guidebooks, exhibits, information services (to include grave locations), a bookstore, and restrooms. About 5,000 visitors attend each of the three major annual Memorial services in the Memorial Amphitheater. They take place on Easter, Memorial Day, and Veterans Day and are sponsored by the U.S. Army Military District of Washington. The Tomb of the Unknowns, also known as the Tomb of the Unknown Soldier, has never been officially named. The Tomb of the Unknowns stands atop a hill overlooking Washington, D.C. On March 4, 1921, Congress approved the burial of an unidentified American soldier from World War I in the plaza of the new Memorial Amphitheater. The Tomb of the Unknowns is guarded 24 hours a day, 365 days a year, and in any weather by Tomb Guard sentinels.

Arlington National Cemetery Expansion Projects

Currently, Arlington National Cemetery is developing roughly 40 acres of land for additional burial space directly to the west of Route 110, along the southern edge of the current cemetery. The development will yield 26,000 new graves and 5,000 niches along a boundary wall. Landscaping will occur during the second phase. Each acre yields approximately 800 gravesites. The newly developed area will provide ground burials up until 2030.

Two additional projects will start in 2008 and 2010. The Millennium Project in 2008 and the Navy Annex expansion in 2010 will enable the cemetery to hold ground burials until 2060. The Millennium Project will develop three separate parcels. The cemetery has plans to develop half of the acreage along with the Fort Myer picnic area along McNair Road. The area around the cemetery's old warehouse, in back of the Fort Myer motor pool will also be part of the Millennium Project. The Navy Annex development could begin as early as 2010, and is tied in with the Pentagon renovation.

Milling and Re-surfacing of Sherman Drive and Memorial Avenue

Arlington National Cemetery will be milling and re-surfacing Sherman Drive including those portions around Arlington House. This work is expected to be a short duration project during the summer, 2006 and finishing by the end of summer. Staging for equipment and materials will be associated with the larger Arlington National Cemetery expansion project in the southeast portion of the cemetery. There is no nexus between the reconstruction of Memorial Avenue work and anticipated work at Arlington House. This is an extensive reconstruction, re-milling and re-paving project that will adversely impact traffic access to Arlington House. However, this project is expected to be completed by October 6, 2006. Staging of equipment and supplies for this project will occur along the George Washington Memorial Parkway.

IMPAIRMENT ANALYSIS

The *NPS Management Policies 2001* require an analysis of potential effects to determine whether or not actions would impact park resources, but also to determine whether those actions would impair park resources. The fundamental purpose of the national park system, as established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. These laws give the NPS the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values.

The impairment that is prohibited by the Organic Act and the General Authorities Act is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Whether an impact meets this definition depends on the particular resources and values that

would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact to any park resource or value may constitute an impairment, but an impact would be more likely to constitute an impairment to the extent that it has a major or severe adverse effect upon a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

Impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by concessionaires, contractors, and others operating in the park.

An impairment determination is included in the conclusion statement for all impact topics related to all Arlington House natural and cultural resources. Impairment determinations are not made for health and safety or park operations and management because impairment findings relate back to park resources and values, and these impact areas are not generally considered to be park resources or values. Impairment determinations are not made for visitor use and experience because, according to the Organic Act, enjoyment cannot be impaired in the same way an action can impair park resources and values.

SOILS

Methodology and Assumptions

Potential impacts to soils are assessed based on the extent of disturbance to natural undisturbed soils, the potential for soil erosion resulting from disturbance, and limitations associated with the soils. Analysis of possible impacts to soil resources was based on on-site inspection of the resource within the project area, review of existing literature and maps, and information provided by the NPS and other agencies.

Study Area

The geographic study area for soils is contained within the boundaries of the Arlington House grounds. It is expected that rehabilitation activities would not occur outside this area.

Impact Thresholds

The following thresholds were used to determine the magnitude of impacts on soil resources:

Negligible – Soils would not be impacted or the impact to soils would be below or at the lower levels of detection. Any impacts to soils would be slight.

Minor – Impacts to soils would be detectable. Impacts to undisturbed soil area would be small. Mitigation would be needed to offset adverse impacts and would be relatively simple to implement and would likely be successful.

Moderate – Impacts to soils would be readily apparent and result in a change to the soil character over a relatively wide area. Mitigation measures would be necessary to offset adverse impacts and would likely be successful.

Major – Impacts to soils would be readily apparent and substantially change the character of the soils over a large area both in and out of the park. Mitigation measures necessary to offset adverse impacts would be needed, extensive, and their success would not be guaranteed.

Duration – Short-term impact to soils would last less than one year; long-term impacts to soils would last longer than one year.

Impacts of Alternative A - No Action Alternative

Analysis. Under the No Action Alternative, the NPS would continue with its current maintenance protocols within Arlington House and its outbuildings and grounds. There would be no demolition or construction of buildings, no excavation of soils or rock, placement of fill, or removal of vegetation as a result of this alternative. Therefore, no direct or indirect, adverse or beneficial impacts to soils resources would occur.

Cumulative Impacts. Impacts to soils are site specific and are not affected by cumulative development outside the study area. Cumulative impacts would only occur if development immediately within or adjacent to the site affected the soils on the site. Currently, there are no proposed projects that could result in impacts to soils found within Arlington House. Because the No Action Alternative would not result in any beneficial or adverse impacts to soils, there would be no cumulative impacts as a result of the No Action Alternative.

Conclusion. Implementation of the No Action Alternative would result in no direct, indirect, or cumulative beneficial or adverse impacts to soil characteristics in the study area. The No Action Alternative would not result in impairment of soils.

Impacts of Alternative B (NPS Preferred) – Rehabilitation of Arlington House Outbuildings, and Grounds

Analysis. Alternative B would require the removal of the non-contributing 1921 Comfort Station and maintenance shed, the construction of a new Comfort Station and underground Mechanical Bunker, and the installation of an underground utility corridor that connects the Mechanical Bunker with the other structures on the site. In addition a staging area would be located on the western side of the Kitchen Garden. This area would be covered with an approved filter fabric for stockpiling of gravel. All construction materials and debris would be removed prior to project closeout and the staging area tilled to mitigate soil compactions that may have occurred.

During the initial removal of the 1921 Comfort Station and maintenance shed, soils in and around the demolition site would likely be disturbed and also compacted from equipment used during demolition and while hauling materials offsite. After the removal of the Comfort Station, the site would be remediated by replacing the soils that were removed and planting vegetation that is conducive to the original 1861 landscape. The site where the existing maintenance shed currently sits is the approximate site of the proposed new Comfort Station.

During the initial site preparation for the installation of the new Comfort Station and Mechanical Bunker, the area would have to be excavated and the areas immediately adjacent to this excavation would likely be disturbed and also compacted from the equipment used during the excavation and excavated from both the Mechanical Bunker and new Comfort Station, covering approximately 1,600 square feet. During construction of the new structures, exposed soils could be lost as a result of erosion during a storm event. However, erosion at the site would be minimized through implementation of mitigation measures such as silt fencing and sediment traps to contain sediment onsite and by covering disturbed soil with plastic sheeting or other suitable cover material.

The installation of new utility lines would require a narrow trench several feet deep to be dug that would connect the new Comfort Station and Mechanical Bunker to the Mansion. The proposed alignment of the trench would follow the previously disturbed gravel road and Work Yard also disturbing area soils. Additional adverse short-term impacts to soils could occur if construction equipment working onsite drove off the gravel driveway, which could compact and disturb soils. These impacts would be mitigated after construction has been completed by tilling or aerating the soil and replanting the areas impacted.

Soils within the western edge of the Kitchen Garden would be compacted as the area would be used as a staging area during construction. Equipment and materials would be stored on this site as construction activities took place. Overall impacts to this site would be minimal because prior to staging, the site

would be prepared by placing an approved filter fabric down over the site then gravel would be placed on top. After construction has been completed, the gravel and filter fabric would be removed and the site would be restored by tilling and aerating the soils prior to planting.

Overall, these actions combined would result in adverse short-term minor impacts to soils because of the necessary disturbance, potential placement of fill, and the compaction of soils. These adverse impacts to soils would be minor because the area of undisturbed soil impacted would be small and mitigation measures to correct those impacts would be successful and occur only during construction.

Cumulative Impacts. Cumulative impacts would be the same as Alternative A. Cumulative impacts would only occur if development immediately within or adjacent to the site affected the soils on the site. Currently, there are no past, present, or proposed future projects that could result in impacts to soils found within Arlington House. As a result, there would be no cumulative impacts as a result of Alternative B.

Conclusion. Implementation of Alternative B would result in adverse short-term minor impacts to soils due to the necessary disturbance, excavation, potential placement of fill, and the compaction of soils in and around the sites for the new Mechanical Bunker and Comfort Station. There would be no beneficial or adverse cumulative impacts associated with this alternative. Alternative B would not result in impairment of park soils.

VEGETATION

Methodology and Assumptions

Available information on vegetation and vegetative communities occurring within the proposed project area was compiled and reviewed. Predictions about short- and long-term project impacts on vegetation were based on general characteristics of the native vegetation and proposed encroachment into vegetated areas associated with the construction of the proposed Mechanical Bunker and Comfort Station.

Study Area

The geographic study area for vegetation lies within the boundary of each proposed site and any area that would be used for construction staging. It is expected that construction activities would not occur outside this area.

Impact Thresholds

The following thresholds were used to determine the magnitude of impacts on vegetation:

Negligible – Individual native plants may be impacted, but measurable or perceptible changes in plant community size, integrity, or continuity would not occur. No species of special concern would be impacted.

Minor – Impacts on native plants would be measurable or perceptible, but would impact a small area. The viability of the plant community would not be impacted and the community, if left alone, would recover. Special measures to avoid impacting species of special concern could be required and would be effective.

Moderate – A change would occur over a relatively large area in the native plant community that would be readily measurable in terms of abundance, distribution, quantity, or quality. Mitigation measures would probably be necessary to offset adverse impacts and would likely be successful. Some species of special concern could also be impacted.

Major – Impacts on native plant communities would be readily apparent, and would substantially change vegetation community types over a large area in and out of the park. Plant communities could include species of special concern. Extensive mitigation would be needed to offset adverse impacts, and its success would not be assured.

Duration – Short-term impacts to vegetation would last less than one year; long-term impacts would last longer than one year.

Impacts of Alternative A – No Action Alternative

Analysis. Under the No Action Alternative, there would be no demolition or construction of buildings, no excavation of soils or rock, placement of fill, or removal of vegetation as a result of this alternative. Current maintenance of the grounds would continue, including regular mowing of the lawns, trimming of shrubs and trees, and the occasional removal of any tree that poses a potential threat to visitor or staff safety. As a result, adverse long-term negligible impacts to vegetation could occur as the occasional individual tree is removed.

Cumulative Impacts. Proposed and current projects occurring within the general vicinity of Arlington House that could impact vegetation include the current and future planned expansion of Arlington National Cemetery. The current expansion project would cover roughly 40 acres, while future expansion projects would total another 40 acres. Site preparation for the proposed expansions would require the land be cleared of most vegetation in order to prepare the site for landscaping, several large trees would be preserved. As part of the expansion, grass would be laid down, trees and other ornamental plants, and shrubs would be planted in strategic places. Impacts to vegetation as a result of the current and future proposed cemetery expansion would result in adverse long-term minor impacts. These impacts in combination with the adverse long-term negligible impacts of the No Action Alternative would result in adverse long-term minor cumulative impacts to vegetation. While the areas where the cemetery expansions are to take place are not adjacent to Arlington House, the total amount of vegetation within Arlington National Cemetery, which Arlington House is physically a part of, would be impacted.

Conclusion. Implementation of the No Action Alternative could result in adverse long-term negligible impacts to vegetation due to some maintenance activities. Adverse long-term minor cumulative impacts to vegetation would also occur because of the expansion of Arlington National Cemetery. Impairment of vegetation resources would not occur under this alternative.

Impacts of Alternative B (NPS Preferred) – Rehabilitation of Arlington House Outbuildings, and Grounds

Analysis. Activities associated with the construction of the new Comfort Station and Mechanical Bunker would occur on the mixed hardwood side slopes of the western and northern edge of the site where the proposed footprints of these structures would to be placed. It is anticipated that no more than 2,000 square feet of this habitat would be impacted during construction.

Adverse impacts to trees and other vegetation adjacent to the footprint of these buildings would occur from construction activities proposed under this alternative. During site preparation and construction of the Mechanical Bunker and Comfort Station, the overall health of trees and other vegetation in the general vicinity of the construction activities could be affected through disturbances such as broken tree branches and severed or damaged tree roots. In addition, the trimming or removal of an occasional tree could become necessary if the tree is a hindrance to construction or if it could be a hazard to visitors and staff. It is expected that up to six trees may need to be removed to accommodate the proposed construction activities. To minimize impacts to trees and other native and managed vegetation, including the number of trees removed, existing trees would be incorporated into the design plans whenever possible. After construction, disturbed areas would be reseeded or replanted with grasses or ornamental plantings aimed at screening the proposed structures. Construction activities associated with the Alternative B would have adverse long-term minor, localized, impacts on vegetation found within the study area.

Proposed activities associated with the restoration of the Kitchen Garden would involve the removal of roughly 1,500 square feet of hedgerow made up of ornamental English holly, with the area being replanted with a series of ornamental evergreen trees and fruit trees that were present at the time of Robert E. Lee's residence. Little if any habitat loss would occur in these areas. Minimal native vegetation removal would occur and vegetation that is removed would be replaced. As a result, adverse impacts to

native vegetation as a result of activities associated with the restoration of the Kitchen Garden would be negligible and of short duration.

Cumulative Impacts. Proposed and current projects occurring within the general vicinity of Arlington House that could impact vegetation include the current and future planned expansion of Arlington National Cemetery. The current expansion project would cover roughly 40 acres, while future expansion projects would total another 40 acres. Site preparation for the proposed expansions would require that these areas be cleared of most vegetation in order to prepare the site for landscaping; however, several large trees would be preserved. As part of the expansion, grass turf would be laid, trees and other ornamental plants and shrubs would be planted in strategic places. These activities would result in adverse long-term minor impacts to vegetation. These impacts in combination with the adverse short-term negligible and long-term minor impacts of Alternative B would result in adverse long-term minor cumulative impacts to vegetation. While the areas where the cemetery expansions are to take place are not adjacent to Arlington House, the total amount of vegetation within Arlington National Cemetery, which includes Arlington House, would be adversely impacted.

Conclusion. Implementation of Alternative B would result in adverse short-term negligible and long-term minor impacts to vegetation due to construction-related disturbance. Adverse long-term minor cumulative impacts to vegetation would also occur because of the expansion of Arlington National Cemetery. Impairment of vegetation resources would not occur under this alternative.

CULTURAL RESOURCES

GUIDING REGULATIONS AND POLICIES

Federal actions that have the potential to affect cultural resources are subject to a variety of laws. The National Historic Preservation Act of 1966, as amended, is the principal legislative authority for managing cultural resources associated with NPS projects. Generally, Section 106 of the National Historic Preservation Act (NHPA) requires all Federal agencies to consider the effects of their actions on cultural resources listed and/or determined eligible for listing in the National Register of Historic Places (National Register). Such resources are termed “historic properties.” Agreement on mitigation of adverse effects to historic properties is reached through consultation with the State Historic Preservation Officer; Tribal Historic Preservation Officer, if applicable; and, as required, the Advisory Council on Historic Preservation (Advisory Council). In addition, the NHPA requires that Federal agencies take actions to minimize harm to historic properties that would be adversely affected by a Federal undertaking. Among other things, Section 110 of the NHPA also charges Federal agencies with the responsibility for establishing preservation programs for the identification, evaluation, and nomination of historic properties to the National Register of Historic Places.

Other important laws and regulations designed to protect cultural resources are:

- Native American Graves Protection and Repatriation Act (NAGPRA), 1990
- American Indian Religious Freedom Act (AIRFA), 1978
- National Environmental Policy Act (NEPA), 1969
- Archeological Resources Protection Act (ARPA), 1979
- Executive Order 11593, 1971

In addition, the NPS is charged with the protection and management of cultural resources in its custody. This is furthered through the implementation of Directors Order 28: Cultural Resources Management Guidelines (NPS 1998), NPS Management Policies (NPS 2000a), and the 1995 Service-wide Programmatic Agreement with the Advisory Council and the National Conference of State Historic Preservation Officers. These documents charge NPS managers with avoiding, or minimizing to the greatest degree practicable, adverse impacts on park resources and values. Although the NPS has the

discretion to allow certain impacts in parks, that discretion is limited by the statutory requirement that park resources and values remain unimpaired, unless a specific law directly provides otherwise.

GENERAL METHODOLOGY AND ASSUMPTIONS

The NPS categorizes cultural resources by the following categories: archeological resources, cultural landscapes, historic districts and structures, museum objects, and ethnographic resources. As noted in “Issues and Impact Topics” of the “Purpose and Need” chapter, only impacts to archeological resources, cultural landscapes, historic districts and structures, and museum objects are of potential concern for this project. There would be no impacts to ethnographic resources.

The descriptions of effects on cultural resources that are presented in this section are intended to comply with the requirements of both NEPA and Section 106 of the NHPA. In accordance with the Advisory Council’s regulations implementing Section 106 (36 CFR Part 800, *Protection of Historic Properties*), impacts on cultural resources were identified and evaluated by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that are either listed in or eligible to be listed in the National Register; (3) applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and (4) considering ways to avoid, minimize, or mitigate adverse effects.

Under the Advisory Council’s regulations, a determination of either *adverse effect* or *no adverse effect* must also be made for affected National Register eligible cultural resources. An adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the National Register (for example, diminishing the integrity of the resource’s location, design, setting, materials, workmanship, feeling, or association). Adverse effects also include reasonably foreseeable effects caused by the proposal that would occur later in time, be farther removed in distance, or be cumulative (36 CFR 800.5). A determination of *no adverse effect* means there is either no effect or that the effect would not diminish, in any way, the characteristics of the cultural resource that qualify it for inclusion in the National Register.

CEQ regulations and the National Park Service’s *Conservation Planning, Environmental Impact Analysis and Decision-making* (Director’s Order #12) also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, e.g. reducing the intensity of an impact from major to moderate or minor. Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under NEPA only. Cultural resources are non-renewable resources and adverse effects generally consume, diminish, or destroy the original historic materials or form, resulting in a loss in the integrity of the resource that can never be recovered. Therefore, although actions determined to have an adverse effect under Section 106 may be mitigated, the effect remains adverse.

The NPS guidance for evaluating impacts (*Director’s Order 12: Conservation Planning, Environmental Impact Analysis, and Decision Making*) (NPS 2001, 2004d) requires that impact assessment be scientific, accurate, and quantified to the extent possible. For cultural resources, it is seldom possible to measure impacts in quantifiable terms, therefore impact thresholds must rely heavily on the professional judgment of resource experts.

A summary is included in the impact analysis sections for historic districts and structures, cultural landscapes, archaeological resources, and museum objects to comply with Section 106. The Section 106 summary is an assessment of the effect of the undertaking (implementation of the alternative) on National Register eligible or listed cultural resources only, based upon the Advisory Council’s criteria of adverse effect.

The Area of Potential Effects for this project includes all areas where new facility construction or landscaping and utilities construction may occur. This area may vary to some degree by impact topic.

ARCHEOLOGICAL RESOURCES

Methodology and Assumptions

As archeological resources exist essentially in subsurface contexts, potential impacts to archeological resources are assessed according to the extent to which the proposed action would involve ground-disturbing activities such as excavation or grading. Analysis of possible impacts to archeological resources was based on a review of the previous archeological studies, consideration of the preliminary design plans, and other information provided by the NPS.

Study Area

The geographic study area for archeological resources soils is contained within the boundaries of the Arlington House grounds, especially the Mansion, the Kitchen Garden, the North and South Slave Quarters, and the Work Yard. It is expected that ground-disturbing activities would be confined to this area.

Impact Thresholds

Impacts to archeological resources occur when the proposed action results in whole or partial destruction of the resource, which is termed a loss of integrity in the context of Section 106. Impact thresholds for archeological resources consider both the extent to which the proposed action results in a loss of integrity and the degree to which these losses can be compensated by mitigating activities, such as preservation or archeological data recovery. The process begins with assessment of a resource according to its eligibility for the National Register of Historic Places (NRHP), as only resources considered only sites considered significant enough for listing on the NRHP are protected by Federal regulations.

Under Federal guidelines, resources are eligible for the NRHP if they possess integrity and they meet one or more of the criteria of eligibility for inclusion in the NRHP. Most archeological resources found eligible for the NRHP significant under Criterion D because they have the potential to provide important information about the history or prehistory. However, in some circumstances, archeological resources might found significant because (i) they are associated with events that have made a significant contribution to the broad patterns of our history (NRHP Criterion A), or (ii) because they are associated with the lives of persons significant in our past (NRHP Criterion B), or (iii) because they the distinctive characteristics of a type, period, or method of construction (NRHP Criterion C). Given the established historical significance of the site, archaeological resources should be considered not only in terms of Criterion D, but also with respect to Criteria A and B. Further, an archeological resource can be determined eligible for the National Register in one of three levels of significance: local, state, or national (see *National Register Bulletin #15, How to Apply the National Register Criteria for Evaluation*).

For purposes of analyzing impacts to archeological resources, thresholds of change for the intensity of an impact are based upon the significance of the resources and the foreseeable loss of integrity. All of these discussions consider only the direct impacts of construction, because operation of the facilities should have no ground disturbance activities and no additional effect on archeological resources under any of the alternatives under consideration. All impacts are considered long-term (e.g., lasting longer than one year).

Impact Thresholds

- Negligible* — There would be no real disturbance at all to an archeological site. For purposes of Section 106, the determination of effect would be *no adverse effect*.
- Minor* — Adverse impact — The impacts would affect small portions of an archeological site that have been already disturbed, previously investigated and found to have no information potential, or contain completely redundant features. The impacts would not affect the ability to recover information about the site. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Beneficial impact — A site would be preserved in its natural state. For purposes of Section 106, the determination of effect would be no adverse effect.

Moderate — Adverse impact — The impact would result in the destruction of larger portions of an archeological site (not investigated, investigated and known to contain additional features, etc.) that would hamper the ability to recover information about the site. For purposes of Section 106, the determination of effect would be *adverse effect*. (A memorandum of agreement is executed among the National Park Service and applicable state or tribal historic preservation officer and, if necessary, the Advisory Council on Historic Preservation in accordance with 36 CFR 800.6(b). Measures identified in the MOA to minimize or mitigate adverse impacts reduce the intensity of impact under NEPA from major to moderate.)

Beneficial impact — The site would be stabilized. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Major — Adverse impact — The impacts would result in a more complete destruction of an archeological site that would negate the ability to recover information about the site. For purposes of Section 106, the determination of effect would be *adverse effect*. (Measures to minimize or mitigate adverse impacts cannot be agreed upon and the National Park Service and applicable state or tribal historic preservation officer and/or Advisory Council are unable to negotiate and execute a memorandum of agreement in accordance with 36 CFR 800.6(b).)

Beneficial impact — The site would be actively stabilized/preserved in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* to accurately depict its form, features, and character as it appeared during its period of significance. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Duration — All impacts to archeological resources are considered long-term.

Impacts of Alternative A - No Action Alternative

Analysis. Under the No Action Alternative, there would be no impacts to archeological resources, since no ground-disturbing activities would occur. Existing archeological resources would remain undisturbed.

Cumulative Impacts. Impacts to archeological resources are site specific and are not affected by cumulative development outside the study area. Cumulative impacts would only occur if new projects within the site involve ground disturbing activities. Aside from the action currently under analysis, there are no other projects that could have an effect on the site's archeological resources. Because the No Action Alternative would result in no beneficial or adverse impacts to archeological resources, there would be no cumulative impacts as a result of the No Action Alternative.

Conclusion. Implementation of the No Action Alternative would result in no direct, indirect, or cumulative beneficial or adverse impacts to archeological resources in the study area. The No Action Alternative would not result in impairment of archeological resources.

Impacts of Alternative B (NPS Preferred) – Rehabilitation of Arlington House Outbuildings, and Grounds

Analysis. While most of the proposed rehabilitation activities would involve the visible, above ground elements of the Mansion, Slave Quarters and Grounds, Alternative B would also require a variety of ground-disturbing activities that must be considered for possible impacts to archeological resources. These include:

- interior treatments to the Slave Quarters
- drainage improvements for the Main House and Slave Quarters
- foundation stabilization for the Mansion
- construction of the new Mechanical Bunker
- construction of the new Comfort Station
- installation of new utility lines
- temporary use of the Work Yard and Kitchen Garden for construction staging
- rehabilitation of the Kitchen Garden and Grounds
- activities associated with site stabilization that may involve ground disturbance, such as the addition of erosion control measures

As the NPS has completed a number of archeological investigations of the site, it is possible to assess the potential impacts of each of these activities in detail. In the North Slave Quarters, ground disturbing activities would occur only in the Summer Kitchen and Center Room (Mammy's Room). Work in the lower level of the Summer Kitchen would include repair of the existing brick floor and installation of a landing and stairway from the upper level. Some ground disturbance in the Center Room may occur during installation of a reproduction ships ladder from the upper level. Previous restoration campaigns have significantly altered the interior grades in both rooms, and there are no intact archeological deposits associated with the site's period of significance. In the South Slave Quarters, ground disturbing activities would occur in the Center Room (Smokehouse) and in Selina Gray's Room. Activities in the Center Room would involve removal of the existing floor, raising the floor level, and reconstruction of a hearth. The room contains a buried hearth feature believed to date to the site's period of significance, and it would be protected during the reconstruction activities. Selina Gray's Room contains archeological remnants of the floor and hearth that are believed to date from the site's period of significance, as well as more recent reconstruction features. During reconstruction of the hearth, care would be taken to preserve all original remnants of features that date to the site's period of significance. Considered as a whole, the interior treatments of the Slave Quarters would have adverse negligible impacts on noteworthy archeological resources.

Drainage improvements would occur in the yard areas immediately adjacent to the foundations of the Mansion and Slave Quarters. Archeological investigations in these areas have documented the sequence of historical landscape modifications that have occurred around these structures, including many events that postdate the site's period of significance. As the drainage improvements would occur primarily in areas that are either disturbed or already investigated archeologically, adverse impacts from these activities would be negligible.

No significant archeological resources are present in the proposed areas where the new Mechanical Bunker and Comfort Stations would be built; therefore, these elements of Alternative B would have no impact on archeological resources.

There were no archeological resources identified during the survey conducted in conjunction with the 2005 Phase I Archeology Report of the utility line corridor. However, the survey results did suggest that some midden areas might be present along the utility corridor, so there is a possibility that utility line construction may have a direct effect on these resources. As recommended in the Phase I Archeology Report, the NPS would implement a construction monitoring program for the utility line excavation conducted by either a NPS or contracted archeologist. This monitoring program would archeologically document any midden areas found along this corridor. If such resources are discovered during utility line excavation, the adverse impact would be negligible as the NPS construction contract would contain a standard provision that would require the contractor to cease work and notify the NPS of the find. In the event of such an unanticipated discovery, the NPS would develop and implement appropriate mitigation measures in accordance with 36 CFR 800.13. Although this element of Alternative B may have a direct

adverse negligible impact on archeological resources, this impact would be fully mitigated by archeological monitoring and documentation of significant finds.

There would be some temporary use of the Work Yard and Kitchen Garden for construction staging activities, and this would result in some compaction of the surface soils. Previous surveys determined that the surface soils in the Work Yard are relatively recent, so there would be no impacts to archeological resources in that area. Surveys conducted in the Kitchen Garden did not identify noteworthy archeological resources, but there is the possibility that small, localized archeological features or deposits are present. If so, any adverse impact from compaction and subsequent restoration (tilling) of the soil would be negligible, particularly because the Kitchen Garden soils would be protected by installation of a filter cloth during construction activities.

Ground-disturbing activities associated with rehabilitation of the Kitchen Garden and Grounds would be associated with the removal intrusive structures that post-date the site's period of significance. Reconstruction of the landscape to reflect the site's period of significance would occur. In addition to removal of the existing Comfort Station and maintenance shed, minor ground disturbing activities would include replacement of vegetation, installation of a post and rail fence, grading, and other landscape treatments. These activities would occur within the Kitchen Garden and Work Yard. Previous survey in these areas have not identified any noteworthy archeological resources, however the possibility exists that small, localized archeological features or deposits are present and, if so, the rehabilitation activities could have an adverse effect on them. If archeological resources are discovered during rehabilitation activities, the adverse impact would be negligible as the NPS construction contract would contain a standard provision that would require the contractor to cease work and notify the NPS of the find. In the event of such an unanticipated discovery, the NPS would develop and implement appropriate mitigation measures in accordance with 36 CFR 800.13.

Cumulative Impacts. Cumulative impacts would be the same as Alternative A. Currently, there are no past, present, or proposed future projects that could result in impacts to archeological resources associated with Arlington House. As a result, there would be no cumulative impacts in Alternative B.

Conclusion. Activities associated with the implementation of Alternative B that would require subsurface excavation or ground disturbing activities could have adverse long-term negligible impacts to archeological resources. However, these impacts would be fully mitigated through archeological monitoring and documentation of significant finds. There would be no cumulative impacts to archeological resources associated with Alternative B. Alternative B would not result in impairment of archeological resources.

MUSEUM COLLECTIONS

Methodology and Assumptions

Potential impacts to museum collections are assessed according to the conditions under which they are displayed or stored. Environmental conditions such as temperature and humidity are important factors governing the stability of museum objects. Museum objects are most stable and secure when they are under storage in a facility that meets museum standards. They are subject to physical damage or loss when then must be moved or when they are stored or displayed in settings with inadequate or outdated fire suppression systems and environmental controls. Analysis of possible impacts to museum collections was based on examination of the facilities where the collections are stored and displayed as well as information provided by the NPS.

Study Area

The study area for museum collections consists of the facilities where the collections are displayed or stored. There are currently seven "official" storage locations for the Arlington House collections, including on-site and off-site locations. The on-site locations include various locations within the Mansion, the Museum Building, the Old Administration Building, and the Curatorial Building. The

primary off-site location is the Museum Resource Center (MRCE) in Landover, and some Park Archival Records (maps, project files, etc) are also stored at the Parkway's Maintenance Complex. As the size of the collections exceeds the available storage space, a number of "unofficial" storage locations are also in use; many of these are locations within the Mansion that are not visible to the public, such as drawers, closets, or locations behind doors and beds.

Impact Thresholds

Museum collections (prehistoric and historic objects, artifacts, works of art, archival documents, and natural history specimens) are generally ineligible for listing in the NRHP. As such, Section 106 determinations of effect are not provided for museum collections. However, museum collections may be threatened by fire, theft, vandalism, natural disasters, and careless acts, as well as the gradual deterioration that results from fluctuating environmental conditions. The preservation of collections is an ongoing process of preventative conservation, supplemented by conservation treatment, when necessary. The primary goal is preservation of artifacts in as stable condition as possible to prevent damage and minimize deterioration.

For the purpose of analyzing potential impacts, the thresholds for the intensity of an impact on museum collections are defined as follows:

<i>Negligible</i>	Impact is at the lowest levels of detection — barely measurable with any perceptible consequences, either adverse or beneficial, to museum collections.
<i>Minor-</i>	<p><u>Adverse impact</u> – would affect the integrity of few items in the museum collection, but would not degrade the usefulness of the collection for future research and interpretation.</p> <p><u>Beneficial impact</u> – impact (s) would stabilize the current condition of the collection or its constituent components to minimize degradation.</p>
<i>Moderate-</i>	<p><u>Adverse impact</u> – would affect the integrity of many items in the museum collection and diminish the usefulness of the collection for future research and interpretation.</p> <p><u>Beneficial impact</u> – would improve the condition of the collection or protect its constituent parts from the threat of degradation.</p>
<i>Major-</i>	<p><u>Adverse impact</u> – would affect the integrity of most items in the museum collection and destroy the usefulness of the collection for future research and interpretation.</p> <p><u>Beneficial impact</u> – would secure the condition of the collection as a whole or its constituent components from the threat of further degradation.</p>
<i>Duration –</i>	Short-term impact to museum collections would last less than one year; long-term impacts would last longer than one year.

Impacts of Alternative A - No Action Alternative

Analysis. Under Alternative A (No Action Alternative), the NPS would continue with its current procedures for the preservation and conservation of the museum collections, in accordance with the existing Collection Management Plan, Collection Storage Plan, and Housekeeping Plan. However, while the current practices would continue under the No Action Alternative, some adverse long-term, minor impact to the collections is foreseeable. This is attributable primarily to the environmental conditions within the Main House and Slave Quarters that threaten to deteriorate the collections, especially furniture. Given the lack of effective fire suppression controls, collections housed in the Mansion or Slave Quarters could be subject to a catastrophic loss (major adverse effect).

The primary environmental threats currently affecting museum collections that are stored or displayed at Arlington House are related to temperature, relative humidity, and air pollution. Temperatures that are too high can cause gradual disintegration or discoloration of organic materials, while temperatures that are too low can cause desiccation that can lead to fracture of paints, adhesives, and other materials. Fluctuating temperatures can cause objects to expand and contract rapidly, resulting in fractures and delamination of brittle solid materials.

Humidity is directly related to temperature. High humidity can cause mold to form, cause rust and corrosion to metals, and can hydrate of some materials which can cause swelling. Low humidity may lead to dehydration or desiccation of organic materials. Fluctuating levels of humidity causes shrinking and swelling of organic materials that can lead to crushing or fracturing of organics, delamination of veneered furniture, and the loosening of joints in furniture.

Air pollutants include particulates (dust, dirt, mold, etc.) and gases (ozone, sulphur dioxide, etc.) that can be harmful due to the effect of abrasion during the cleaning of objects; they can also attract moisture and pollutants and serve as a catalyst for harmful chemical reactions. Air pollutants can harm objects composed of metal, stone, paint, textile, paper, leather, and ceramics.

The effects of these factors on specific objects varies according to their material composition, however there are some general principles which can be applied to the collection as a whole. Organic materials are most vulnerable to inappropriate levels of temperature and humidity; these include wood, paper, textiles, leather and skins, horn, bone, ivory, shell, etc. Inorganic objects such as metals, ceramics, and glass are less vulnerable to inappropriate levels of temperature and humidity, but they may absorb contaminants and be subject to the adverse effects of light. Many museum objects are of diverse (composite) materials and may react to environmental conditions in different ways and in opposition to each other.

Cumulative Impacts. Impacts to museum collections are site specific and likely would not be affected by cumulative development outside of the museum in which they are housed. Cumulative impacts would only occur if development occurred immediately within or adjacent to the site that affected the collections. Currently, there are no proposed projects that would result in impacts to museum collections housed within Arlington House. As a result, there would be no adverse or beneficial cumulative impacts to museum collections as a result of the No Action Alternative.

Conclusion. Implementation of the No Action Alternative would likely result in adverse long-term minor impacts to the museum collections due to the lack of effective climate (humidity) controls. As there is no existing fire suppression system (sprinklers) in place, the collections are vulnerable to catastrophic loss, which could range from moderate to severe, depending on the extent of damage to the objects in the collection. No cumulative impacts or impairment to museum collections would occur under this alternative.

Impacts of Alternative B (NPS Preferred) – Rehabilitation of Arlington House Outbuildings, and Grounds

Analysis. For the duration of construction activities associated with the interior treatments of the Mansion and Slave Quarters, there would be some risk of inadvertent damage to the museum collections that are currently exhibited or stored within these buildings. NPS would mitigate this risk by removing these items and either placing them in temporary storage or loaning them to other sites where they would be exhibited. Some objects would be stored on site in one of the existing collection storage locations, while others would be stored at Museum and Resource Center (MRCE), located in Glenn Dale, Maryland, just outside Washington D.C. The MRCE facility has a relatively new HVAC system that is governed with local control in each zone throughout the large volume of the storage area. Temperature is maintained between 55 and 60 degrees Fahrenheit. The storage facility also has sprinklers throughout the structure and is equipped with infra-red beam smoke sensors, manual pull alarms, heat sensors in the sprinkler heads, and flashing alarm signals. Each of the four exit doors are wired for intrusion detection. The loading dock and main entry are monitored by a video camera. Motion detectors are located

throughout the storage area. The security system is wired to the National Park Service police for internal emergencies and to the Federal Protective Service for external emergencies. Prince George's County emergency services also serve the area.

Some objects that are on display in Arlington House are so large that moving them from the house would pose a greater risk than if they were crated for the duration of construction; examples are the *Battle of Monmouth* painting which is too large to fit through any doorway and the Pier Mirror in the White Parlor that is so large that crating it on site is more prudent from a conservation standpoint. The NPS curation staff would make these decisions regarding removal and temporary storage or on-site crating, based on their familiarity with the collections and sound conservation principles. The NPS curation staff would also oversee the protection of the architectural fabric of the Mansion itself, including items such as the window treatments, mantels, and projecting wall corners, stairs, and banisters.

Overall, these actions combined would result in no foreseeable adverse impacts to the museum collections. While the collections would be at some short-term risk of accidental damage during transport prior to construction activities, precautions would be undertaken to fully mitigate these risks. As a result there could be adverse long-term negligible impacts to museum collections. The improvement of the environmental conditions (temperature and humidity controls) and fire suppression systems would result in a beneficial long-term minor impact to the collections, especially those that are exhibited in the Mansion and Slave Quarters. There would be no foreseeable impact, beneficial or adverse, to the collections that normally remain in storage.

Cumulative Impacts. Cumulative impacts would be the same as alternative A. Currently, there are no past, present, or proposed future projects that could result in impacts to the museum collections associated with the site. Therefore, there would be no cumulative impacts as a result of Alternative B.

Conclusion. Implementation of Alternative B would result in a beneficial long-term minor impact to the museum collections, due to the implementation of climate (humidity) controls and fire suppression systems (sprinklers). The collections would be at some short-term risk of accidental damage during transport prior to construction activities, which could result in adverse long-term minor impacts. Precautions would be undertaken to fully mitigate these risks. There would be no cumulative impacts and no impairment of museum collections under this alternative.

HISTORIC DISTRICTS AND STRUCTURES

Methodology and Assumptions

Potential impacts to historic districts and structures were assessed according to their listing on the National Register.

Study Area

The study area would be the National Register listed Arlington House, its outbuildings, and grounds.

Impact Thresholds

For purposes of analyzing potential impacts to historic districts and structures, the thresholds of change for the intensity of an impact are defined as follows:

Negligible: The impact is at the lowest level of detection with neither adverse nor beneficial consequences. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Minor: Adverse impact — Alteration of a pattern(s) or feature(s) of a historic property listed on or eligible for the National Register of Historic Places would not diminish the integrity of a character-defining feature(s) or the overall integrity of the historic

property. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Beneficial impact — The character-defining feature(s) of the historic property would be stabilized in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (NPS 1995b), to maintain its existing integrity. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Moderate: **Adverse impact** — The impact would alter a character-defining pattern(s) or feature(s) of a historic property and diminish the integrity of that feature(s) and the overall integrity of the historic property. For purposes of Section 106, the determination of effect would be *adverse effect*. (A memorandum of agreement is executed among the National Park Service and applicable state or tribal historic preservation officer and, if necessary, the Advisory Council on Historic Preservation in accordance with 36 CFR 800.6(b). Measures identified in the MOA to minimize or mitigate adverse effects reduce the intensity of the impact under NEPA from major to moderate.)

Beneficial impact — The historic property would be rehabilitated in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* to make possible a compatible use of the property while preserving its character-defining features. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Major: **Adverse impact** — The impact would alter a character-defining pattern(s) or feature(s) of the historic property and severely diminish the integrity of that feature(s) and the overall integrity of the historic property. For purposes of Section 106, the determination of effect would be *adverse effect*. (Measures to minimize or mitigate adverse effects cannot be agreed upon and the National Park Service and applicable state or tribal historic preservation officer and/or Advisory Council are unable to negotiate and execute a memorandum of agreement in accordance with 36 CFR 800.6(b).)

Beneficial impact — The historic property would be actively restored in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* to accurately depict its form, features, and character as it appeared during its period of significance. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Duration: Short-term impacts would last for the duration of construction activities associated with the alternative; long-term impacts would last beyond the construction activities.

Impacts of Alternative A – No Action Alternative

Analysis. Under the No Action Alternative, the NPS's current maintenance protocols for Arlington House, its outbuildings, and grounds would be continued, and no historic rehabilitation work would be completed on the North and South Slave Quarters or Kitchen Garden. The NPS would continue to treat the structures and grounds, as needed, in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. However, the buildings would not receive protection from adequate fire suppression and climate management systems. The buildings would continue to be vulnerable to catastrophic damage from fire. Uncontrolled fluctuations of humidity and temperature would also continue to threaten the buildings and their contents. Failure to stabilize the Mansion's foundation by replacing badly deteriorated brick and repairing foundation drainage along the west perimeter will continue to threaten the foundation's structural support of the first floor joists and could lead to its subsequent failure. The No Action Alternative would have an adverse short-term negligible impact on the

Arlington House historic property. However, over time, the lack of a climate management system and the continuation of foundation drainage and structural deficiencies would have an adverse long-term minor impact as the buildings and their contents are subjected to humidity and temperature fluctuations harmful to their preservation and the foundation deteriorates further. In terms of Section 106, the No Action Alternative would have a short-term no adverse effect and a long-term no adverse effect.

Cumulative Impacts. Impacts to historic structures likely would not be affected by cumulative development outside of the project area. Cumulative impacts would only occur if development occurred immediately within or adjacent to the structures on the site. Currently, there are no proposed projects that would result in impacts to historic structures from past or foreseeable future projects under the No Action Alternative. Therefore, there would no cumulative impacts.

Conclusion. The No Action Alternative would result in adverse long-term negligible impacts to the Arlington House National Register property because of NPS maintenance protocols. There would not be any cumulative impacts and no impairment of historic districts and structures associated with the No Action Alternative. No impairment to historic districts or structures would occur under the No Action Alternative.

Impacts of Alternative B – Rehabilitation of Arlington House, Outbuildings & Grounds

Analysis. The rehabilitation of the North and South Slave Quarters would impact these two buildings. Construction activities associated with the rehabilitation would diminish characteristics of the National Register listed buildings but would maintain the integrity of the buildings' character-defining features, thus causing adverse short-term minor impacts to the two Slave Quarters. In terms of Section 106, this short-term impact would be *no adverse effect*. However, the completed rehabilitation activities would be conducted in conformance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* in conjunction with the outlined mitigation measures, and would return the two structures to their 1861 period of significance appearance. As a result, the rehabilitation of the Slave Quarters would be a beneficial long-term moderate impact since the activities would preserve and maintain the integrity of the remaining historic fabric and the two buildings' character-defining features. In terms of Section 106, the long-term impacts of rehabilitating the two Slave Quarters would be *no adverse effect*.

Installation of a new fire suppression and fire alarm system within Arlington House and the North and South Slave Quarters would diminish historic characteristics of the Mansion and the two Slave Quarters. While the installation of associated piping and wiring would be in non-public areas of the buildings and measures to minimize harm to historic fabric would be undertaken, sprinklers would still be recessed into historic plaster ceilings and conventional smoke detectors would be applied atop historic surfaces. Implementation of the mitigation measures would ensure the sprinklers are only installed in non-ornate plaster ceilings, while direct oversight of construction workers by Park staff would ensure contractors do not harm irreplaceable wallpaper, paint, and plaster surfaces during installation of the associated piping and wiring systems. These activities, while impacting characteristics of the three National Register listed buildings, would not diminish the integrity of their character-defining features or jeopardize their National Register eligibility. In addition, these impacts would be partially offset by the beneficial greater protection from a catastrophic fire event provided to the historic buildings from the new systems. As a result, installation of new fire suppression and fire alarm systems in the Arlington House and the North and South Slave Quarters would have adverse short- and long-term minor impacts. In terms of Section 106, these impacts would be *no adverse effect*.

Installation of a new climate management system in Arlington House and the North and South Slave Quarters would diminish historic characteristics of the Mansion and two Slave Quarters. Although installed in non-public areas of the buildings, ductwork for conditioned air would be placed atop historic fabric. Implementation of the mitigation measures would limit damage to historic fabric, and duct vents would be small, placed inconspicuously, and painted to match historic paint colors. Similar to the installation of fire suppression and fire alarm systems in the Mansion and Slave Quarters, these activities, while impacting characteristics of the buildings, would not diminish the integrity of their character-

defining features or jeopardize their National Register eligibility. In addition, these impacts would be partially offset by the beneficial greater protection from drastic changes in humidity and temperature provided to the historic buildings from the new system. As a result, installation of a new climate management system in the Arlington House and the North and South Slave Quarters would have adverse short- and long-term minor impacts. In terms of Section 106, these impacts would be *no adverse effect*.

Construction of a new Mechanical Bunker along the western edge of the Kitchen Garden, below grade and cut into the slope facing Sherman Drive would also diminish characteristics of the overall historic property. While the new building would be hidden from view and not directly harm buildings or structures contributing to the National Register property, it would introduce a new element into the boundaries of the historic property. The Mechanical Bunker's construction would not diminish the integrity of character-defining features of the National Register property nor jeopardize its National Register eligibility. Therefore, construction of the new Mechanical Bunker would have adverse short-term and long-term minor impacts on the overall Arlington House National Register property. In terms of Section 106, these impacts would be *no adverse effect*.

Removing the 1921 Comfort Station from the site and either constructing a new Comfort Station or installing a temporary modular structure would also diminish characteristics of the overall historic property. Although older than 50 years old, the Comfort Station is identified as a non-contributing element to the National Register-listed Arlington House historic property. Therefore, demolition of the Comfort Station would benefit the historic site by returning it nearer to its historic appearance in 1861, the period of the site's significance. However, construction of a new Comfort Station or installation of a temporary modular structure would introduce a new element into the boundaries of the historic property and offset the benefit of removing the Comfort Station. Implementation of the proposed mitigation measure; installation of the screening device, would limit views of the new building or structure. Thus, introduction of the new building or temporary structure would not diminish the integrity of character-defining features of the National Register property nor jeopardize its National Register eligibility. Construction of the new Comfort Station or installation of a temporary structure would have adverse short- and long-term minor impacts on the overall Arlington House National Register property. In terms of Section 106, these impacts would be *no adverse effect*.

Rehabilitation of the Kitchen Garden to more closely reflect its 1861 period of significance would impact the Arlington House historic property. While the proposed rehabilitation would retain the Potting Shed, a non-contributing element to the National Register property built in the 1880s, the Kitchen Garden would more closely reflect its historic appearance in 1861 upon completion of the proposed rehabilitation. The eastern, southern and western boundaries of the Kitchen Garden would be expanded and, combined with the 1921 Comfort Station's demolition, would return the Kitchen Garden historic relationship to the North Slave Quarters. The Kitchen Garden plots would be reconfigured and new fencing and plantings installed to match the Kitchen Garden's historic appearance. The rehabilitation would be conducted in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*, and would preserve and maintain its character-defining features and integrity. Therefore, construction activities associated with the rehabilitation would result in short-term minor adverse impacts to the historic property. Completion of the proposed rehabilitation and returning the Kitchen Garden to its 1861 appearance would be a beneficial long-term moderate impact. In terms of Section 106, short-term and long-term impacts would be *no adverse effect*.

Stabilization of the Arlington House foundation and the correction of drainage deficiencies along foundation's walls would impact the Arlington House historic property. The proposed activities would be conducted in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* and would replace historic brick with custom-sized reproduction bricks. Lime-mortar joints, mortar color, and joint striking would match historic features. As a result, adverse short-term impacts of the proposed stabilization work would be minor while rehabilitation and stabilization activities are being conducted. Upon completion of the proposed stabilization, beneficial long-term impacts would be minor

since the work would stabilize character-defining features and maintain the integrity of the historic property. In terms of Section 106, both short-term and long-term impacts would be *no adverse effect*.

Cumulative Impacts. Cumulative impacts would be the same as alternative A. Currently, there are no past, present, or proposed future projects that could result in impacts the Arlington House historic property. Therefore, there would be no cumulative impacts.

Conclusion. Implementation of Alternative B would result in adverse short-term minor impacts to the Arlington House National Register property (no adverse effect under Section 106). During construction and rehabilitation activities adverse long-term minor impacts would occur to the National Register property because of the new Comfort Station (no adverse effect under Section 106). Beneficial long-term minor impacts would occur because of stabilization of the Arlington House, and beneficial moderate long-term impacts would occur because of the rehabilitation of the Kitchen Garden to its 1861 appearance. These impacts would result in no adverse effect under Section 106. There would be no cumulative impacts and no impairment of historic districts and structures under this alternative.

CULTURAL LANDSCAPES

Methodology

Cultural landscapes are comprised of two principal organizational elements, spatial organization and land patterns, and several other character-defining landscape features. These character-defining features include views, vistas, topography, vegetation, circulation, water features, and structures, site furnishings, and objects. The paramount attribute of the organizational elements and the character-defining features is their interrelationships in space. Individual features of the landscape are never examined alone but only in relationship to the overall landscape. The arrangement and interrelationship of a cultural landscape's organizational elements and character-defining features provide the key to determining the potential impacts and effects of the proposed improvements to the cultural landscape (see *The Secretary of the Interior's Standards for the Treatment of Historic Properties and the Guidelines for the Treatment of Cultural Landscapes*, 1996).

Study Area

The geographic study area for archeological resources soils is contained within the boundaries of the Arlington House grounds, especially the Mansion, the Kitchen Garden, the North and South Slave Quarters, and the Work Yard.

Impact Thresholds

For purposes of analyzing potential impacts to cultural landscapes, the thresholds of change for the intensity of an impact are defined as follows:

Negligible: The impact is at the lowest level of detection with neither adverse nor beneficial consequences. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Minor: Adverse impact — Alteration of a pattern(s) or feature(s) of a cultural landscape listed on or eligible for listing on the National Register of Historic Places would not diminish the integrity of a character-defining feature(s) of the historic property. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Beneficial impact — The character-defining feature(s) of the cultural landscape are stabilized in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*, to maintain its existing integrity. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Moderate: Adverse impact — The impact would alter a character-defining pattern(s) or feature(s) of the cultural landscape and diminish the integrity of that feature(s) and the overall integrity of the cultural landscape. For purposes of Section 106, the determination of effect would be *adverse effect*. (A memorandum of agreement is executed among the National Park Service and applicable state or tribal historic preservation officer and, if necessary, the Advisory Council on Historic Preservation in accordance with 36 CFR 800.6(b). Measures to minimize or mitigate adverse effects reduce the intensity of the impact under NEPA from major to moderate.)

Beneficial impact — The cultural landscape would be rehabilitated in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* to make a possible compatible use of the landscape while preserving its character-defining features. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Major: Adverse impact — The impact would alter a character-defining pattern(s) or feature(s) of the cultural landscape and severely diminish the integrity of that feature(s) and the overall integrity of the cultural landscape. For purposes of Section 106, the determination of effect would be *adverse effect*. (Measures to minimize or mitigate adverse effects cannot be agreed upon and the National Park Service and applicable state or tribal historic preservation officer and/or Advisory Council are unable to execute a memorandum of agreement in accordance with 36 CFR 800.6(b).)

Beneficial impact — The cultural landscape would be actively restored in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* to accurately depict its form, features and character as it appeared during its period of significance. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Duration: Short-term impacts would last for the duration of construction activities associated with the proposed action; long-term impacts would last beyond the construction activities.

Impacts of Alternative A – No Action Alternative

Analysis. Under the No Action Alternative, the current maintenance protocols for Arlington House, its outbuildings, and grounds would be continued. Therefore, the NPS would maintain the characteristics of the cultural landscape and none of the integrity of the character-defining features would diminish. Therefore, there would not be any impacts to cultural landscapes. For the purposes of Section 106, there would be *no adverse effect* on cultural landscapes under this alternative the No Action Alternative.

Cumulative Impacts. Ongoing funeral services and visitation at Arlington National Cemetery and proposed expansion projects at the cemetery do not have the potential to impact the Arlington House cultural landscape. Therefore, there would not be any cumulative impacts. Impairment to cultural landscapes would not occur under the No Action Alternative.

Conclusion. As there would not be any construction activities associated with the No Action Alternative, no impacts to cultural landscapes (no adverse effect in terms of Section 106) would occur. There would not be any cumulative impacts or impairments to cultural landscapes under this alternative.

Impacts of Alternative B – Rehabilitation of Arlington House, Outbuildings & Grounds

Analysis. Rehabilitation of the North and South Slave Quarters would impact the two Slave Quarters contributing to the Arlington House cultural landscape. The rehabilitation activities outlined previously, undertaken in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*, would result in adverse short-term minor impacts (no adverse effect under Section 106) for the duration of the construction activities as characteristics of the cultural landscape would be altered but

not sufficiently enough to diminish the integrity of the historic property. The completed rehabilitation would return the two Slave Quarters to their 1861 appearance, maintaining the relationships of the buildings to the other cultural landscape components, and preserve these character-defining building features of the cultural landscape. Thus, beneficial long-term moderate impacts would occur and no adverse effect under Section 106.

Installation of fire suppression and fire alarm systems would also impact the Mansion and the two Slave Quarters contributing to the Arlington House cultural landscape. As described earlier, the proposed installation would have an adverse short-term minor impact on these building components while actual installation activities are being undertaken. Completion of the installation would see the buildings preserved in their 1861 appearance and maintained in their relationships with the other components of the cultural landscape. Similar to the rehabilitation of the Slave Quarters, installation of the fire suppression and fire alarm systems would be a beneficial long-term moderate impact. Under Section 106 the long-term impact would be no adverse effect.

Impacts resulting from the installation of climate management systems into the Mansion, the North and South Slave Quarters, and the Potting Shed would also be similar to the fire suppression and fire alarm installation. During construction activities, aspects of cultural landscapes' building components would be impacted but not to the extent that the integrity of these character-defining features would be diminished. Therefore, adverse short-term impacts would be minor (no adverse effect under Section 106). The completed installation would preserve the buildings in their 1861 appearance and maintain their relationships with the other components of the cultural landscape. Thus, installation of climate management systems would be a beneficial long-term moderate impact. Under Section 106 the long-term impact would be *no adverse effect*.

Construction of the Mechanical Bunker would introduce a new element into the organization of the Arlington House cultural landscape. The new bunker would not stand directly within one of the six principal areas of the landscape's spatial organization as identified in the Cultural Landscape Report or impact the landscape's historic land use patterns (Hanna 2001b). Research indicates that the area proposed for the placement of the new Mechanical Bunker provided an edge for the Kitchen Garden, and this land use pattern would remain intact. Additionally, the new bunker would not interrupt the relationships between the landscape's other character-defining features. Therefore, construction of the Mechanical Bunker would result in adverse short- and long-term minor impacts to the Arlington House cultural landscape. Under Section 106 the impacts would be *no adverse effect*.

Demolition of the 1921 Comfort Station and installation of a new or temporary Comfort Station would remove a non-contributing building element from the Arlington House cultural landscape while also introducing a new element into the cultural landscape. Similar to the construction of the Mechanical Bunker, the new Comfort Station would not stand directly within one of the six principal areas of the landscape's spatial organization (Hanna 2001b). Research indicates that the area proposed for the placement of the new Comfort Station served as part of the Kitchen Garden's northern edge, and this land use pattern would remain intact. Additionally, the new Comfort Station would not interrupt the relationships between the landscape's other character-defining features. Therefore, construction of the new Comfort Station would result in adverse short-term and long-term minor impacts to the Arlington House cultural landscape. Under Section 106 the impacts would be *no adverse effect*.

Rehabilitation of the Kitchen Garden would impact a character-defining feature of the Arlington House cultural landscape. The proposed activities would be conducted in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* and would return the Kitchen Garden nearer to its 1861 appearance, the period of its significance. The proposed rehabilitation would also preserve the interrelationships of the Kitchen Garden with the cultural landscape's other character-defining features. Implementation of the proposed rehabilitation during would result in adverse short-term minor impacts (no adverse effect under Section 106) during construction. The completed activities would rehabilitate the landscape's spatial organization

and land use patterns, and preserve the integrity of the landscape. Therefore the proposed rehabilitation of the Kitchen Garden would have a beneficial long-term moderate impact on the Kitchen Garden component of the cultural landscape. Under Section 106, the impact would be *no adverse effect*.

Stabilization of the Arlington House foundation would impact an element of the Arlington House cultural landscape's building component. The proposed stabilization would be conducted in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* and would ultimately help to preserve the Mansion and its relationship to the other components of the cultural landscape.

Construction activities would result in an adverse short-term minor impact (no adverse effect under Section 106) as they would alter characteristics of the cultural landscape but not to the extent that the integrity of the feature is diminished. Long-term, proposed rehabilitation would stabilize a building component of the Arlington House cultural landscape and maintain the cultural landscape's integrity. Thus the beneficial long-term impact would be a minor impact. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Cumulative Impacts. Ongoing funeral services and visitation at Arlington National Cemetery and proposed expansion projects at the cemetery do not have the potential to impact the Arlington House cultural landscape. Therefore, there would not be any cumulative impacts. Impairment to cultural landscapes would not occur under the No Action Alternative.

Conclusion. Implementation of Alternative B would result in adverse short-term minor impacts to the Arlington House cultural landscape during construction. Adverse long-term minor impacts to the cultural landscape would occur from actions related to the Mechanical Bunker and the new Comfort Station. Beneficial long-term minor impacts to the cultural landscape would occur from the stabilization of the Arlington House, and moderate long-term beneficial impacts related to the rehabilitation of the Kitchen Garden and installation of new fire and climate management systems into contributing buildings. Under Section 106, no adverse effect would occur because of these actions. There would be no cumulative impacts and no impairment of cultural landscapes in this alternative.

VISITOR USE AND EXPERIENCE

Methodology and Assumptions

NPS *Management Policies 2001* states that the enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all parks and that the NPS is committed to providing appropriate, high-quality opportunities for visitors to enjoy the parks (NPS 2000a). While NPS places a high priority on maintaining Arlington House as it existed in 1861 immediately prior to the Civil War, it also seeks to ensure that visitors safely enjoy and are satisfied with availability and accessibility and appropriate interpretive and recreational opportunities.

Impacts to visitor use and experience were determined by identifying projected increases or decreases in interpretational or educational experiences and other visitor uses, and determining how these projected changes would affect the overall visitor use and experience at Arlington House, The Robert E. Lee Memorial.

Study Area

The geographic study area for visitor experience is the NPS administered boundaries of Arlington House.

Impact Thresholds

The following thresholds were defined:

Negligible – Visitors would likely be unaware of impacts associated with implementation of the alternative. There would be no noticeable change in visitor use and experience or in any defined indicators of visitor satisfaction or behavior.

Minor – Changes in visitor use and/or experience would be slight and detectable, but would not appreciably limit or enhance critical characteristics of the visitor experience. Visitor satisfaction would remain stable.

Moderate – Few critical characteristics of the desired visitor experience would change. The number of participants engaging in a specified activity would be altered. Some visitors who desire their continued use and enjoyment of the activity/visitor experience might be required to pursue their choices in other available local or regional areas. Visitor satisfaction would begin to either decline or increase.

Major – Multiple critical characteristics of the desired visitor experience would change and/or the number of participants engaging in an activity would be greatly reduced or increased. Visitors who desire their continued use and enjoyment of the activity/visitor experience would be required to pursue their choices in other available local or regional areas. Visitor satisfaction would markedly decline or increase.

Duration – Short-term impacts occur during all or part of alternative implementation; long-term impacts extend beyond implementation of the alternative.

Impacts of Alternative A - No Action Alternative

Analysis. Under the No Action Alternative, Arlington House, The Robert E. Lee Memorial would continue to be visited by nearly 500,000 visitors per year, with nearly all of the visitors touring Arlington House itself. Rangers and volunteers would continue to be stationed in and around the house to answer questions, give guided tours, and provide information.

Visitors to Arlington House are provided an intimate look at life before and after the Civil War. Visitors tour the house either by themselves or with a guided group tour. During most of the year, temperatures within the Mansion and other structures are tolerable, and are usually a few degrees higher than the ambient temperature outside. However, during the summer, visitors often experience physical discomfort from exceptionally high levels of heat and humidity while visiting Arlington House, especially the upper levels of the Mansion. Currently, in the summer months park staff place box fans through out the buildings to keep air circulating to provide some relief to visitors and also to protect the park's artifacts from damage caused by high humidity. These box fans, however, create a lot of noise and, by placing those out in the open, detract from the overall historic context, which can detract from the visitor's overall experience. The uncomfortable conditions and presence of box fans would likely result in adverse long-term, minor impacts to visitor use and experience.

The continued degradation of the historic buildings and museum collections and the non-contributing elements of the cultural landscape under this alternative could adversely affect visitor use and experience over the long-term. These resources would continue to experience deterioration and/or damage as a result of uncontrolled heat and humidity levels inside of Arlington House and outbuildings, and if left untreated, such deterioration could become apparent to park visitors. In addition, the continued deterioration of its foundation due to drainage problems and improper past repairs may lead to some areas of Arlington House and the collection being closed off and unavailable for interpretation due to necessary treatments to protect the resources. Since many visitors come to the park to specifically tour Arlington House and its collection, this could have adverse impacts on their overall experience at the park. Adverse impacts to visitor use and experience from the continued degradation of Arlington House, its outbuildings, and collection could be adverse long-term and range from minor to moderate.

In addition, under this alternative, the park would continue to operate with a Comfort Station that is not ADA compliant. While on the grounds of Arlington National Cemetery there are fully ADA compliant Comfort Station, those people visiting Arlington House who would require a fully ADA compliant Comfort Station would have to be driven to one of the Cemetery's facilities. As a result, under the No Action Alternative, Arlington House's lack of an ADA compliant Comfort Station would result in adverse long-term minor impacts to visitor use and experience.

Cumulative Impacts. The roughly 500,000 annual visitors to Arlington House, the Robert E. Memorial are part of the more than four million people that visit Arlington National Cemetery annually. Present and future plans to expand Arlington National Cemetery could potentially bring additional visitors to the cemetery and also to Arlington House. Because of the limited size of Arlington House, an increase in annual visitation could have adverse impacts to the overall visitor use and experience due to overcrowding within the Mansion, outbuildings, and grounds. The adverse impacts would be negligible to minor and of long duration. These impacts in combination with the adverse long-term minor to moderate impacts of the No Action Alternative would result in adverse long-term minor cumulative impacts to visitor use and experience.

In addition, the milling and re-surfacing of both Sherman Drive and Memorial Avenue is scheduled begin in the late spring and summer of 2006 respectively. The work is expected to last roughly 8 to 12 week and would likely result in minor adverse impacts to visitor use and experience from possible traffic delays, noise associated with the roadwork, and the presence of equipment and laborers. Only the work being done to Memorial Avenue is expected to overlap with the proposed rehabilitation work at Arlington House.

These impacts in combination with the adverse long-term minor to moderate impacts of the No Action Alternative would result in adverse long-term minor cumulative impacts to visitor use and experience.

Conclusion. Implementation of the No Action Alternative would result in adverse long-term minor to moderate impacts to visitor use and experience from the current lack of an adequate climate management system, the continued degradation of Arlington House, its outbuildings, and collection, and lack of an ADA compliant Comfort Station. Adverse long-term minor cumulative impacts to visitor use and experience would be expected as a result of implementing this alternative the No Action Alternative.

Impacts of Alternative B (NPS Preferred) – Rehabilitation of Arlington House Outbuildings, and Grounds

Analysis. To assure visitor safety under Alternative B, during the installation of the climate management and fire suppression system, the demolition of the 1921 Comfort Station, and the construction of the new Comfort Station and Mechanical Bunker, all areas where construction would take place would be closed to the public. Park staff would endeavor to keep as much of the Memorial open to the public visitors as possible, and also plan construction activities in such a way that all work is kept localized and is finished before work would begin in another area. The period that these areas would remain closed could range from several months to over a year. People wishing to see certain areas of Arlington House may be disappointed because they would not be able to fully experience the historic context of Arlington House and its collections. These closures would last as long as construction activities were taking place, and would likely have adverse short-term minor to moderate impacts visitor use and experience.

Park staff would mitigate these adverse impacts by increasing the amount of public interpretation in order to emphasis the importance of the 1861 historic landscape, provide visitors information regarding the problems Arlington House is experiencing, and how those problems are being rectified why the rehabilitation work is taking place.

Activities associated with the installation of the new climate management and fire suppression system, demolition of the 1921 Comfort Station, the installation of the new Comfort Station and Mechanical Bunker, and the rehabilitation of the Kitchen Garden would also likely affect the visual quality of each visitor's experience due to the visibility of and noise associated with construction activities. Visual quality would be impacted by the presence of workers, equipment, and materials in the project area and ground disturbance associated with construction. However, these impacts would be short-term and localized to the vicinity of the project site where construction or rehabilitation activities were taking place. Overall, there would be adverse short-term minor impacts to visitor use and experience from visual quality impacts and noise during construction.

After the rehabilitation and the installation of the new climate management and fire suppression system are complete, the park structures and artifacts would be better protected and maintained for future generations. In addition, activities associated with the rehabilitation of the grounds and Slave Quarters would provide better representation of the 1861 historic landscape, which in turn would enhance the overall visitor experience and result in beneficial long-term minor impacts.

While the new climate management system does not provide for air conditioning during the summer, humidity within Arlington House would remain below 70 percent, and the interior temperature would not be allowed to rise above 85 degrees Fahrenheit. This would provide some level of comfort for park visitors and would eliminate the need for box fans through out the Mansion resulting in beneficial long-term impacts to visitor use and experience.

In addition, under this alternative, the park would also provide a fully ADA compliant Comfort Station for those visitors with special needs, which would result in beneficial long-term minor impacts to visitor use and experience.

Cumulative Impacts. The roughly 500,000 annual visitors to Arlington House, the Robert E. Memorial are part of the more than four million people that visit Arlington National Cemetery annually. Present and future plans to expand Arlington National Cemetery could potentially bring additional visitors to the cemetery and also Arlington House. Because of the limited size of Arlington House, an increase in annual visitation could have adverse impacts to the overall visitor use and experience due to overcrowding within the Mansion, outbuildings, and grounds. Visitation into the house however would be monitored by a ranger and would be limited on occasion, and sometimes people would be asked to wait. The number of people is also limited on the second floor due to structural limitations and occupancy code. The adverse impacts would be negligible to minor and of long duration. These impacts in combination with the adverse short-term minor to moderate impacts of the Alternative B and the beneficial long-term minor impacts of Alternative B would result in beneficial minor long-term cumulative impacts to visitor use and experience.

In addition, the milling and re-surfacing of both Sherman Drive and Memorial Avenue is scheduled begin in the late spring and summer of 2006 respectively. The work is expected to last roughly 8 to 12 week and would likely result in adverse minor impacts to visitor use and experience from possible traffic delays, noise associated with the roadwork, and the presence of equipment and laborers. Only the work being done to Memorial Avenue is expected to overlap with the proposed rehabilitation work at Arlington House.

These impacts in combination with the adverse short-term minor to moderate impacts of the Alternative B and the beneficial long-term minor impacts of Alternative B would result in beneficial long-term minor cumulative impacts to visitor use and experience.

Conclusion. Implementation of Alternative B would result in adverse short-term minor to moderate impacts to visitor use and experience during construction. While there would be adverse short-term impacts as a result of construction activities associated with this alternative, the installation of a new fire suppression and climate management system and fully ADA compliant Comfort Station would result in beneficial long-term minor impacts. Beneficial long-term minor cumulative impacts to visitor use and experience would be expected as a result of implementing Alternative B.

HEALTH AND SAFETY

Methodology and Assumptions

Impacts to visitor and staff health and safety were determined qualitatively based on the features of the existing and proposed infrastructure located within Arlington House and the information discussed in the Value Analysis Workshop conducted by the NPS regarding the proposed fire suppression system in May, 2004. NPS management policies and other guidelines such as *Director's Order #83: Public Health* and

Director's Order #58: Structural Fire Management was considered to determine standards for visitor health.

Study Area

The study area for visitor health and safety is the area encompassing Arlington House, the Robert E. Lee Memorial.

Impact Thresholds

The impact intensities for health and safety were defined as follows:

Negligible — The impact to health and safety would not be measurable or perceptible.

Minor — The impact would be detectable but would not have an appreciable effect on overall public health and safety. Individuals could be affected in a localized area. If mitigation were needed, it would be relatively simple and would likely be successful.

Moderate — The impacts would be readily apparent and result in substantial, noticeable effects to public health and safety on a local scale. Mitigation measures would probably be necessary and would likely be successful.

Major — The impacts would be readily apparent and result in substantial, noticeable effects to public health and safety on a regional scale. Extensive mitigation measures would be needed, and success would not be guaranteed.

Duration — Short-term impacts would be immediate, occurring during implementation of the alternative. Long-term impacts would persist after implementation of the alternative.

Impacts of Alternative A - No Action Alternative

Analysis. Under the No Action Alternative, no new climate management or fire suppression system would be installed in Arlington House or its outbuildings.

Under this alternative, during the summer months, park staff and visitors would continue to be exposed to extreme heat and humidity within Arlington House and its outbuildings from the lack of an appropriate climate management system. The heat and humidity that can occur within the structures can increase the risk of heat related illnesses, especially among the very young and very old. Heat-related illnesses can range from heat cramps, heat exhaustion, and heat stroke (American Red Cross 2005).

- Heat cramps are muscular pains and spasms due to heavy exertion that usually involve the abdominal muscles or the legs.
- Heat exhaustion is less dangerous than heat stroke. It typically occurs when people exercise heavily or work in a warm, humid place where body fluids are lost through heavy sweating. Fluid loss causes blood flow to decrease in the vital organs, resulting in a form of shock. With heat exhaustion, sweat does not evaporate as it should, possibly because of high humidity or too many layers of clothing. As a result, the body is not cooled properly. Signals include cool, moist, pale, flushed or red skin; heavy sweating; headache; nausea or vomiting; dizziness; and exhaustion. Body temperature will be near normal.
- Heat Stroke, also known as sunstroke, is life-threatening. The victim's temperature control system, which produces sweating to cool the body, stops working. The body temperature can rise so high that brain damage and death may result if the body is not cooled quickly. Signals include hot, red and dry skin; changes in consciousness; rapid, weak pulse; and rapid, shallow breathing.

Heat related illnesses could occur to park visitors and staff within Arlington House and its outbuildings as a result of excessive high heat and humidity due to the lack of an appropriate climate management system within the structures. These potential illnesses would have an adverse long-term minor impact on human health and safety.

In addition, mold, mildew, and other allergens could become a risk to people susceptible to these types of respiratory pathogens because the humidity within the structures is not regulated and moisture problems occur within the basement and around the foundation of Arlington House. These continued threats would constitute an adverse long-term minor impact on staff and visitor health and safety.

While existing safety systems such as fire alarms and fire extinguishers would continue to meet minimal safety codes, staff at Arlington House would continue to be the first responders to a fire emergency, and would make visitor and employee egress the first priority. The services of the Arlington County fire department or rescue personnel would be called upon for assistance as required. Local response time to this site is estimated to be between three and five minutes. Delays in response times could occur depending on local traffic, and a fire alarm system that does not direct fire fighters to the source of the fire. Therefore, the continued lack of a non-automatic fire suppression system and adequate fire detection within Arlington House would have an adverse long-term minor impact on human health and safety.

Overall, these actions combined would result in adverse long-term minor impacts to human health and safety because of the lack of an adequate climate management and fire suppression system. These adverse impacts to human health and safety would be minor because the impact would not have an appreciable effect on overall public health and safety. Individuals would most likely be affected within the confines of Arlington House and its outbuildings. The impacts occurring under this alternative would be considered long-term because, under this alternative, no steps would be taken to address the problems.

Cumulative Impacts. More than four million people Visit Arlington National Cemetery annually, many of whom find themselves inadvertently at Arlington House, the Robert E. Lee Memorial. During exceptionally hot and humid days in the summer months, those visitors spending the day touring the cemetery could become more susceptible to heat related illnesses if they tour the Mansion, which could result in adverse long-term minor impacts to visitor use and experience. These impacts in combination with the adverse long-term minor impacts of the No Action Alternative could result in adverse long-term minor cumulative impacts to human health and safety.

Conclusion. Implementation of the No Action Alternative would result in adverse long-term minor impacts to health and safety due to lack of an adequate climate management and fire suppression system. Cumulative impacts would be adverse minor long-term because, during the summer, visitors to the cemetery who also find themselves visiting Arlington House would find no relief from the heat and humidity and could become more susceptible to heat related illnesses.

Impacts of Alternative B (NPS Preferred) – Rehabilitation of Arlington House Outbuildings, and Grounds

Analysis. The proposed installation of a new climate management and fire suppression system would provide important health and safety improvements for Arlington House and its outbuildings. During construction activities associated with the demolition of the current Comfort Station, the construction of the new Mechanical Bunker and Comfort Station, and all interior work within Arlington House and its outbuildings, the areas under construction would be closed to visitors. Closure of these areas would greatly reduce the potential for the public to be exposed to dangers at the construction site. With all of these safety measures in place as described in the “Mitigation” section of the “Alternatives” chapter, any adverse impacts to worker or public safety from construction would be short-term, localized, and negligible to minor.

The installation of a new fire suppression and detection system would provide for the protection of employees and property (structures and equipment). This alternative would greatly improve upon the existing fire suppression system. Under this alternative, park staff would continue to be the first line of defense; however, the new sprinkler system would automatically suppress any fires with a response time of less than 60 seconds. By having an automatic suppression system, park staff would be free to concentrate solely on evacuating visitors, greatly reducing the potential for loss of life and property in the

event of a fire. These improvements would also greatly reduce the potential for loss of life and property and the need for rescues during fire events by enabling the infrastructure to adequately contain and/or suppress a fire and greatly reducing the potential for a fire to become out of control. As a result, there would be beneficial long-term minor impacts as a result of installing a new fire suppression system.

The installation of a climate management system within Arlington House and its outbuilding would regulate and reduce the current high temperatures and humidity levels experienced inside Arlington House during the summer, thereby reducing the potential for heat-related illnesses and improving the overall health and safety of both park visitors and staff. In addition, reducing the humidity and having positive air pressure within the buildings would improve indoor air quality, which would help to reduce health risks for those susceptible to mold, mildew, and pollution. Overall, installation of a new climate management system in Arlington House would result in beneficial localized minor impacts on staff and visitor health and safety.

In addition, a First Aid Room in a new comfort station would provide for better human health and safety service and better sanitation than the present makeshift use of smoke room in the South Slave Quarters. This would result in beneficial long-term, localized, minor impacts on visitor and staff health and safety.

Overall, these actions combined would result in beneficial long-term minor impacts to human health and safety because of the installation of a new fire suppression and climate management system. These beneficial impacts to human health and safety would be minor because, while detectable, the impacts would not have an appreciable effect on overall public health and safety. Visitors and staff would most likely only be benefited within the confines of Arlington House and its outbuildings. The beneficial impacts occurring under this alternative would be considered long-term because, under this alternative, the systems would last in perpetuity.

Cumulative Impacts. More than four million people Visit Arlington National Cemetery annually, many of whom find themselves inadvertently at Arlington House, the Robert E. Lee Memorial. During exceptionally hot and humid days in the summer months, those visitors spending the day touring the cemetery could become more susceptible to heat related illnesses if they tour the Mansion. However, with the new climate management system, the heat and humidity within the house would be less than the ambient temperature outside the building, providing some relief to the visitors. These impacts in combination with the adverse short-term negligible to minor impacts and the beneficial long-term minor impacts of Alternative B would result in beneficial long-term minor cumulative impacts to human health and safety.

Conclusion. Implementation of Alternative B could result in adverse short-term negligible to minor short-term impacts to human health and safety resulting from construction activities. Beneficial long-term minor impacts to public health and safety would occur as a result of updating the climate management and fire suppression systems. Beneficial long-term minor cumulative impacts would also occur because of these facility improvements.

PARK OPERATIONS AND MANAGEMENT

The George Washington Memorial Parkway is responsible for administering the staff that performs all of the day-to-day operations and maintenance required to run Arlington House, the Robert E. Lee Memorial, as noted in the “Purpose and Need” chapter.

Study Area

The geographic study area for park operations and management is Arlington House, the Robert E. Lee Memorial.

Impact Thresholds

The impact intensities for health and safety were defined as follows:

Negligible — Park operations would not be impacted, or the impacts would be at low levels of detection and would not have an appreciable effect on park operations.

Minor — The impact would be detectable and would be of a magnitude that would not have an appreciable effect on park operations. If mitigation was needed to offset adverse effects, it would be simple and likely successful.

Moderate — The impacts would be readily apparent and result in a substantial change in park operations in a manner noticeable to staff and the public. Mitigation measures would be necessary to offset adverse effects and would likely be successful.

Major — The effects would be readily apparent, result in a substantial change in park operation in a manner noticeable to staff and the public, and be markedly different from existing operations. Mitigation measures to offset adverse effects would be needed, extensive, and success could not be guaranteed.

Duration — Short-term impacts would be immediate, occurring during implementation of the alternative. Long-term impacts would persist well after the implementation of the alternative.

Impacts of Alternative A - No Action Alternative

Analysis. Under Alternative A, Arlington House, The Robert E. Lee Memorial would continue under its current management. Staff assigned to Arlington House would continue to be responsible for conducting interpretative programs, managing the Memorial's bookstore, maintaining and cataloging the Memorial's vast museum collection, coordinating volunteers, and overall management of the site. Maintenance would continue to occur on an as-needed basis, but would become more frequent and costly as the Memorial's structures and collection continued to deteriorate as a result of inadequate drainage and climate management. These ongoing maintenance, repair, and energy costs would result in adverse long-term minor impacts to park operations and management.

Cumulative Impacts. The roughly 500,000 annual visitors to Arlington House, the Robert E. Memorial are part of the more than four million people that visit Arlington National Cemetery annually. Present and future plans to expand Arlington National Cemetery could potentially bring additional visitors to the cemetery and also Arlington House. Those additional visitors could potentially necessitate the need for more park staff or an increase in the responsibilities of current park staff, which would have adverse long-term minor impact to park operations and management. These impacts in combination with the adverse long-term minor impacts of the No Action Alternative would result in adverse long-term minor cumulative impacts to park operations and management.

Conclusion. Implementation of No Action Alternative would result in minor long-term adverse impacts to park operations and management as increased maintenance to park structures and infrastructure would be required as drainage problems continue and the Memorial would continue to operate without an adequate climate management system. Adverse long-term minor cumulative impacts to park operations and management would result from the potential increase in visitation due the current and future planned expansion of Arlington Cemetery.

Impacts of Alternative B (NPS Preferred) – Rehabilitation of Arlington House Outbuildings, and Grounds

Analysis. The proposed rehabilitation of Arlington House, outbuildings, and grounds would necessitate the closure of sections of Arlington House and the entire North Slave Quarters to the public for the duration of the installation of the proposed systems. Areas that would remain open during construction include the front portico of the Mansion, the Flower Garden, the South Slave Quarters, the Potting Shed, and the east side of the Kitchen Garden. To compensate for the closures, park staff would provide

additional interpretation to park visitors to explain need for the closure and rehabilitation. Limited ranger lead tours of the first floor of Arlington House would be provided on a first come, first serve basis or limited to school groups. Regular park operations such as routine maintenance of the grounds, structures and facilities would continue as usual, however, these activities would need to accommodate construction schedules and activities for the duration of the construction phase of the project.

Construction activities (including the presence of workers, construction noise, presence of equipment and materials in the project and staging area) may in turn impact interpretive programs at the park, especially those focused on Arlington House, the North Slave Quarters, and Kitchen Garden. However, these adverse minor impacts would be of short duration and localized to the vicinity of the project area. Park staff would also be required to spend additional time keeping visitors out of closed sections of the Memorial. Lastly, under this alternative, park staff would be required to catalog, package, and ship the Memorial's entire museum collection to a suitable storage facility prior to any construction activity taking place. The overall increases in park staff responsibilities that would occur under this alternative would last as long as rehabilitation activities continue and would result in adverse short-term minor impacts to park management and operations.

After the rehabilitation activities have taken place, it would be likely that less continued maintenance of park structures and infrastructure would be required by park maintenance staff as drainage problems are resolved and new mechanical systems are installed. In addition, with the new climate management system, the amount of dust within Arlington House would be greatly reduced, which would alleviate some of the daily maintenance requirements currently preformed by museum staff on the collections (e.g., dusting artifacts, sweeping displays, and providing continued air flow with the use of box fans as necessary). This reduction in maintenance and operational requirements would result in beneficial long-term minor impacts to park operations and maintenance at Arlington House.

Cumulative Impacts. The roughly 500,000 annual visitors to Arlington House, the Robert E. Memorial are part of the more than four million people that visit Arlington National Cemetery annually. Present and future plans to expand Arlington National Cemetery could potentially bring additional visitors to the cemetery and also Arlington House. Those additional visitors could potentially necessitate the need for more park staff or an increase in the responsibilities of current park staff, which would have adverse long-term minor impact to park operations and management. These impacts in combination with the adverse short-term minor impacts and the beneficial long-term minor impacts of Alternative B would result in adverse long-term minor cumulative impacts to park operations and management.

Conclusion. Implementation of Alternative B would result in adverse short-term minor impacts to park operations and management during rehabilitation activities. By resolving drainage problems and installing new and modern mechanical systems less future maintenance would be required, resulting in beneficial long-term minor impacts. Adverse long-term minor cumulative impacts to park operations and management would result from the potential increase in visitation due the current and future planned expansion of Arlington Cemetery.

COORDINATION AND CONSULTATION

The National Park Service is proposing to rehabilitate Arlington House, the Robert E. Lee Memorial, its outbuildings, and the general grounds, which is administered by the George Washington Memorial Parkway.

Coordination with state and Federal agencies was conducted during the NEPA process to identify issues and/or concerns related to natural and cultural resources located in and around the site. In accordance with Section 106 of the National Historic Preservation Act of 1966, the George Washington Memorial Parkway sent a letter to the State Historic Preservation Officer at the Virginia State Historic Preservation Office on April 18, 2003. The letter initiated the consultation process and briefly explained the project. This EA, along with the latest site plans and documents, will be forwarded to the Virginia State Historic Preservation Officer in a “seeking concurrence to a determination of effect” package as part of the Section 106 consultation process.

In accordance with Section 7 of the Endangered Species Act of 1973, a letter was sent on behalf of Arlington House, the Robert E. Lee Memorial to solicit comments from the USFWS regarding potential occurrences of Federally listed species within the project area that could be adversely impacted by the proposed alternatives. A letter was received on March 27, 2006 from the U.S. Fish and Wildlife Service indicating that there are no known Federally listed species that occur within the project area and concurred with the opinion that the proposed actions would have no effect on any Federally listed threatened or endangered species (Appendix A).

This EA will be distributed for public and agency review with a comment period of at least 30 days. The NPS will consider the comments prior to drafting the final decision document that will be sent to the National Capital Region Director for approval and signature.

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LIST OF PREPARERS

Jess Commerford, AICP, Vice President, The Louis Berger Group
Joel Gorder, AICP, Project Manager/Environmental Planner, The Louis Berger Group
Charlie LeeDecker, Senior Archeologist, The Louis Berger Group
Stuart Dixon, Senior Architectural Historian, The Louis Berger Group
Lori Gutman, AICP, Planner, The Louis Berger Group
Karen Lusby, Senior Planner, The Louis Berger Group
Dana Otto, AICP, Senior Environmental Scientist, The Louis Berger Group
Baird Smith, AIA, FAPT, Quinn Evans Architects

CONTRIBUTORS

Kate Barrett, Landscape Architect, GWMP
Garth Shull, Supervisory Project Manager, GWMP
Kendell Thompson, Arlington House Site Manager, GWMP
Matt Virta, Cultural Resource Manager, GWMP
Andrew Wenchel, Historical Architect, GWMP
Kimberly Benson, Architect, A&E Project Manager, NCR
Maureen Joseph, Regional Historic Landscape Architect, NCR

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GLOSSARY OF TERMS AND ACRONYMS

BMPs	Best Management Practices
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
EA	Environmental Assessment
EV	Exceptional Value
FONSI	Finding of No Significant Impact
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPS	National Park Service
NRHP	National Register of Historic Places
Pub. L.	Public Law
U.S. EPA	U.S. Environmental Protection Agency
USC	United States Code
USFWS	U.S. Fish and Wildlife Service

Affected Environment — The existing environment to be affected by a proposed action and alternatives.

Best Management Practices — Methods that have been determined to be the most effective, practical means of preventing or reducing pollution or other adverse environmental impacts.

Contributing Resource — A building, site, structure, or object that adds to the historic significance of a property or district.

Council on Environmental Quality (CEQ) — Established by Congress within the Executive Office of the President with passage of the *National Environmental Policy Act of 1969*. CEQ coordinates Federal environmental efforts and works closely with agencies and other White House offices in the development of environmental policies and initiatives.

Cultural Resources — Prehistoric and historic districts, sites, buildings, objects, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or any other reason.

Cumulative Impacts — Under NEPA regulations, the incremental environmental impact or effect of an action together with the effects of past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions (40 CFR 1508.7).

Deciduous — Describing trees species that have leaves that fall off every season.

Emergency Services — Public services that respond to emergency situations including police, fire, rescue, and EMS.

Enabling Legislation — National Park Service legislation setting forth the legal parameters by which each park may operate.

Endangered Species — “...any species (including subspecies or qualifying distinct population segment) that is in danger of extinction throughout all or a significant portion of its range (ESA Section 3(6)).” The lead Federal agency, U.S. Fish and Wildlife Service, for the listing of a species as endangered is responsible for reviewing the status of the species on a five-year basis.

Endangered Species Act (ESA) (16 USC 1531 et seq.) — An Act to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved and to provide a program for the conservation of such endangered species and threatened species.

Environmental Assessment (EA) — An environmental analysis prepared pursuant to the *National Environmental Policy Act* to determine whether a Federal action would significantly affect the environment and thus require a more detailed environmental impact statement (EIS).

Executive Order — Official proclamation issued by the President that may set forth policy or direction or establish specific duties in connection with the execution of Federal laws and programs.

Finding of No Significant Impact (FONSI) — A document prepared by a Federal agency showing why a proposed action would not have a significant impact on the environment and thus would not require preparation of an Environmental Impact Statement. A FONSI is based on the results of an Environmental Assessment.

Floodplain — The flat or nearly flat land along a river or stream or in a tidal area that is covered by water during a flood.

Flora — Plants considered as a group, especially the plants of a particular country, region, or time.

National Environmental Policy Act (NEPA) — The Act as amended articulates the Federal law that mandates protecting the quality of the human environment. It requires Federal agencies to systematically assess the environmental impacts of their proposed activities, programs, and projects including the “no action” alternative of not pursuing the proposed action. NEPA requires agencies to consider alternative ways of accomplishing their missions in ways which are less damaging to the environment.

National Historic Preservation Act of 1966 (16 USC 470 et seq.) — An Act to establish a program for the preservation of historic properties throughout the nation, and for other purposes, approved October 15, 1966 [Public Law 89-665; 80 STAT.915; 16 USC 470 as amended by Public Law 91-243, Public Law 93-54, Public Law 94-422, Public Law 94-458, Public Law 96-199, Public Law 96-244, Public Law 96-515, Public Law 98-483, Public Law 99-514, Public Law 100-127, and Public Law 102-575].

National Register of Historic Places (National Register) — A register of districts, sites, buildings, structures, and objects important in American history, architecture, archaeology, and culture, maintained by the Secretary of the Interior under authority of Section 2(b) of the *Historic Sites Act of 1935* and Section 101(a)(1) of the *National Historic Preservation Act of 1966*, as amended.

Organic Act — Enacted in 1916, this Act commits the National Park Service to making informed decisions that perpetuate the conservation and protection of park resources unimpaired for the benefit and enjoyment of future generations.

Scoping — Scoping, as part of NEPA, requires examining a proposed action and its possible effects; establishing the depth of environmental analysis needed; determining analysis procedures, data needed,

and task assignments. The public is encouraged to participate and submit comments on proposed projects during the scoping period.

Topography — The physical features of a surface area including relative elevations and the position of natural and man-made (anthropogenic) features.

Viewshed — A physiographic area composed of land, water, biotic, and cultural elements which may be viewed and mapped from one or more viewpoints and which has inherent scenic qualities and/or aesthetic values as determined by those who view it.

Wetlands — The U.S. Army Corps of Engineers (Federal Register, 1982) and the Environmental Protection Agency (Federal Register, 1980) jointly define wetlands as: Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

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Appendix A
Coordination with the
U.S. Fish & Wildlife Service

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THE Louis Berger Group, INC.

2300 N Street, NW, Washington, DC 20037 U.S.A.
Tel 202 912 0200 Fax 202 293 0787 www.louisberger.com

Maricela Constantino
U.S. Fish and Wildlife Service
177 Admiral Cochrane Drive
Annapolis, MD 21401

Re: Section 7 Information Request for Federally Listed Species List for Arlington National Cemetery, Arlington Virginia.

Dear Ms. Constantino,

The Louis Berger Group, Inc. is assisting the, Arlington House, The Robert E. Lee Memorial, an administrative unit of the National Park Service, in preparing an Environmental Assessment (EA) to assess the potential effects of rehabilitating Arlington House, The Robert E. Lee Memorial, located within Arlington National Cemetery, in Arlington, Virginia (see Figure 1). The purpose of this correspondence is to request a list of any federally listed species that may occur within the proposed project area and to solicit any input or concerns that you may have regarding this proposed action. A vicinity map and project area map are included on page 4 and 5 of this letter to assist you in this request.

The NPS wishes to take this action in order to rehabilitate Arlington House its outbuildings, and the surrounding grounds in a manner that protects and maintains its cultural resources and values. The need for action is a result of long-standing drainage problems that has contributed to the deterioration of the foundation of Arlington House, the presence of non-contributing 1920's era comfort station, improper past interpretation and recreation of the 1861 historic grounds, and the lack of a proper climate management and fire suppression system needed to protect and maintain Arlington House, its outbuildings, and the collection housed within these structures.

The NPS is only considering two alternatives within this EA, the No Action Alternative and the proposed action. Under the proposed action, the NPS wishes to rehabilitate the interiors and exteriors of the North and South Slave Quarters, install a new fire suppression system within Arlington House and its outlying buildings, install a new climate management system within in these buildings and install a mechanical bunker (see Figure 2) to support these systems. They also propose removing an existing 1920's era comfort station and replace it with a modern facility at a different location on the site (see Figure 2), conduct activities associated with grounds and site access stabilization, and stabilize the foundation and improve the drainage of Arlington house. The proposed project area can be defined as that portion of the memorial, located east of Sherman Drive, north of (but including) the South Slave Quarters (see Figure 2), to the northern boundary.

The majority of the proposed actions are associated directly with the Memorial's structures. The only actions not associated directly with Arlington House and its outbuildings that would impact native vegetation would be the installation of a new mechanical bunker and comfort station (See Figure 2). Activities associated with the construction of the new comfort station and mechanical bunker would occur on the mixed hardwood side slopes of the western and northern edge of the site where the proposed footprints of these structures would be placed. While, no more than 2,000 square feet of this habitat would be impacted during construction, it is anticipated that up to six (6) larger trees may have to be removed in this area to accommodate the proposed construction activities. The siting of the structures, however, would be done in a manner that



would minimize the loss of trees. Trenching for utility lines that would support these new facilities would follow a gravel pathway that currently exists.

Proposed activities associated with the restoration of the Kitchen Garden would involve the removal of roughly 1,500 square feet of hedgerow made up of ornamental English holly (*Ilex aquifolium*), with the area being replanted with a series of ornamental evergreen trees and fruit trees that were present at the time of Robert E. Lee's residence. Any habitat loss that would occur in these areas would be minimal, and little, if any, native vegetation would be removed.

The NPS places a strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. To help ensure the protection of natural resources the following mitigations would be implemented as part of the proposed action. The NPS would implement an appropriate level of monitoring throughout the construction process to help ensure these protective measures are being properly implemented and to achieve their intended results.

Soils

Minimize the square footage of earth disturbance to the amount necessary to accomplish the project, and limit the area and duration of disturbed soil exposure to rainfall.

Use erosion containment controls such as silt fencing and sediment traps to contain sediment on site where necessary.

Cover disturbed soil or soil stockpiles with plastic sheeting, jute matting, erosion netting, straw, or other suitable cover material.

Inspect erosion and sediment control best management practices (BMPs) on a regular basis and after each measurable rainfall, to ensure that they are functioning properly, and maintain BMPs (repair, clean, etc.) as necessary to ensure that they continue to function properly.

Sequence BMP installation and removal in relation to the scheduling of earth disturbance activities, prior to, during and after earth disturbance activities.

Phase clearing to coincide with construction at a given location to minimize the amount of area exposed to erosion at a given time.

Stabilize and replant exposed soils with native vegetation immediately following completion of construction activities, or during temporary cessation of the earth disturbance activities.

Surface Waters

Implement erosion and sediment controls and stormwater best management practices as discussed under soils to minimize potential impacts to waters both in and downstream of the project area. Implement BMPs described under the mitigation measures for Natural Physical Resources.

Minimize adverse effects of fuel spills:

- Locate construction staging areas away from surface water features.
- Locate activities such as refueling well away from surface water features.
- Designate areas where refueling or construction vehicle and equipment maintenance will be performed and have containment devices such as temporary earth berms around these areas.
- Have absorbent pads available to clean up spills.

**Vegetation**

Prior to clearing and grading, clearly mark on the ground the area to be cleared to minimize the amount of cleared area.

Clear only those areas necessary for construction.

Prior to clearing, assess vegetated areas to determine if there are trees in the area of the proposed area that need protection from construction activities. Any trees selected for protection will be marked and fenced.

Monitor vegetation in areas replanted following construction to ensure successful establishment of native species. Remove any exotic invasive species that appear in the replanted areas.

If you have questions or require additional information, please contact Joel Gorder by phone at (202) 912-0318, by facsimile at (202) 293-0787, or by e-mail at jgorder@louisberger.com. Thank you in advance for your assistance.

Sincerely,

A handwritten signature in black ink, appearing to read 'Joel Gorder'.

Joel Gorder, AICP
Planner/Environmental Scientist



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
6669 Short Lane
Gloucester, VA 23061



Date: March 27, 2006

Project name: ARLINGTON NATIONAL CEMETERY

Project number: SEC 7-9471 City/County ARLINGTON, VA

The U.S. Fish and Wildlife Service (Service) has reviewed your request for information on federally listed or proposed endangered or threatened species and designated critical habitat for the above referenced project. The following comments are provided under provisions of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

☒ We have reviewed the information you have provided and believe that the proposed action will not adversely affect federally listed species or federally designated critical habitat because no federally listed species are known to occur in the project area. Should project plans change or if additional information on listed and proposed species becomes available, this determination may be reconsidered.

☐ We recommend that you contact **both** of the following State agencies for site specific information on listed species in Virginia. Each agency maintains a different database and has differing expertise and/or regulatory responsibility:

Virginia Dept. of Game & Inland Fisheries
Environmental Services Section
P.O. Box 11104
Richmond, VA 23230
(804) 367-1000

Virginia Dept. of Conservation and Recreation
Division of Natural Heritage
217 Governor Street, 2nd Floor
Richmond, VA 23219
(804) 786-7951

If either agency indicates a federally listed species **is present**, please resubmit your project description with letters from both agencies attached.

☐ If **appropriate habitat may be present**, we recommend surveys within appropriate habitat by a qualified surveyor. Enclosed are county lists with fact sheets that contain information the species' habitat requirements and lists of qualified surveyors. If this project involves a Federal agency (Federal permit, funding, or land), we encourage the Federal agency to contact this office if appropriate habitat is present and if they determine their proposed action may affect federally listed species or critical habitat.

☐ Determinations of the presence of waters of the United States, including wetlands, and the need for permits are made by the U.S. Army Corps of Engineers. They may be contacted at: Regulatory Branch, U.S. Army Corps of Engineers, Norfolk District, 803 Front Street, Norfolk, Virginia 23510, telephone (757) 441-7652.

Our website <http://virginiafieldoffice.fws.gov> contains many resources that may assist with project reviews. Point of contact is Mike Drummond at (804) 693-6694, ext. 114.

Sincerely,

Karen L. Mayne
Supervisor
Virginia Field Office



As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historic places, and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people. The department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

NPS D-267 / February 2006