

3.8 CUMULATIVE IMPACTS

3.8.1 What are the results of the Cumulative Impacts analysis?

The No Action Alternative along with the four action alternatives were considered during the cumulative impacts assessment. Several potential impacts among the action alternatives were similar due to the fact that they would all occur on the same site. At the cumulative level, the four action alternatives are proposing the same change in land use from open space to a site supporting a museum and open space, which would result in a similar set of impacts. Any impact unique to a specific action alternative is presented following the discussion of impacts common to all action alternatives within each resource section. The impact thresholds used to characterize the level of impact are the same as those used in Chapter 3 of this Tier II Draft EIS.

Analysis of Cumulative Impacts on Land Use and Planning Policies

The completion of several of the present and future projects described in Table 1.8.3 would result in cumulative impacts on land use. Projects involving the construction of new buildings, structures, or memorials (as opposed to renovations or security improvements) would result in the loss of flexible open space on or adjacent to the National Mall. These include the Potomac Park Levee project, the Martin Luther King, Jr. Memorial, and the U.S. Institute of Peace Headquarters and the Vietnam Veterans Memorial Visitor Center. While the intent of these projects is to improve the overall experience or to enhance the physical quality of the Mall, their completion would have a cumulative impact on the area's land use. When taken into consideration with the NMAAHC, this would yield

significant adverse cumulative impacts due to the loss of flexible open space that could otherwise be used for public gatherings and the display of First Amendment rights. In addition, projects that may be under construction during construction of the NMAAHC would have a cumulative short-term impact.

With respect to planning policies, the *National Mall Plan* will guide the future land uses and management practices of the National Mall. A portion of the plan outlines projects that would incrementally preserve and enhance the National Mall experience. For the National Mall, the *DC Center City Action Agenda* seeks to create a mixed-use corridor along 14th Street from downtown to the Tidal Basin. Projects that would occur along 14th Street include: the NMAH Public Space Revitalization/Expansion, Department of Commerce National Aquarium Entrance, Washington Monument Permanent Security Improvements, Centennial Initiative/Wayfinding and New Pedestrian Guides, and U.S. Department of Agriculture – Jamie L. Whitten Building. These projects would create new destinations along 14th Street, further increasing pedestrian volumes and activating the corridor. Overall, the implementation of these projects would result in a beneficial cumulative impact on planning policies.

With the No Action Alternative, cumulative projects that would result in land use changes around the site would still occur. However, because there would be no land use or planning impacts from the No Action Alternative, there would be no cumulative impacts.

Analysis of Cumulative Impacts on Visitor Use and Experience

As discussed in the Tier I EIS, construction of the Martin Luther King, Jr. Memorial, the American Veterans Disabled for Life Memorial, the Dwight D. Eisenhower Memorial, and the Vietnam Veterans Memorial Visitors Center would alter the visitor experience by creating new destinations on the National Mall. Impacts on visitor use and experience, however, is not limited to the addition of new attractions. Circulation patterns, accessibility, visual and aesthetic quality would also affect visitor use. In addition, visitors come to the National Mall and surrounding area for different reasons. They would experience the Mall in different ways, resulting in a variety of potential impacts.

In addition to the projects discussed in Tier I, the following projects would also affect visitor experience: the Washington Monument Permanent Security Improvements, the D.C. War Memorial Rehabilitation, the Thomas Jefferson Memorial Plaza and Seawall Improvements and the NMAH Public Space Revitalization/Expansion, Department of Commerce National Aquarium Entrance, and the potential reuse of the Arts and Industries Building and the Jamie L. Whitten Building. The National Mall Turf Study and Centennial Initiative/Wayfinding and New Pedestrian Guides would result in a beneficial cumulative impact on visitors experience as they seek to restore the aesthetic nature and increase accessibility of the mall.

Roadway improvement projects in the immediate area, including the separation of bicycle and vehicular lanes on Madison Drive, 15th Street, and Constitution Avenue, would cumulatively improve site access and circulation for visitors wishing to bike to, from, and around the National Mall. Improving the Mall's grass and turf would

enhance its visual quality, while placement of park furniture would enhance the visitors' experience (NPS, 2010).

Tourists who are visiting the Mall for the Smithsonian Museums would see an overall beneficial cumulative impact to their visitor experience based on the increase in cultural destinations in close proximity to NMAAHC. The addition of a museum with new subject matter would also increase the educational breadth of the visitors' experience. However, there would be potential negative impacts on tourists visiting the National Mall seeking a reflective, contemplative experience at the Washington Monument and memorials due to increased visitorship and the loss of a personal connection to these destinations. Similarly, there would also be potential negative impacts on visitors who are using the National Mall for active recreation or public gathering because the placement of destinations on the Mall and loss of flexible open space would reduce options for First Amendment demonstrations and special events. This would result in significant negative impacts from the irretrievable loss of open space and the ability to practice these rights.

There would be no cumulative impacts due to the No Action Alternative.

Analysis of Cumulative Impacts on Historic Resources

The NMAAHC project site is located in the northeast corner of the Washington Monument Grounds within the National Mall. There is an abundance of historic resources in the area and the development and construction of other projects within the vicinity would have a cumulative effect on this historic character. The historic resources

of the National Mall can be subdivided into several subcategories discussed below.

Short-term effects would be those associated with the construction phase, such as the loss of existing turf and vegetation, the placement and operation of construction equipment and machinery, stockpiling of excavation materials, and other construction activities. Projects occurring on the National Mall would include: the NMAH Public Space Revitalization/Expansion, the Vietnam Veterans Memorial Visitors Center, the Lincoln Memorial Reflecting Pool and Grounds, the Thomas Jefferson Memorial Permanent Security Improvements, the Constitution Avenue Roadwork, the Madison Drive Roadwork, the Washington Monument Permanent Security Improvements, the National Mall Turf Study, the D.C. War Memorial Rehabilitation, the Centennial Initiative/Wayfinding and New Pedestrian Guides, the Arts and Industries Building, the U.S. Department of Agriculture – Jamie L. Whitten Building, the Washington Monument Steamlines, the Martin Luther King, Jr. Memorial, the Potomac Park Levee Project, the Thomas Jefferson Memorial Plaza and Seawall Improvements, and the Smithsonian Institution Mall-Wide Perimeter Security Improvements. It is anticipated that construction of some of these projects would occur concurrently with construction of NMAAHC and would result in significant adverse cumulative short-term impacts.

The analysis of historic views and vistas examines the potential effects on historic resources within the vicinity of the site. Due to the varying locations of the historic viewsheds and the location of the cumulative projects on and around the National Mall, the projects listed in Table 1.1 would contribute to cumulative impacts on historic views and vistas. It is anticipated that cumulative impacts on view corridors directly adjacent to or in close proximity

of the National Mall would have major/significant adverse impacts. However, for more distant views, such as from Arlington Cemetery, cumulative impacts would be reduced as individual projects would be less distinguishable.

The analysis of historic spatial organization examines the cross-axial relationship that characterizes the National Mall as it extends outward from the Washington Monument and also how the Mall interacts within the historic city plan. Projects located close to the project site would generate cumulative impacts that are expected to be major/significant and adverse on the Washington Monument Grounds, the cross-axial spatial organization of the monumental core, and the larger spatial organization of the National Mall. The other projects listed in Table 1.1 would also result in cumulative impacts due to the development of currently undeveloped parcels, the placement of buildings in close proximity to established setback lines, the alteration of historic boundaries, and of roadway realignments or construction. Moderate/significant adverse cumulative effects are anticipated.

The historic land use and circulation patterns of the National Mall, Washington Monument Grounds and surrounding urban context would be affected by the projects listed in Table 1.1 because they are located on or adjacent to the National Mall and the Washington Monument Grounds. The cumulative effects on the Washington Monument Grounds would be major/significant and adverse due to the loss of parcels that are currently open space.

The naturalist topography and distinct characteristics of the Washington Monument Grounds and the topography of the National Mall and surrounding urban context would experience cumulative effects from the ground-disturbing projects listed in Table 1.1 due

to the alteration of the topography that would result from site development. Cumulative effects are anticipated to be minor and adverse because while there would be some degree of site grading for engineering or accessibility purposes the overall topography of the area would be retained.

The significant vegetative features of the Washington Monument Grounds and the grass panels, tree panels and elms within the National Mall would experience cumulative effects associated with the removal of vegetation during the construction of the projects listed in Table 1.1. Cumulative effects are anticipated to be moderate/significant and adverse because while some vegetation would be removed, the majority would remain intact. Furthermore, projects such as the National Mall Turf Study are seeking to improve the visual aesthetic and performance of the grass on the National Mall.

Historic buildings and structures, including the Washington Monument, Bulfinch Gateposts, Monument Lodge, and buildings within the Federal Triangle and the National Mall would experience cumulative effects from the projects listed in Table 1.1 due to the degradation of the visual character to and from these buildings or structures. Cumulative impacts on the historic buildings and structures within the Washington Monument Grounds would be major/significant and adverse due to the placement of new development or the alteration of vegetative buffering.

The No Action Alternative would not include construction of NMAAHC on the project site. As a result, there would be no cumulative impacts on historic resources.

Analysis of Cumulative Impacts on Visual Resources

To properly assess visual impacts, several subcategories were evaluated including the surrounding urban context, urban viewsheds, and night lighting. Since changes to visual resources can be detected over a wider range than impacts to more site specific resources all of the cumulative projects listed in Table 1.1 are considered for potential visual impacts.

The scale, height, layout and massing of each project would visually affect adjacent structures. Projects located along Constitution and Independence Avenues would be more consistent with their context as these areas are more urban in nature. Cumulative impacts associated with projects in these areas would be moderate/significant and adverse. Projects located on and west of the Washington Monument Grounds, and along the Tidal Basin would have greater impacts due to the open space character of these areas. As a result, these cumulative impacts would be major/significant and adverse.

Key urban viewsheds and view corridors would experience cumulative effects from the placement of projects or buildings within these corridors that may obscure key viewpoints or alter the current visual character. By altering a key urban viewshed there would be major/significant cumulative effects.

The projects listed in Table 1.1 would contribute to light pollution within the Washington Metro area. While urban areas have a high concentration of light pollution due to higher densities of people and buildings, street lighting, and vehicles, each of the projects would include night lighting either for accessibility, aesthetic accent

lighting, or safety and would have moderate/significant cumulative effects on night lighting.

The No Action Alternative would not include construction of NMAAHC and, as a result, there would be no cumulative impacts.

Analysis of Cumulative Impacts on Geology, Soils and Groundwater

Potential geologic and soil impacts are site specific and thus would be potentially affected by the cumulative impact projects that would be located within 500 feet such as the Monument Lodge Security Screening project, NMAH Public Space Revitalization/Expansion, Department of Commerce, Herbert C. Hoover Building Modernization, the Washington Monument steamlines, and the Department of Commerce National Aquarium Entrance. A project outside of the 500 foot radius but still of concern would be the Washington Monument Permanent Perimeter Security Improvements. The potential for the NMAAHC to induce settlement of adjacent buildings would be alleviated by the use of deep pilings that extend to bedrock to bear all of the building's load. If other buildings are constructed similar to the NMAAHC, there would be no cumulative geologic and soil impacts, particularly with respect to potential settlement of adjacent structures..

Groundwater was observed onsite at an elevation of -5 above sea level, which is relatively shallow. Permanent changes in groundwater patterns or movement could have an effect on an entire watershed. Alteration of the natural groundwater patterns and movement could result in the reversal of the hydraulic gradient, where streams recharge the water table rather than the water table recharging the streams. This condition may also lead to a loss of soil stability and the settlement of surrounding structures. Due to the

potential widespread effects to groundwater levels, all of the projects listed in Table 1.1 were considered for cumulative impacts. However, potential cumulative impacts from the construction of the NMAAHC would be mitigated by the use of a diaphragm slurry wall in combination with a dewatering system to reduce fluctuations in groundwater levels. During construction, all excavation would be limited to the site. Thus, no cumulative impacts would occur on-site or within the surrounding area.

With the No Action Alternative, no construction would occur on the project site and there would be no cumulative impacts on groundwater are anticipated from implementation of other projects.

Analysis of Cumulative Impacts on the Conservation of Natural Resources

Potential cumulative impacts on open space, site performance, and global climate change could result from the Department of Commerce National Aquarium Entrance, the Dwight D. Eisenhower Memorial, the Vietnam Veterans Memorial Visitor Center, the Martin Luther King, Jr. Memorial, and the U.S. Institute of Peace Headquarters. The construction of these projects would result in a permanent cumulative loss of open space on and around the National Mall. While each of these projects would provide some degree of publicly accessible open space, the adverse cumulative impact on open space resources would be significant.

The amount of impervious surfaces, sustainability measures, stormwater runoff, and energy consumption would be cumulatively affected by the projects listed in Table 1.1. However, sustainability strategies and natural resource conservation implemented as part of the projects would minimize the cumulative impacts.

Emissions of GHGs are a major environmental concern due to their impacts on global climate change and overall air quality of a region. Impacts due to the emissions of GHGs are generally from non-point sources and, as a result, cumulative in nature. The projects listed in Table 1.1 would contribute to cumulative impacts. During the construction phase of projects, there would be an incremental increase in emission of GHGs from diesel burning construction machines and equipment. During the operation of the NMAAHC, emissions would result from HVAC systems, energy consumption and other sources such as increased vehicular traffic. There would be a negative cumulative impact from the incremental increase in GHG emissions; however, at the regional scale this amount would not be significant. Potential global climate change impacts from the construction and operation of the museum would be further mitigated by compliance with Executive Order 13514. EO 13514 is a federal mandate that establishes an integrated strategy towards reducing GHG emissions and improving sustainability. Implementation of EO 13514 would also help to incrementally reduce impacts on global climate change from the construction and operation of other projects.

The No Action Alternative would retain the project site in its current condition; as a result, there would no cumulative impacts.

Analysis of Cumulative Impacts on Transportation

The surrounding roadway, bicycle and pedestrian networks, along with public transportation systems would potentially be affected by the NMAH Public Space Revitalization/Expansion, Department of Commerce National Aquarium Entrance, American Veterans Disabled for Life Memorial, Dwight D. Eisenhower Memorial, Vietnam Veterans Memorial Visitors Center, Lincoln Memorial

Reflecting Pool and Grounds, Thomas Jefferson Memorial Permanent Security Improvements, Washington Monument Permanent Security Improvements, D.C. War Memorial Rehabilitation, Arts and Industries Building, U.S. Department of Agriculture – Jamie L. Whitten Building, Martin Luther King, Jr. Memorial, United State Institute of Peace Headquarters, Thomas Jefferson Memorial Plaza and Seawall Improvements. Because transportation impacts are assessed by creating a future scenario, where all reasonable projects (including future improvements to public transportation, pedestrian, and bicycle amenities) within the vicinity of a project site are quantified and aggregated, these future conditions are by definition, cumulative. Thus, the impacts on local and regional roadways, public transportation systems, and bicycle facilities would be viewed as cumulative. As documented in Section 3.7, it is anticipated there would be no significant cumulative effects on roadways, public transportation systems, or bicycle facilities.

It is likely that tour bus and school bus visits currently associated with the nearby Smithsonian Institution and District landmarks that include the Washington Monument, World War II Memorial, NMAH, NMNH, and U.S. Holocaust Museum would also include a visit to NMAAHC. The existing layby area located on Madison Drive just south of the project site currently provides that facility for that activity and would continue to do so with the NMAAHC in place. The cumulative impact of the operation of the NMAAHC on tour bus and school bus activity would be less than significant.

Pedestrian activity within the vicinity of the project site would cumulatively increase due to the development, roadways, public transportation systems, and bicycle facility projects listed in Table 1.1. Pedestrian safety would be of the most concern at the intersections of 14th Street and Constitution Avenue and 15th Street

and Constitution Avenue. Significant adverse cumulative impacts on pedestrian safety are anticipated.

The cumulative projects that seek to improve the conditions of the local and regional transportation resources, including the Constitution Avenue Roadwork, Madison Drive Roadwork, Centennial Initiative/Wayfinding and New Pedestrian Guides, The District of Columbia Tour Bus Management Initiative, and Visitor Transportation Study for the National Mall and Surrounding Park Areas would reduce cumulative impacts on transportation resources.

There would be no construction on the project site with the No Action Alternative. As a result, there would be no cumulative impacts.

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