

National Park Service
U.S. Department of the Interior



National Mall and Memorial Parks
Washington, DC



REHABILITATE TIDAL BASIN AND WEST POTOMAC PARK SEAWALLS

ENVIRONMENTAL ASSESSMENT

FEBRUARY 2023

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Note to reviewers and respondents: Comments on this EA may be submitted electronically at <https://parkplanning.nps.gov/SeawallRehabilitation>.

You may mail written comments by Friday, April 1, 2023 to:

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Before including personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

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ACRONYMS AND ABBREVIATIONS

°C	Degrees Celsius
ABAAS	Architectural Barriers Act Accessibility Standards
ACHP	Advisory Council on Historic Preservation
ANSI	American National Standards Institute
AOE	Assessment of Effects
APE	Area of Potential Effect
BMP	Best Management Practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
dB(A)	Decibel A Scale
DBH	Diameter at Breast Height
DC	District of Columbia
DCMR	District of Columbia Municipal Regulations
DC Water	District of Columbia Water and Sewer Authority
DDOT	District Department of Transportation
DO	Director's Order
DO	Dissolved Oxygen
DOEE	District Department of Energy and the Environment
DOI	Department of the Interior
DPS	Distinct Population Segments
EA	Environmental Assessment
EFH	Essential Fish Habitat
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FRA	Federal Railroad Administration
FY	Fiscal Year
GHG	Greenhouse Gases
GW Parkway	George Washington Memorial Parkway
I-395	Interstate 395
I-495	Interstate 495
IPaC	Information for Planning and Consultation
Ik	Iuka Sandy Loam
JD	Jurisdictional Determination
Ld	Lindsay Loam
Leq	Equivalent A-Weighted Sound Level
mg/L	Milligrams per Liter
mph	Miles Per Hour
MBTA	Migratory Bird Treaty Act
MOA	Memorandum of Agreement
NAVD88	North American Vertical Datum of 1988
NCPC	National Capital Planning Commission
NEPA	National Environmental Policy Act

NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	National Resources Conservation Service
Park	National Mall and Memorial Parks
PEPC	Planning, Environment and Public Comment
ppt	Parts Per Thousand
RT&E	Rare, Threatened and Endangered
SAV	Submerged Aquatic Vegetation
SHPO	State Historic Preservation Office
SW	Southwest
U1	Udorthents
US	United States
USACE	US Army Corps of Engineers
USC	US Code
USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
VDWR	Virginia Department of Wildlife Resources
VPRA	Virginia Passenger Rail Authority
WMATA	Washington Metropolitan Area Transit Authority

1.0 PURPOSE AND NEED

INTRODUCTION

The National Park Service (NPS) is developing a plan and environmental assessment (EA) for National Mall and Memorials Park (Park) in Washington, DC to evaluate the impacts from the rehabilitation of approximately 6,800 linear feet of seawall along West Potomac Park and portions of the Tidal Basin. The original seawalls were constructed from the late 1800s to early 1900s to retain material dredged from the Potomac River used to create the lands now encompassing West Potomac Park and the Tidal Basin. In the years since their construction, the seawalls have significantly settled and are compromised. The seawalls were constructed on soft soils, and previous studies have determined that portions of the seawall have settled as much as five feet since the initial construction (NPS, 1994, NPS, 2011a). As a result of this settlement and sea level rise, portions of the seawalls are overtopped twice daily during normal tidal conditions. Greater lengths of the seawall and areas of the Park are submerged during and after extreme weather events.

The seawall settlement and deterioration over time has led to reduced public access, trip and fall hazards, and damage to the cultural landscape and Park infrastructure. Some of the overtopped areas do not drain resulting in standing water and mud along the walkways. Overtopped areas are frequently littered with woody debris and other trash from the river. Trash and decomposing organic material from the river deposited along the shoreline leads to concerns for sanitation and health and safety for Park visitors as well as budget and maintenance issues for the NPS.

PURPOSE AND NEED FOR THE ACTION

The *purpose* of the proposed action is to restore the historic functional height¹ of the seawalls within their historic alignment to provide some flood protection, stabilize/eliminate settlement of the seawalls, minimize soil erosion and safety hazards, restore the cultural landscape, and improve visitor experience along the shorelines. The proposed action is *needed* because the existing structural deficiencies of the seawalls negatively impact the experience and safety of Park visitors and allow water to drown out vegetation, adversely affecting the landscape.

This EA describes two alternatives for the rehabilitation of the Tidal Basin and West Potomac Park Seawalls, an action alternative and a no action alternative, and analyzes the environmental consequences of implementing the alternatives. The EA was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 as implemented by Council for Environmental Quality regulations (40 CFR 1500-1508); NPS Director's Order #12: *Conservation Planning, Environmental Impact Analysis, and Decision-Making*; and the NPS NEPA Handbook (NPS, 2011b, NPS, 2015a). In conjunction with this EA, the project is concurrently undergoing a review of potential effects on historic resources in compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (36 CFR Part 800).

BACKGROUND AND PROJECT AREA

The Tidal Basin and West Potomac Park experience large numbers of visitors every day of the year with peak visitation during the spring with the blooming of the Japanese cherry blossoms during the months of March through April. The Thomas Jefferson Memorial received approximately 2.5 million visitors between January and September 2022 (NPS, 2022a). Many of these visitors then walk around some portion of the Tidal Basin. The Tidal Basin and West Potomac Park provide opportunities for visitor recreation, including ball fields, multi-use trails, and paddle boating. West Potomac Park and the Tidal

¹ The original seawalls were constructed such that the top of the wall was six feet above mean low water at the time of their construction (NPS, 1973).

Basin are also home to the National Cherry Blossom Festival and iconic sites within the District of Columbia including the Thomas Jefferson Memorial, the Martin Luther King, Jr. Memorial, and the Franklin Delano Roosevelt Memorial. These Parks are owned by the United States and administered by the NPS through the Park (see Figure 1).

Figure 1: Tidal Basin and West Potomac Park Area Map



A 2022 geotechnical investigation along the existing seawalls around the Tidal Basin and within West Potomac Park documented that the subsurface soil layer consists of a soft fill material layer underlain by bedrock. The depth of bedrock ranges from approximately 45 to 100 feet below the existing ground surface). Over time, the soft soils have compacted resulting in settlement of the seawalls and adjacent land, which allows frequent inundation by water overtopping the seawalls. The geotechnical report is provided in **Appendix A**.

Photographs illustrating existing conditions at normal high tide are provided in **Figure 2**. Significant expanses of land are inundated with water, which erodes soil, damages vegetation, and threatens historic resources and Park infrastructure. Japanese cherry trees that line the Tidal Basin are dying as their roots are submerged for extended durations and exposed by the erosive floodwaters. Portions of the walkway on top of the Tidal Basin seawall on either side of the Inlet Bridge are inaccessible twice daily at high tide, creating a hazardous condition for Park visitors.

Figure 2: Existing Conditions at Normal High Tide



Tidal Basin West Near Inlet Bridge – Looking North at Washington Monument



Tidal Basin East – Looking North at Thomas Jefferson Memorial



Tidal Basin West – Looking North from Inlet Bridge



Tidal Basin East – Looking South on the edge of Thomas Jefferson Memorial



Tidal Basin East – Looking North at Washington Monument and Thomas Jefferson Memorial

Photographs of existing seawall damage are provided in **Figure 3**. In the Tidal Basin, portions of the concrete cap have eroded away and/or concrete has been used to patch and repair seawall sections. Both the Tidal Basin and West Potomac Park seawalls have settled and lost stones from their face. The seawall along the southern half of West Potomac Park has a less defined alignment as sections of the original seawall structure have failed. In these areas, the seawall has sunk below normal water levels and contemporary materials have been used as riprap landward of the seawall to protect the exposed shoreline against erosion.

Figure 3: Existing Seawall Damage



Tidal Basin East – Looking East at Seawall and Landscape Damage due to Inundation and Erosion



West Potomac Park – Looking Northeast at Failed Seawall and Rip-Rap Stabilization Repairs



Tidal Basin East – Looking North at Thomas Jefferson Memorial, Collapsing Seawall, Landscape Damage, and Visitor Safety Barrier

SCOPING AND IDENTIFYING ISSUES

Issues and Impact Topics Retained for Detailed Analysis

The NPS, participating agencies, the public, and other stakeholders identified environmental issues and impact topics for detailed analysis during the internal and external scoping processes. The issues and concerns that warranted further consideration are included in the impact topics discussed in **Chapter 3**, Affected Environment and Environmental Consequences. Some issues and impact topics were considered by the NPS, but ultimately dismissed from detailed analysis. Brief descriptions of the issues and impact topics retained for detailed analysis and those that were dismissed are provided below along with a summary justification.

Historic Resources and Cultural Landscape: The Area of Potential Effect (APE) for the proposed action includes six historic districts, multiple cultural landscapes, and individual resources listed in the National Register of Historic Place (NRHP). The proposed action would rehabilitate the existing stone seawall, which is a contributing historic resource to the National Mall and East and West Potomac Park Historic Districts, as well as remove and replace Japanese cherry trees and other contributing vegetation. Rehabilitation of the West Potomac Park and Tidal Basin seawalls would result in short-term adverse and long-term beneficial effects to historic resources and the cultural landscape; therefore, these impacts are analyzed in **Chapter 3** of this EA.

Visitor Use and Experience: The proposed action would result in long-term beneficial impacts and short-term adverse impacts to visitor enjoyment, safety, and circulation. The proposed action would temporarily disrupt vehicular, pedestrian, and cyclist traffic and would require detours. Construction-related noise would also occur on Park land that may temporarily detract from the visitor experience at monuments, memorials, Japanese cherry trees, and other important Park sites. Furthermore, construction activities would temporarily diminish the aesthetics of West Potomac Park and the Tidal Basin. However, proposed improvements to the existing seawall and walkways would benefit visitor enjoyment, safety, and circulation in the long-term. Based on these considerations, issues related to visitor use and experience are analyzed in **Chapter 3** of this EA.

Water Resources: Construction of the proposed action would occur in the Potomac River, a tidal waterbody that flows into the Chesapeake Bay. Aquatic resources could be adversely affected during the construction phase. However, after construction is complete, the rehabilitated seawall and associated grading would reduce the volume and frequency of soil and sediment erosion into the Potomac River, resulting in beneficial long-term impacts to aquatic resources. Construction activities within the Potomac River would disturb river bottom sediments, resulting in temporary adverse impacts to water quality. As a water-dependent project, the effect on water resources is analyzed in **Chapter 3** of this EA.

Rare, Threatened and Endangered Species: The proposed action would require disturbance to the Potomac River during construction that may affect but is not likely to adversely affect two listed species of sturgeon that may be present: the federally endangered shortnose sturgeon (*Acipenser brevirostrum*) and all five of the Distinct Population Sections (DPS) of the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). Atlantic sturgeon originating from the New York Bight, Chesapeake Bay, South Atlantic and Carolina DPSs are listed as endangered; the Gulf of Maine DPS is listed as threatened. The proposed action area includes designated critical habitat for the shortnose sturgeon and Atlantic sturgeon. As part of consultation required under Section 7(a)(2) of the Endangered Species Act (Public Law 93-205), the NPS has requested concurrence from the National Marine Fisheries Service (NMFS) with the determination of not likely to adversely affect federally endangered species and a waiver from time-of-year restrictions for in-water construction activities on November 30, 2022 (see **Appendix B**, Agency Consultation). Based on these considerations, issues related to rare, threatened, and endangered species are analyzed in **Chapter 3** of this EA.

Issues and Impact Topics Dismissed from Detailed Analysis

Some issues and concerns identified during scoping were considered by the NPS but were ultimately dismissed from detailed analysis because they were determined not central to the proposal or not of critical importance. This section provides brief descriptions of the issues and concerns determined to not warrant further consideration, as well as a summary justification for the dismissal of each issue.

Wildlife and Wildlife Habitat: The NPS policy is to protect the natural abundance and diversity of all naturally occurring communities. The NPS *Management Policies 2006*, NPS Director's Order (DO) #77: *Natural Resources Management*, and other NPS and Park policies provide general direction for the protection of wildlife and wildlife habitat (NPS, 2006, NPS, 2016a). The project area is in a highly developed region and urbanized setting. The wildlife species found in the area, including migratory and resident bird species, have adapted to and thrive in the developed environment. Limited construction activities associated with the proposed action would damage or remove vegetation or other features that provide habitat for common species of animal wildlife or displace or destroy specimens of common animal wildlife species. However, it is anticipated that many of the displaced specimens would relocate to similar areas of habitat during construction and return to the disturbed areas as construction activities cease and vegetation and other features providing habitat regenerate or are restored. The NPS biologists or other qualified personnel would develop applicable best management practices (BMPs) to minimize impacts on wildlife, such as seasonal time-of-year restriction on tree removal or pre-construction nesting bird surveys would be completed to ensure impacts to nesting birds are avoided. The inadvertent destruction of individual specimens of wildlife during small-scale construction activities is not anticipated to result in population-level impacts on any species. In the long-term, there would be no adverse impacts on common species of wildlife at the Park. For these reasons, this topic was dismissed from detailed analysis in this EA.

Vegetation: Vegetation in the project area is primarily landscaped with trees, shrubs, and lawns. Trees would be removed and restored to accommodate the rehabilitated seawall and associated infrastructure, while remaining vegetation within the construction area would be protected from construction activities and equipment. Due to the regularly maintained nature of the project area, it is not anticipated that invasive species would be an issue after revegetation. In addition, the overall vegetation composition would not change as trees would be replaced in kind or with more suitable species. The NPS would adhere to NCPC policy on tree replacement. In the long-term, there would be no adverse impacts on vegetation; therefore, this topic was dismissed from detailed analysis in this EA. Analyses of impacts to trees with regard to the cultural landscape and visitor use are discussed in Chapter 3, Historic Resources and Cultural Landscapes, and Chapter 3, Visitor Use and Experience, respectively.

Wetlands: Executive Order 11990, "Protection of Wetlands" (1977a), and NPS DO #77-1: Wetland Protection define the NPS goal to maintain and preserve wetland areas (NPS, 2002). A wetland delineation field assessment was conducted in July 2022 that identified four small wetlands within the study area (NPS, 2022b). These wetlands have formed in depressional areas behind the seawalls where surface water ponds and is no longer able to sheet flow over the seawall. The NPS has designated these wetlands as incidental, and a jurisdictional determination (JD) from the U.S. Army Corps of Engineers (USACE) is pending. The proposed action would regrade the fill behind the seawalls to establish positive drainage and discourage ponding of water that could result in incidental wetlands. According to Section 4.2.3 of NPS Procedure Manual #77-1, Activities with Adverse Impacts on Artificial (incidental) Wetlands, the proposed action is exempted because the wetlands do not provide habitat for any protected species and the loss is minor. The action of rehabilitating the seawalls would impact wetlands that developed incidentally within the construction zone of the original seawall. Therefore, impacts to wetlands in the original construction footprint would also fall under an exempted action under Section 4.2.1.7 of NPS Procedural Manual #77-1, Renovation of an Existing Facility (NPS, 2016a). In addition, a review of the DOEE Aquatic Resource Map indicated the presence of SAV within the study area in 2017;

however, none have been observed from 2018 to 2022 (DOEE, 2022). The NPS would coordinate with DOEE prior to construction to determine if a SAV survey is required. If a future survey documents the presence of SAV within the work area, the NPS would coordinate with DOEE regarding potential impacts and mitigation.

The NPS would adhere to Sections 404 and 401 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act of 1899, obtain all necessary federal and state permits for proposed actions occurring in wetlands, and adhere to applicable requirements set forth in the permits. Adherence to the requirements of NPS Procedural Manual #77-1 and applicable federal and local permits and regulations would ensure that the proposed action would avoid wetlands and minimize unavoidable wetland impacts to the maximum extent practicable. As a result, this topic was dismissed from detailed analysis in this EA and a Wetland Statement of Findings is not necessary.

Floodplains: Executive Order 11988, “Floodplain Management” (1977b), and NPS DO #77-2: *Floodplain Management* require an examination of impacts on floodplains and potential risk involved in placing facilities within floodplains (NPS, 2003). Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map panel 1100010018C (revised September 27, 2010) details that the entire project area is within the regulated one percent annual chance floodplain of the Potomac River. The proposed action could result in disturbances during construction and may also add minor amounts of fill within the regulated floodplain.

Any floodplain encroachments would be minimal in relation to the overall area of the floodplain. Rehabilitation of the seawalls would not increase floodplain elevations or velocities upstream or downstream, occupy the floodplain with a new building or structure, or encourage occupancy of the floodplain. Based on these considerations, the proposed project would not result in negative impact to human health, capital investment, or natural and beneficial floodplain values. Therefore, this project is anticipated to conform to the requirements of Executive Order 11988 and NPS DO #77-2, and the issue has been dismissed from detailed analysis in this EA and a Floodplain Statement of Findings is not necessary.

Archeology: There are no registered archeological sites in West Potomac Park or the Tidal Basin. According to the Natural Resources Conservation Service (NRCS) Web Soil Survey generated for the project area, most of the area along the Potomac River is mapped as Udorthents (U1) and most of the areas along the lower half of the Tidal Basin is mapped as Lindside loam (Ld). The transition from the Potomac River into the Tidal Basin is mapped as Iuka sandy loam (Ik) (NRCS, 2019). The soil survey map is reflective of past anthropogenic influences from the late 1800s to early 1900s where the USACE dredged the Potomac River to improve navigation of the river and placed the dredged material to create the lands now encompassing East and West Potomac Parks and the Tidal Basin. Man-made soil alterations have occurred within the project area as the Tidal Basin has been dredged by the USACE and created through the deposition of dredged material along with the initial creation of the seawalls. Therefore, the potential to impact archaeological resources is considered low and the topic was dismissed from detailed analysis in this EA.

Environmental Justice: Executive Order 12898, “General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” (1994), requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. According to the EPA, environmental justice is the “...fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies.” The goal of “fair treatment” is not to shift risks among populations, but to identify potentially disproportionately high and adverse effects and identify alternatives that may mitigate these impacts. Environmental justice is dismissed as an impact topic for the following reasons:

- The NPS solicited public participation as part of the planning process and gave equal consideration to all input from persons regardless of age, race, income status, or other socioeconomic or demographic factors.
- Implementation of the proposed action would not result in any identifiable adverse human health effects. Therefore, there would be no direct or indirect adverse impacts on any minority or low-income population.
- The impacts associated with implementation of the proposed action would not disproportionately affect any minority or low-income population or community.
- Implementation of the proposed action would not result in any identified effects that would be specific to any minority or low-income community.

Greenhouse Gases/Climate Change: Gases that trap heat in the atmosphere are called greenhouse gases (GHGs). Climate change describes a collection of phenomena, such as increasing temperatures and rising sea levels, occurring across the globe due to increasing anthropogenic emissions of GHGs (USEPA, 2022). The NPS recognizes the need to address climate change as a fundamental human and environmental issue and has considered climate change resiliency in the design and planning of the proposed action. The foundation of the proposed seawall has been designed to allow additional capacity for the walls to be extended vertically in response to future sea level rise or changing climate patterns. The proposed action would not exacerbate environmental conditions already resulting from climate change (e.g., increased precipitation, flooding), and would instead alleviate the impacts of climate change by safeguarding against frequent inundation of tides and flooding.

The project would result in a temporary increase in GHG emissions, lasting for the approximately three-year construction period. GHG emissions associated with phased construction of the proposed action would include electricity usage associated with water consumption for dust control and use of electric equipment, diesel fuel consumption from on-road hauling trips and off-road construction diesel equipment, and gasoline consumption from on-road worker commute and vendor trips. These emissions would be short-term, remain localized, and would not be substantial enough to affect climate change trends at a regional, state, national, or even global scale. In the long term, GHG emissions are likely to decrease from existing baseline levels. Maintenance and management activities are currently undertaken to remove debris, patch repairs, and place additional riprap along the shoreline, yielding low levels of GHG emissions from personnel vehicles traveling to and from the site or the use of diesel-powered maintenance equipment. Implementation of the rehabilitated seawall would reduce the frequency of maintenance activities and their associated GHG emissions by reducing the frequency that the walls are overtopped by river water. With fewer seawall failure events, the NPS' need to respond to frequent, and emergency maintenance requests would decrease, along with GHG emissions resulting from these activities.

Given the overall benefit that would result from this project, a quantitative emissions analysis was not conducted. The rehabilitated seawall would offer protection from climate change impacts to the surrounding vegetation, wildlife habitat, and recreational areas. In addition, GHG emissions are expected to decrease due to the resiliency of the proposed seawall, reducing the need for maintenance and management activities in the long term. Alleviating climate change impacts would improve the recreational experience and safety for all visitors, including those from communities with environmental justice concerns. This topic was, therefore, dismissed from additional analysis in this EA.

2.0 ALTERNATIVES

This EA analyzes the potential environmental consequences of two alternatives, an action, and no action alternative. The elements of these alternatives are described in detail in this Chapter. Impacts associated with each alternative are outlined in **Chapter 3** of this EA, Affected Environment and Environmental Consequences. In addition, several options associated with the proposed action were dismissed from further consideration. These are described in this chapter under “Alternatives Considered but Dismissed.”

ALTERNATIVE A: NO ACTION

Under the No Action Alternative, the proposed action would not be implemented. The seawalls would continue to deteriorate and settle over time, resulting in increased flooding and failure events. The NPS would continue its current maintenance and management operations including debris removal, patch repairs to address differential settlement and safety issues in the walkways around the Tidal Basin, and placement of additional riprap along the West Potomac Park shoreline (as funding is available). Walkways around the Tidal Basin would not be widened from approximately eight feet to twelve feet and the top of wall elevation would not be increased. As a result, visitor circulation in and around the Tidal Basin would not be improved, high tide conditions would remain unsafe, and sections of the Park would remain inaccessible during daily high tides. The No Action Alternative reflects the status quo and provides a comparative baseline against which to analyze the effects of the proposed action, as required under the CEQ Regulations (40 CFR Part 1502.14).

ALTERNATIVE B: PROPOSED ACTION (PREFERRED ALTERNATIVE)

The NPS proposes to rehabilitate approximately 6,800 linear feet of seawall along West Potomac Park and portions of the Tidal Basin, as identified in **Figure 4** and **Figure 5**. The seawalls would be engineered and rehabilitated to be resilient to flooding during normal tidal events, minor flood stage events as well as to be adaptable to changing climate patterns, including storms of greater intensity. It is anticipated that construction would begin in fiscal year (FY) 2024 with up to a three-year construction duration.

The existing stone masonry seawall would be removed and reconstructed along the historic alignment and to the historic functional height of the original seawalls, which placed the top of the seawalls approximately six feet above mean low water (NPS, 1973). To the extent possible, the stones of the historic wall would be salvaged and reused in the rehabilitation of these seawalls. Extant stones would be cut for maximum use of historic stone. Additional stones would be sourced based on color, size, and texture for consistency with the historic material. Due to settlement and sea level rise that has occurred since these walls were constructed, the top of wall elevation for the rehabilitated seawall would need to be raised above original construction elevations to achieve the historic functional height. Existing top of wall elevations range from +0.88 feet to +3.57 feet within the Tidal Basin project area and range from 0.00 feet to +3.20 feet along West Potomac Park². The proposed top of wall elevation would be elevation +4.75 feet within the Tidal Basin and would be +5.50 feet along West Potomac Park. The higher elevation in West Potomac Park is necessary to account for wind and wave conditions along the Potomac River.

² Elevations are based on the North American Vertical Datum of 1988 (NAVD88)

Figure 4: Project Area Map



The seawalls in the project area are divided into four distinct sections: Tidal Basin East, Tidal Basin West, West Potomac Park South, and West Potomac Park North (see **Figure 5**). Within Tidal Basin East, there are two different sections built at different times. The Section 106 Assessment of Effects (AOE) Report provides a historical summary of the project area (see **Appendix C**).

Figure 5: Four Seawall Sections



The design of the proposed seawall includes pile-supported platform foundations that bear on bedrock, relieving the weight of the structure on the soft soils that caused the previous settlement. This type of foundation allows additional capacity for the walls to be extended vertically in response to future sea level rise or changing climate patterns, including storms of greater intensity and frequency that may result in increasing storm surge elevations. To the extent possible, the stones of the historic wall would be salvaged and reused in the rehabilitation of these seawalls. Riprap would be placed along the bottom of the pile-supported platform along West Potomac Park to reduce the erosive effects of wave action. The rehabilitated seawalls would have a structural service life of approximately 100 years. **Figure 6** through **Figure 8** depict typical Tidal Basin and West Potomac Park seawall cross sections.

Figure 6: Tidal Basin East – Proposed Seawall Section (Typical)

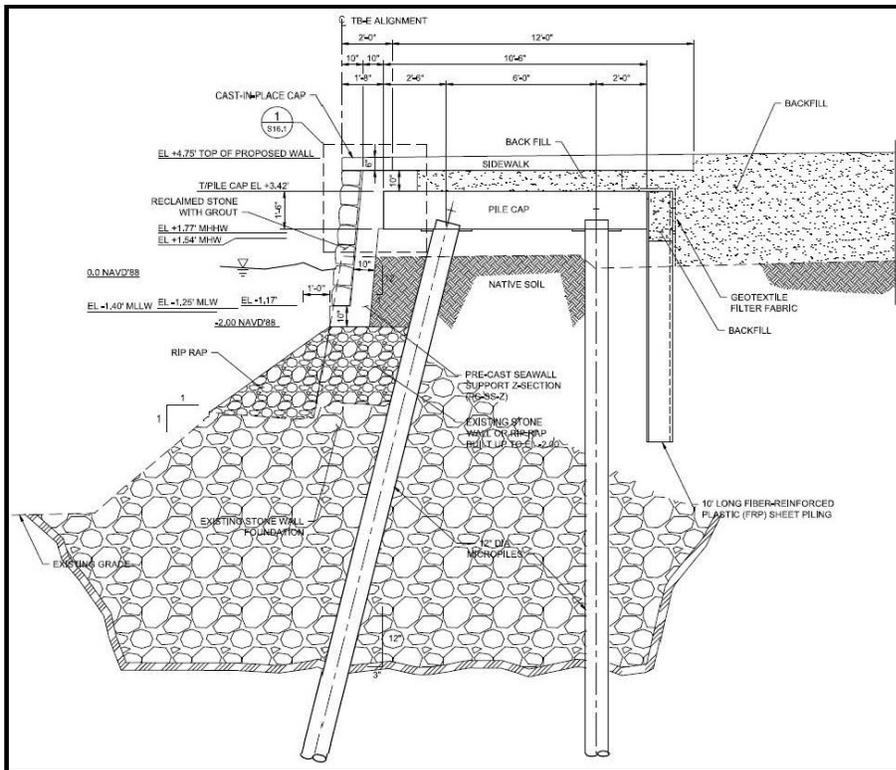


Figure 7: Tidal Basin West – Proposed Seawall Section (Typical)

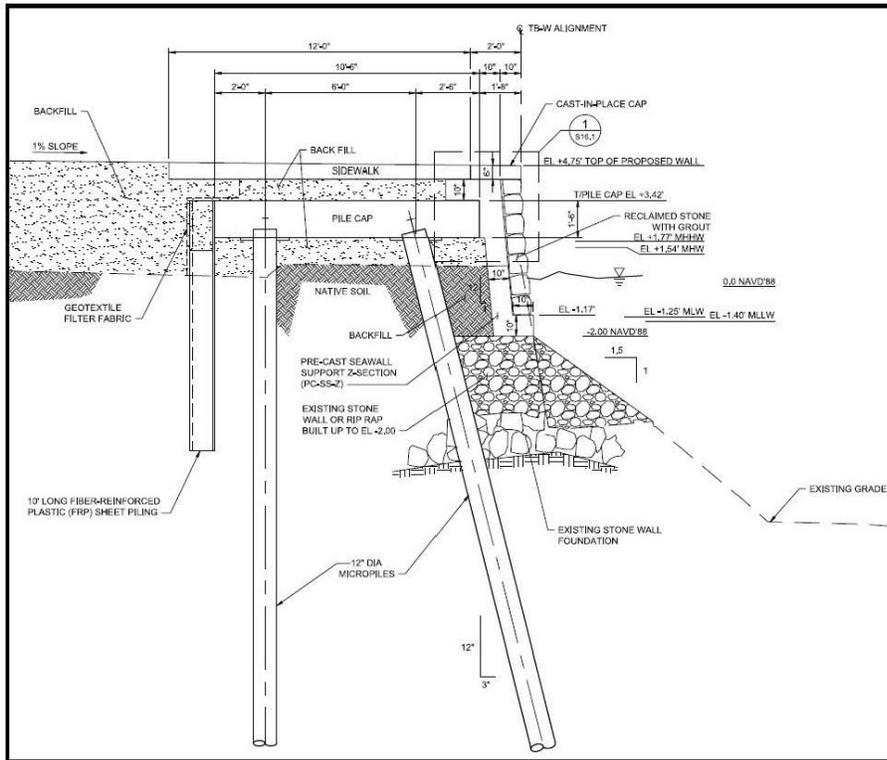
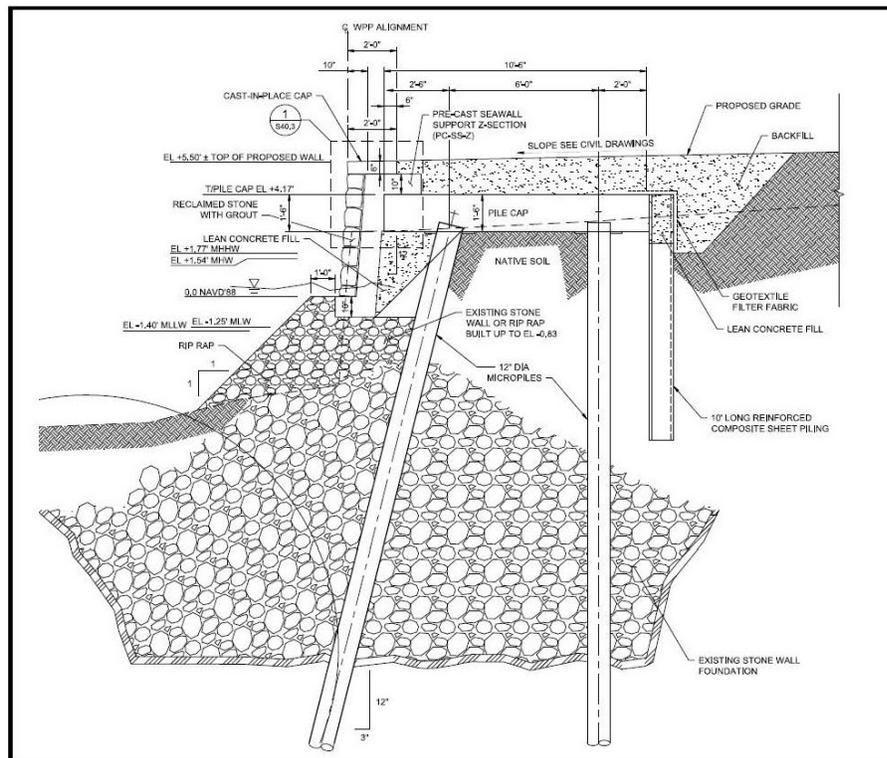


Figure 8: West Potomac Park – Proposed Seawall Section (Typical)



The seawalls around the Tidal Basin are the foundation for the walkways, which would also be repaired or replaced to re-establish the character of the Park and improve the visitor experience. The rehabilitated walkway would be widened from eight to twelve feet and would connect to existing pedestrian walkways around the Tidal Basin providing a seamless and accessible route to the rehabilitated seawall. The proposed action would correct deficiencies in the upland area behind the walls as well. Grading would be adjusted for the corrected seawall height and to re-establish sheet flow of runoff by eliminating the pockets of settlement that have developed. Re-establishing the historic functional height of the seawalls and regrading of the adjacent areas would eliminate the daily inundation of the tides, reduce the impact of, and provide positive drainage for the more extreme water events, allowing for the cultural landscape of the Park to be rehabilitated. These areas would be replanted with trees and other significant plantings as part of the rehabilitation.

Based on existing GIS data from 2017, there are approximately 590 trees within the project area, including deciduous, evergreen, and Japanese cherry trees. Further detail on the existing trees and wall conditions can be found in **Appendix C**, Section 106 Assessment of Effect Report. It is anticipated that approximately 40 trees would be impacted in West Potomac Park, 160 in Tidal Basin East, and 60 in Tidal Basin West. The final number of trees and species to be replaced would be determined pending final project design, which would include a tree inventory, and in accordance with the Section 106 Memorandum of Agreement (MOA) for the project.

Construction of the proposed action would occur within the project area shown on **Figure 4**. To rehabilitate the seawall and replace the existing walkway, some construction activities would occur within the Potomac River and Tidal Basin. Provisions for the deployment of a temporary cofferdam in the river, approximately 25 feet from the seawall, would be included. Following installation, the area inside the cofferdam would be dewatered so that work on the seawall can occur in reduced water conditions. This also allows for the existing seawall and foundation to be removed in a controlled environmental setting without introducing additional sediment to the river. Water removed from inside the cofferdam would be treated in tanks, cofferdam cells, or passed through a filter bag to reduce sediment before discharging the water back to the river.

The structure of the cofferdam consists of steel sheet piles vibrated into the river bottom using a vibratory crane rig. During a soft start, lower vibratory hammer energy levels would be used to start the pile driving process, and then the force of pile driving is gradually increased. Turbidity curtains would be used during the cofferdam installation/removal and monitored and maintained to ensure disturbed river bottom sediments are contained within the construction area. River conditions would be monitored to assess the effectiveness of the turbidity controls. During the construction process, construction barges and support vessels would operate in an area approximately 200 feet riverward of the cofferdam to facilitate installation and removal of the cofferdam and turbidity curtains. The construction barges would be anchored or spudded down for the duration of waterside work in an area of the river that already receives other vessel traffic but would not impede current traffic patterns. All other work involving the construction of the seawall and associated walkways would be done from land to the extent practicable. The construction schedule for the project allows for up to three years of construction. It is anticipated that seawall rehabilitation construction would be implemented in phases to minimize the occupied area within the river and the dewatering requirements.

The proposed laydown area would be in West Potomac Park on the ballfield closest to the Inlet Bridge. Additionally, a temporary landing and pier would be constructed off the southern end of the West Potomac Park seawall to facilitate material delivery and water-based construction activities. These areas would be restored to pre-construction conditions following construction completion. Temporary features, along with anticipated limits of disturbance around the Tidal Basin and West Potomac Park are shown on **Figure 9** through **Figure 11**.

Figure 9: Temporary Construction Laydown Area, Landing, and Pier

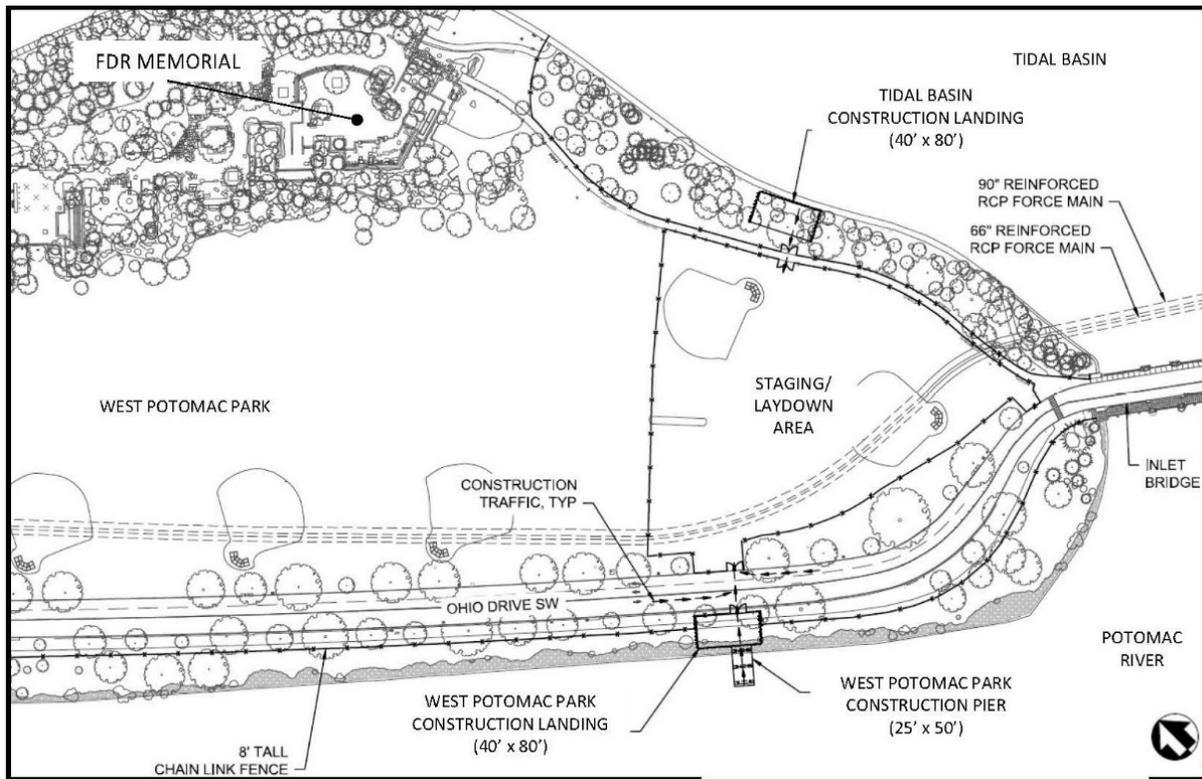


Figure 10: West Potomac Park Construction Laydown Area and Limits of Disturbance

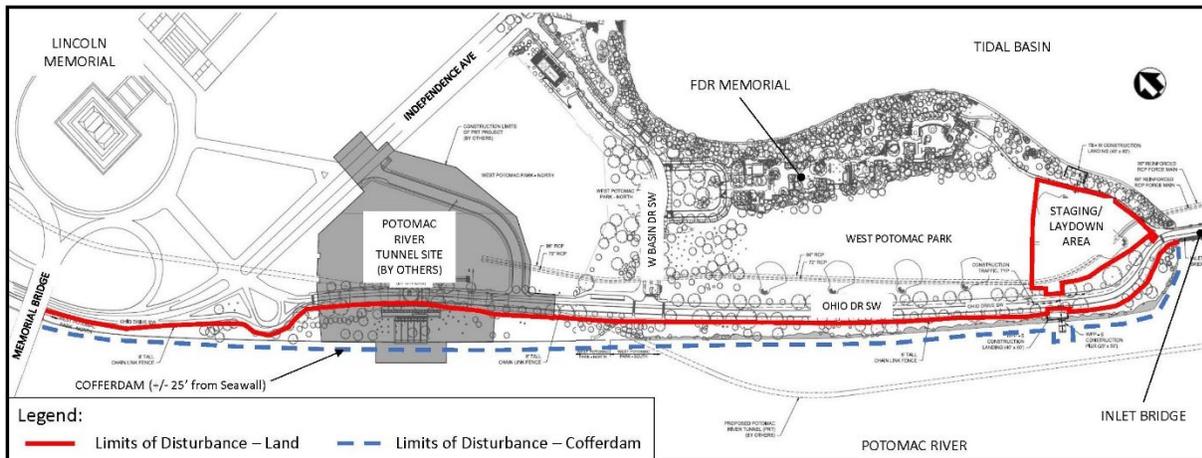
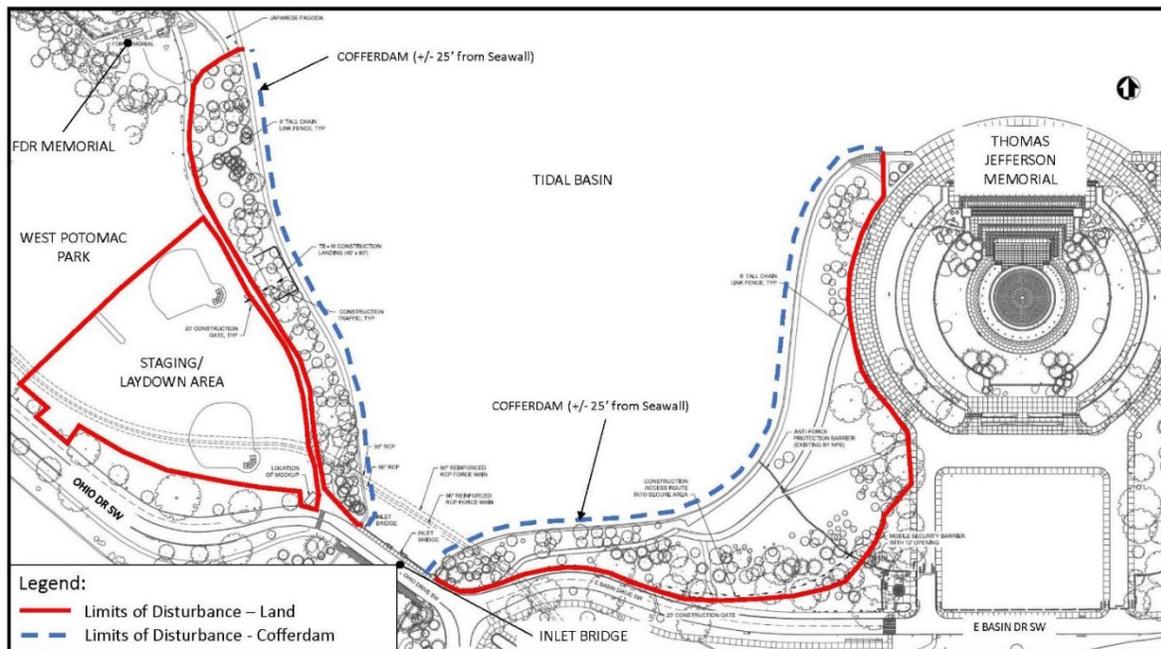


Figure 11: Tidal Basin Construction Limits of Disturbance



Approximately 10 to 150 construction personnel would be present during the construction phases of the proposed action. The amount of construction personnel would vary by work zone and individual construction phases. A limited amount of construction workers vehicles may be parked on-site. Entrance and exit points to the land-based project areas would be located along Ohio Drive and East Basin Drive. All land-based construction equipment and would be staged onsite, within the perimeter of the proposed onsite construction fencing. No on-site fueling of equipment will occur without an approved fueling plan. Some water-side equipment would be transported via boat or barge to the temporary dock and pier. In addition, any hazardous materials or contaminated soil encountered at the time of the proposed construction activities would be disposed of in a proper manner. Only clean-sourced fill would be utilized for the proposed action.

Where possible, stormwater management would be maintained by a natural, gravity runoff over a 2% slope on vegetated terrain. Within the lowest portions of Tidal Basin East, this slope would be reduced to 1% due to tying into the elevation of the adjacent East Basin Road. No new below-ground stormwater systems would be included. Clogged stormwater drains within Tidal Basin East would be cleaned and made operational as a part of the construction, and all impacted drains would be replaced/repared in kind Existing and proposed conditions for the four seawall sections are depicted in **Figure D-1** through **Figure D-15** in **Appendix D**.

Mitigation Measures of the Proposed Action

The NPS places a strong emphasis on avoiding, minimizing, and mitigating potentially adverse impacts to affected resources, whether under the jurisdiction of the NPS or as a result of an NPS decision. To help ensure the protection of natural and cultural resources and the quality of the visitor experience, the following mitigation measures will allow the NPS to meet its conservation mandates as required by the Organic Act (16 USC 1 *et seq.*) and as further detailed in NPS Management Policies, and the National Historical Preservation Act the Endangered Species Act (16 USC 1531 *et seq.*). The NPS would also implement an appropriate level of monitoring throughout the construction process to help ensure that protective measures are being properly implemented and are achieving their intended results.

Historic Resources and Cultural Landscapes

- The NPS, District of Columbia Historic Preservation Office (DC SHPO), National Capital Planning Commission (NCPC), and the Advisory Council on Historic Preservation (ACHP) have developed a MOA that defines the continued consultation and monitoring processes for the project and stipulates mitigation of any adverse effects to historic resources and cultural landscapes.
- Identified archeological resources would be evaluated for listing in National Register and appropriate avoidance, minimization, and mitigation approaches would be developed in consultation with the NPS and DC SHPO.
- The horizontal alignment of the seawalls would not be altered, avoiding any changes to the shape of the Tidal Basin and West Potomac Park and adverse effects pertaining to the location of the seawall.
- Trees and vegetation within the construction area that are to remain would be protected throughout construction to avoid adverse effects.
- Design and construction of the new seawalls would be undertaken in a way that ensures the historic ashlar pattern of the stacked stone walls would be retained in the visible portion of the walls to minimize adverse effects. Additionally, new stone would be placed on the lower levels of the wall at elevations with limited visibility due to tides. Construction of the new wall would be consistent with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (NPS, 2017).
- During the later phases of construction, the approximately 300 trees removed from the cultural landscapes would be replaced in kind, or with a more acceptable/suitable species for the location, soil conditions, and the National Mall as determined appropriate by an interdisciplinary team led by a historical landscape architect, to mitigate the adverse effects from the loss of contributing vegetation. Trees would be replaced based on diameter at breast height (DBH) with an overall increase in total DBH at the site, as per NCPC policy:
 - *Trees less than 10-inches in diameter would be replaced one tree for every one tree removed (1:1).*
 - *Tree(s) 10-inches in diameter or greater would be replaced using the following formula Tree Diameter (in inches) x Species Rating (as percentage) x Condition Rating (as percentage) = Score.*
 - *Trees would be replaced at the following rates based on the score: 1-4.9 = one tree, 5-9.9 = two trees, 10-14.9 = three trees, 15-19.9 = four trees, 20-24.5 = five trees, and 25+ = six trees.” (NCPC, 2020)*
- To mitigate adverse effects that cannot be avoided or minimized, the NPS would install interpretive signage along the Tidal Basin educating the public on the history and significance of the Tidal Basin and the seawalls.
- To mitigate adverse effects that cannot be avoided or minimized, the NPS would complete a comprehensive plan for the Tidal Basin that would include alternatives to rehabilitate the cultural landscape and protect/enhance area aquatic environments while accommodating and meeting very high levels of visitor use in an attractive, convenient, high quality, energy efficient and sustainable manner. The Plan/Environmental Assessment would address multi-modal circulation and transportation; connectivity; conservation; tree preservation; protection of aquatic resources;

climate change and sea level rise resilience; infrastructure; memorials and cultural landscape protection; security; visitor experience, enjoyment, recreation, and services; seawall solutions and facilities; and flexible public spaces to accommodate a wide variety of national celebrations, First Amendment gatherings, and other permitted activities.

Visitor Use and Experience

- Design of at- or above-grade structures would be developed in coordination with the Section 106 MOA signatories and consulting parties to minimize visual impacts of the facilities.
- Trees removed would be replaced in kind, or a more acceptable/suitable species for the location, soil conditions, and the Park, as determined appropriate by an interdisciplinary team led by a historical landscape architect, at a ratio as is defined above in coordination with the Section 106 MOA signatories and consulting parties. Their location and species would be informed by the NPS' Cultural Landscape Report for the Tidal Basin, as well as a historical landscape architect and NPS arborist. The Tidal Basin Cultural Landscape Report would be used to determine where trees are planted around the tidal basin. Tree replacement in West Potomac Park and other parts of the Park would be determined by an interdisciplinary team.
- Efforts would be made during construction to minimize temporary adverse effects to visitor experience with sensitive fencing and signage directing them around the construction. After construction, full access to the resources would be restored.
- Temporary detours would be established for trails, parks, and sidewalks during construction.
- Temporarily relocated Park functions and facilities would be re-established after construction.
- Wildlife friendly barriers would be placed around construction sites to limit the visibility of activities and equipment and to protect the safety of visitors.
- In-river construction areas would be clearly defined, and access would be restricted to ensure the safety of visitors engaged in water-based activities.
- Noise reduction measures would be implemented at construction areas and may include temporary noise barriers, the use of quiet equipment models, maintaining mufflers, lubrication of equipment, limiting idling, minimizing the use of back-up alarms, and frequent noise monitoring.
- Preconstruction surveys would be conducted, as needed, and other construction means and methods would be identified to minimize the effects of vibration on the historic structures and memorials enjoyed by Park visitors. Monitoring and structural protection would be implemented during construction, as needed.
- Maintenance of traffic would be implemented during construction to minimize congestion. The NPS would continue to coordinate with District of Columbia Water and Sanitation Authority (DC Water) and District Department of Transportation (DDOT) regarding the design, construction, and use of the Ohio Drive Southwest (SW) detour road proposed in West Potomac Park in support of the Potomac River Tunnel construction. Final selection of haul routes would take traffic, road conditions, and bridge capacities into consideration.
- Temporary ABAAS-compliant pedestrian access routes would be provided for other facilities adjacent to construction areas. Pathways adjacent to the reconstructed seawalls would be widened from eight feet to twelve feet in width to accommodate the many visitors to the Park.

Water Resources

- The waterward extent of the temporary construction activities has been minimized. Installation and removal of cofferdams would occur behind turbidity curtains to contain disturbed river bottom sediments during work within the Potomac River and Tidal Basin and reduce potential water quality impacts during construction.
- The NPS would implement erosion and sediment controls in accordance with U.S. Environmental Protection Agency's (EPA) National Pollution Discharge Elimination System (NPDES) Construction General Permit and District of Columbia Energy and the Environment (DOEE) requirements. These controls would be employed in areas of ground disturbance and sufficiency would be reviewed and approved by DOEE.
- All measures should be taken to protect against spill or loss of hazardous materials and solid waste at the construction sites. This may include onsite spill kits, containment storage, and covered waste containers.
- Silt fencing, silt bags, cofferdams, hay bales, diversion channels and berms, temporary stormwater basins, temporary inlet protection, stabilized construction entrances, and vegetation stabilization may be used to contain erodible materials within the construction areas.
- Coordination between the NPS and DC Water during final design to avoid impacts to the Potomac Force Mains.
- Sediment-laden water may be pumped into the existing Potomac Force Mains sewer line for treatment at DC Water's Blue Plains Advanced Wastewater Treatment Plant. Waters containing one or more constituents at, or above current DC Water discharge standards would be disposed of by alternative methods, such as offsite disposal or onsite wastewater treatment. The NPS would outline treatment procedures prior to any onsite treatment in a Water Treatment Plan approved by DOEE.
- Surface water and/or groundwater monitoring would be conducted to ensure that erosion and sediment controls are effective during construction.
- Coordination between the NPS, USACE, and DOEE would be undertaken to determine potential mitigation for permanent wetland impacts in accordance with Sections 401 and 404 of the CWA.

Rare, Threatened and Endangered Species

- The NPS committed to either time of year restrictions for tree and vegetation removal or pre-construction nesting bird surveys conducted by a qualified biologist.
- To avoid or minimize potential adverse impacts from cofferdam installation and related noise to endangered sturgeon, the NPS would implement the following best management practices during the construction of the cofferdam:
 - Deploy and maintain turbidity curtains outside of the cofferdam during installation and removal.
 - Monitor the effectiveness of turbidity controls.
 - Water removed from inside the cofferdam would be treated in tanks, cofferdam cells, or passed through a filter bag to reduce sediment before discharging the water back to the river.

- Use of vibratory hammer in lieu of an impact hammer to install sheet piles.
- Soft start – During a soft start lower vibratory hammer energy levels would be used to start the pile driving process, and then the force of pile driving is gradually increased. This process allows all endangered sturgeon in the area to be alerted that work is beginning and gives them an opportunity to clear the area.

ALTERNATIVES CONSIDERED BUT DISMISSED

The NPS has considered multiple concepts during project planning and scoping, including seawall foundation options, various wall types, riprap erosion control/revetment, and living shorelines. Development of the alternatives to repair and control settlement at the West Potomac Park seawall and transition areas began in 1994 when the NPS evaluated riprap erosion control; placement of additional stone; and several concrete wall alternatives (precast, stone-faced, and simulated stone-faced) (NPS, 1994). Following this report, in 2011 the NPS evaluated living shoreline, riprap revetment, geoweb planted face with micropile foundation, and three wall alternatives (soldier pile wall, gravity wall with spread footing, and tie-back wall with spread footing) (NPS, 2011b). The studies recommended that a pile-supported foundation extending to bedrock should be utilized to avoid settlement for any alternative that involves raising the wall height.

Alternative concepts were ultimately dismissed from further consideration based on one or more of the following factors: the concept would not satisfy the project purpose and need; the concept would not be technically, logistically, or economically feasible; or a similar concept would be less environmentally damaging, would have reduced impacts to visitor use and/or would be less expensive. **Table 1** provides an evaluation of these alternatives against the purpose and need screening criteria (NPS, 2022c).

Table 1. Alternatives Considered and Screening Criteria

Alternative	Restores the Functional Height	Maintains Historic Alignment	Stabilizes Settlement of the Seawalls	Minimizes Erosion and Safety Hazards	Rehabilitate the Cultural Landscape	Improves Visitor Experience	Retained or Dismissed
Alternative A No Action	No	Yes	No	No	No	No	Retained
<i>Alternative B</i> Rehabilitated Seawall (Proposed Action)	Yes	Yes	Yes	Yes	Yes	Yes	Retained
<i>Alternative C</i> Rip Rap Revetment	No	No	No	Yes	No	No	Dismissed
<i>Alternative D</i> Living Shoreline	No	No	No	Yes	No	No	Dismissed
<i>Alternative F</i> Geoweb Planted Face with Micropile Foundation	No	No	Yes	Yes	No	Yes	Dismissed
<i>Alternative G</i> Concrete Wall (precast and simulated stone-faced)	Yes	Yes	Yes	Yes	No	Yes	Dismissed
<i>Alternative H</i> Soldier Pile Wall	Yes	Yes	Yes	Yes	No	Yes	Dismissed
<i>Alternative I</i> Gravity Wall with Spread Footing	No	Yes	No	Yes	No	No	Dismissed
<i>Alternative J</i> Tie-back Wall with Spread Footing	No	Yes	No	Yes	No	No	Dismissed

RATIONALE FOR THE PREFERRED ALTERNATIVE

The preferred alternative is the alternative that would “would best accomplish the purpose and need of the proposed action while fulfilling [the NPS] statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors” (43 CFR 46.420(d)). The NPS has identified Alternative B: Rehabilitated Seawall (the proposed action) as the preferred alternative because Alternative B would meet the project purpose and need and would restore the historic functional height, maintain the historic alignment of the seawalls, stabilize/eliminate settlement of the seawalls, minimize soil erosion and safety hazards, rehabilitate the cultural landscape, and improve visitor experience along the shorelines. In addition, it would also allow for future resiliency and sustainability improvements to the wall as required.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This Chapter describes current environmental conditions in and around the project area. This discussion is focused on resources that could potentially be affected by the implementation of the proposed project and provides a baseline for understanding the current condition of the resources. The analysis considers short and long-term effects and adverse and beneficial effects. The affected environment section discusses environmental trends and past, current, and reasonably foreseeable future actions and their impacts for each of the resource issues. ‘Short-term’ is used for impacts lasting only for the project duration or during the construction period for an action. ‘Long-term’ impacts occur beyond the date the project is considered fully implemented and are not readily mitigatable. ‘Beneficial’ is a positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition. ‘Adverse’ is a change that declines, degrades, and/or moves the resource away from a desired condition or detracts from its appearance or condition.

METHODOLOGY FOR ANALYZING IMPACTS

In accordance with the Council on Environmental Quality (CEQ) regulations, the environmental consequences analysis includes the direct, indirect, and cumulative impacts potentially resulting from the proposed alternatives (40 CFR 1508.1(g); 40 CFR 1502.16). In considering whether the effects of the proposed action are significant, the potentially affected environment and degree of the effects of the action were analyzed (40 CFR 1501.3(b)). Where appropriate, mitigation measures for adverse impacts are described and their effect on the severity of the impact is noted. The methods used to assess impacts vary depending on the resource being considered but are generally based on a review of pertinent literature and Park studies, information provided by on-site experts and other agencies, professional judgment, and Park staff knowledge and insight.

This EA also considers cumulative impacts, defined as “effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, or reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.1(g)(3)). Cumulative impacts are addressed in this EA by resource topic and are considered for the no action alternative and the proposed action. Some of these actions are in the early planning stages; therefore, the evaluation of the cumulative impact is based on a general description of the projects.

Projects considered in the cumulative impact analysis are briefly described in **Table 2**.

Table 2. Cumulative Project List

Project Title	Description	Status (Past, current, or proposed)
<p>Thomas Jefferson Memorial Seawall Repair Project</p>	<p>The Thomas Jefferson Memorial Seawall Repair Project rehabilitated 500 linear feet of seawall. The original pilings, installed in the 1930s, were not placed on bedrock. Although movement in the seawall was observed since its construction, lateral and vertical movement accelerated in 2005, and the area of the plaza immediately adjacent to the seawall closed to the public in 2007. New pilings to bedrock were installed, new seawall built on those pilings, and original facing stones on the seawall were re-installed. The plaza adjacent to the wall was also repaired (NPS 2015b).</p> <p>Affected Resources: Historic Resources and Cultural Landscapes, Visitor Use and Experience, Water Resources</p>	<p>Past</p> <p>Construction completed in 2012</p>
<p>DC Clean Rivers Project Potomac River Tunnel</p>	<p>The DC Clean Rivers Project is the District of Columbia Water and Sewer Authority’s (DC Water’s) long-term control plan for capture and control of combined sewer overflows that contribute to water quality impairment of District waterways and ultimately the Chesapeake Bay. The Potomac River Tunnel is a component of the DC Clean Rivers Project. An approximately 5.5-mile-long tunnel with an inside diameter of 18 feet would be mined from a shaft to be constructed within West Potomac Park. The tunnel would be between 70-feet and 140-feet below grade.</p> <p>An approximately 130-foot-wide emergency overflow structure would also be constructed along the north bank of the Potomac River near the mining shaft in West Potomac Park. The new structure would include a stone veneer and would tie into a portion of the seawall proposed for rehabilitation (DC Water 2022).</p> <p>During construction of the Potomac River Tunnel, Ohio Drive SW would be closed between Independence Avenue SW and West Basin Drive SW (DC Water 2022). The closure includes the sidewalk and bicycle path on both sides of Ohio Drive SW. The roadway would commence east of West Basin Drive SW and tie into Independence Avenue SW at a temporarily relocated signalized intersection near the pedestrian crossing for Daniel French Drive SW. The temporary roadway would have three travel lanes and one parking lane on the east side. Pedestrian and bicycle facilities would be provided parallel to the temporary road on the east side.</p> <p>Affected Resources: Historic Resources and Cultural Landscapes, Visitor Use and Experience, Water Resources, Threatened and Endangered Species</p>	<p>Current</p> <p>Construction mid-2023 to March 23, 2030 (Consent Decree Milestone)</p>

Project Title	Description	Status (Past, current, or proposed)
Long Bridge Project	<p>The Long Bridge Project is part of the Transforming Rail in Virginia Program administered by the Virginia Passenger Rail Authority (VPRA). The project involves rehabilitating the existing Long Bridge and constructing new rail and pedestrian bridges over the Potomac River between the existing Long Bridge and the Washington Metropolitan Area Transit Authority (WMATA) Yellow Line Bridge.</p> <p>The project area consists of an approximately 1.8-mile rail corridor extending between Arlington, Virginia, and 12th Street SW in the District of Columbia. It would expand rail capacity in the corridor from two to four track to improve the reliability of railroad service in the region. The Long Bridge Project would permanently impact 0.5 acre of East Potomac Park and 1.4 acres of West Potomac Park for the new upstream bridge and railroad right-of-way. Construction would temporarily impact 2.1 acres of East Potomac Park and 1.3 acres of West Potomac Park, including Parking Lots B and C and additional areas of temporary access located approximately 600 feet southeast of the proposed seawall project area. In addition, a bike-pedestrian bridge would be constructed on the upstream side of the new railroad bridge, which would connect to Ohio Drive SW south of the WMATA Yellow Line Bridge and permanently impact 0.3 acre of West Potomac Park. Construction of the bike-pedestrian crossing and access ramp would necessitate the removal of up to two contributing Japanese cherry trees, and the new railroad bridge would remove up to four Japanese cherry trees along the perimeter of East Potomac Park, in addition to other mature vegetation. All vibration-sensitive structures and seawalls within 125 feet of construction would be included in the project's Noise and Vibration Control Plan. The NPS and NCPC would review and approve design and planting plans prior to implementation (FRA and DDOT 2020a).</p> <p>Affected Resources: Historic Resources and Cultural Landscapes, Visitor Use and Experience, Water Resources, Threatened and Endangered Species</p>	Current Construction 2023 to 2030

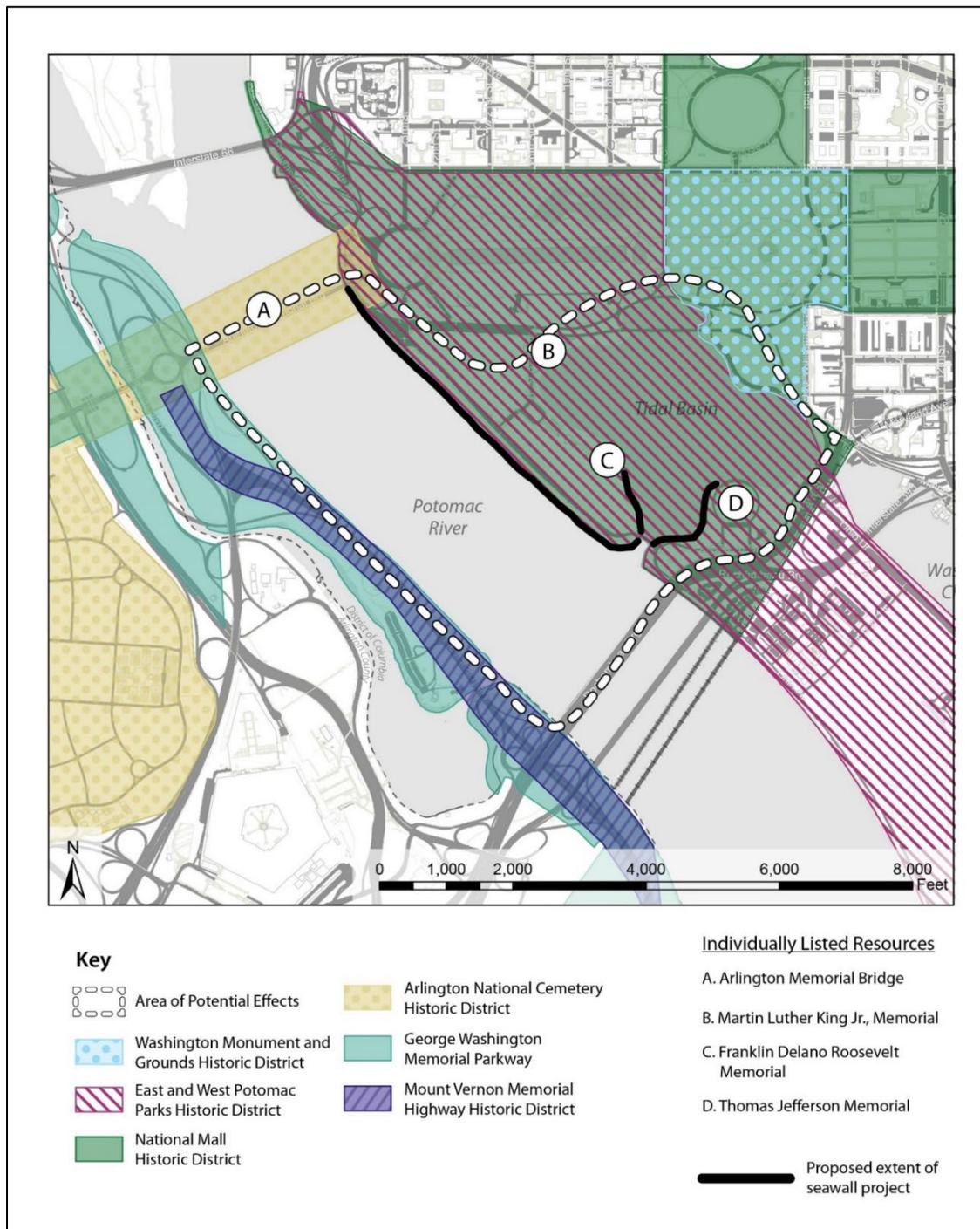
HISTORIC RESOURCES AND CULTURAL LANDSCAPES

Affected Environment

The existing seawall systems date from the late 1800s to early 1900s. As early as 1866, the USACE began dredging to improve navigation and shipping channels adjacent to Washington, DC. By 1875, the term Potomac Flats was introduced, though the reclaimed land was not formally declared a public park until 1897. Between 1882 and 1896, the USACE dredged more than twelve million cubic yards to create more than 600 acres of new land. The seawalls were ultimately constructed to retain the dredged material. The reclaimed lands were transferred from the USACE to the Office of Public Buildings and Grounds (OPBG) for further development, and in 1933, the NPS assumed management of East and West Potomac Parks. The stone seawalls, Japanese cherry trees and other vegetation, and the Inlet Bridge are contributing resources to the East and West Potomac Parks Historic District, which was listed in the National Register of Historic Places in 1973 (updated 2001) under Criteria A and C because they are an important feature of the USACE's efforts to reclaim the Potomac Flats. As described in **Chapters 1** and **2**, the seawalls are currently in a state of disrepair.

To identify potentially affected historic properties for the NEPA analysis, the NPS used the APE that was developed in accordance with Section 106 of the NHPA as part of a separate, but parallel regulatory process (see **Appendix C**, Section 106 AOE Report). The APE is defined as “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking” (36 CFR 800.16[d]; US Advisory Council on Historic Preservation (ACHP) (ACHP, 2004). The overall project APE encompasses the entire Tidal Basin and West Potomac Park, as well as land across the Potomac River in Virginia where the proposed seawall rehabilitation has the potential for visual effects (**Figure 12**).

Figure 12: Section 106 Area of Potential Effects



The APE includes six historic districts, multiple cultural landscapes, and several individually listed resources. These resources are briefly described in **Table 3**. As a contributing resource to the National Mall and East and West Potomac Parks Historic Districts, the existing seawalls, Japanese cherry trees, and surrounding vegetation are integral to the cultural landscape. Brief descriptions of their general boundaries, background, and significance are provided in **Appendix C**, Section 106 AOE Report.

Table 3: Historic Resources and Cultural Landscapes within the Section 106 Area of Potential Effects

Historic District	Description	Component Landscapes	Contributing Resources ³
National Mall Historic District	The National Mall is one of the most important public spaces in the United States and its design reflects two of the most significant plans for the Federal City, the L’Enfant Plan, and the McMillan Plan. The National Mall is significant under Criteria A, C, and D; though the period of significance for Criteria C and D ends in 1965, the period of significance under Criterion A is open ended. The National Mall contains a monument and numerous significant national memorials and landscapes, several of which fall within the APE. (NPS, 2016b)	Lincoln Memorial Grounds; Washington Monument Grounds; Tidal Basin; Thomas Jefferson Memorial and Grounds	Stone Seawalls; Japanese cherry trees and other vegetation, including holly trees; Inlet, Outlet, and Kutz Bridges; Franklin Delano Roosevelt, Martin Luther King Jr., Thomas Jefferson, George Mason, and Ericsson Memorials
East and West Potomac Parks Historic District	Encompassing 730 acres of public parkland, East and West Potomac Parks were created by the large reclamation undertaking in the mid to late nineteenth century by the USACE. The public lands provide spaces for both active and passive recreation, a monument, several memorials, as well as other significant cultural landscapes. The historic district was listed in the NRHP in 1973 under Criteria A and C; additional documentation was accepted in 2001.	Lincoln Memorial Grounds; Washington Monument Grounds; Tidal Basin; Thomas Jefferson Memorial Grounds	Stone Seawalls; Japanese cherry trees; Inlet, Outlet, and Kutz Bridges; Thomas Jefferson and Ericsson Memorials
Washington Monument and Grounds Historic District	Historically known as U.S. Reservation 2, the Washington Monument is one of the country’s most iconic landmarks sited at the center of the National Mall. The Washington Monument and Grounds were listed upon passage of the NHPA in 1966 and were formally documented in 1981 and its boundaries were expanded in 2016. (NPS, 2016b)		Washington Monument; Japanese cherry trees

³ Arlington Memorial Bridge, Franklin Delano Roosevelt Memorial, Martin Luther King Jr. Memorial, and the Thomas Jefferson Memorial are individually listed historic properties in the National Register.

Historic District	Description	Component Landscapes	Contributing Resources ³
Arlington National Cemetery Historic District	Arlington National Cemetery and related features, including the Arlington Memorial Bridge, which is individually listed as well as being a significant resource linking the Federal City to the National Cemetery. The bridge itself was designed by McKim, Mead, and White, and was constructed in 1932. The bridge was a major part of the 1902 McMillan Plan, serving as a symbolic link between north and south, connecting Arlington House (the home of Robert E. Lee) and the Lincoln Memorial.		Arlington Memorial Bridge; Sacrifice and Valor; View from Lincoln Memorial to Arlington House; View from Lincoln Memorial to Ericsson Memorial
George Washington Memorial Parkway Historic District	Constructed in the 1930s, this 25-mile scenic parkway is administered by the NPS and provides a ceremonial and recreational corridor between northern Virginia and Mount Vernon, the home of George Washington, with unfolding scenic views throughout the Park.		Other contributing vegetation; Views from Virginia shoreline to National Mall
Mount Vernon Memorial Highway Historic District	Mount Vernon Memorial Highway Historic District was the first parkway project undertaken by the U.S. government. Initial planning began in the 1880s, but its execution was delayed until the late 1920s. The parkway was completed in 1932 to commemorate the 200 th birthday of George Washington.		Other contributing vegetation; Views from Virginia shoreline to National Mall

Impacts of Alternative A: No Action

Under a no action alternative, the seawalls would continue to settle and deteriorate, resulting in increased flooding and seawall failure events. Frequent inundation behind the seawalls allows water to drown out vegetation, including the Japanese cherry trees and other significant landscape features along the Tidal Basin, which would further degrade the cultural landscape. Eventually, without intervention, the damage would expand, threatening the memorials surrounding the Tidal Basin, and accelerating loss of land in West Potomac Park along the Potomac River shoreline. Collapsed sections of seawall would be visible from historic viewpoints and would detract from the historic designed appearance of the site. Damaged seawall and adjacent walkway sections would continue to pose a safety hazard, requiring fencing to protect visitors. The fencing would continue to detract from the historic viewshed and cultural landscape of the Tidal Basin.

Daily overtopping of the seawalls by normal high tides would continue to occur under the no action alternative. Physical and visual changes to the seawall and surrounding landscape from the no action alternative would result in a significant, long-term adverse impact on historic resources and cultural landscapes as well as the visitor experience, as the appearance and condition of the project area would continue to diminish.

Impacts of Alternative B: Action Alternative

Temporary adverse effects to historic resources and cultural landscapes would result from construction noise and vibration, road closures and trail detours, vegetation clearing, and short-term degradation of existing views to and from the project area. Refer to **Chapter 3**, Visitor Use and Experience for additional analysis on noise/vibration and access/circulation impacts resulting from construction activities.

The rehabilitation of the seawalls would minimize long-term adverse effects to historic resources resulting from the failing seawalls, including prevention of daily flooding, erosion of the landscape, and the continued loss of Japanese cherry trees and other vegetation. Though the proposed seawall rehabilitation would result in adverse effects due to the loss of historic fabric, there would be a significant adverse effect to historic resources by not proceeding with the rehabilitation of the seawalls.

Anticipated short-term and long-term effects to contributing resources are summarized in **Table 4**. A more detailed effects analysis and associated mitigation measures are included in the Section 106 AOE Report and MOA provided within **Appendix C**.

Table 4: Anticipated Short-Term and Long-Term Effects to Contributing Historic Resources

Contributing Resource	Short-Term Effects	Long-Term Effects
Tidal Basin	During construction, various views around the Tidal Basin would temporarily be adversely affected.	Following construction, the alignment, size, and function would not be changed. By restoring the seawalls to their historic functional height, the proposed action would restore historic viewsheds around the Tidal Basin. The surrounding land behind the seawalls would be tied into the existing landscape, avoiding any long-term adverse effects.
Seawalls	The seawalls would be taken down to the foundation and a new structural support wall would be built to support the stacked stone seawall, resulting in a temporary adverse effect during construction.	<p>The rehabilitated wall would be faced with salvaged stone from the extant walls to the maximum extent possible, with the salvaged stone concentrated toward the top of the walls. Masons would be required to stack the historic stone in a similar manner to recreate the historic ashlar pattern and minimize adverse effects to the integrity of the seawalls. The bottom edge of the contemporary seawall structure would be visible only during extreme low tide events and only until it is naturally coated with sediment and algae.</p> <p>Though the proposed action would result in a permanent adverse effect due to the loss of historic fabric, it would concurrently result in beneficial effect in restoring historic views within the historic districts.</p>
Japanese Cherry Trees and Other Contributing Vegetation	Numerous Japanese cherry trees, along with other deciduous and evergreen trees, would be removed to accommodate the seawall rehabilitation and associated regrading of the landscape. Some trees are large-caliper specimens with wide canopies while others were intentionally planted in massed groups. Their removal results in an adverse effect. However, many trees are currently struggling due to daily flooding and root exposure.	Trees would be replanted within the landscaped buffer following construction replacing trees removed during the project and adding trees lost prior to the project due to age and decline in the cultural landscape. Once established, this landscaped buffer would result in a long-term beneficial effect on the surrounding cultural landscape.

Contributing Resource	Short-Term Effects	Long-Term Effects
Arlington Memorial Bridge and Inlet Bridge	<p>The rehabilitated seawalls would not connect structurally to the Memorial Bridge or Inlet Bridge, but would abut the edge of the bridges, at the current location of the existing seawall. Where it abuts, the interface would be sealed, to prevent soil migration through a gap. The seal between the two structures would be done sensitively and would improve the extant interfaces that are failing due to the sinking and crumbling walls. Therefore, the potential for an adverse effect to the interface during construction is low. The Inlet Bridge would be used by inbound and outbound trucks during construction. The various views to and from the bridges would temporarily be adversely affected during construction.</p>	<p>Design and construction would avoid any adverse effects to the bridges. By restoring the seawalls to their historic functional height, in the long-term the proposed action would restore historic viewsheds to and from the bridges resulting in a long-term beneficial effect.</p>
Thomas Jefferson Memorial and Grounds	<p>No changes would be made to the Memorial. The rehabilitated seawalls would not connect structurally to the previously rehabilitated Memorial Plaza seawall but would abut the southwest edge of that seawall. Where it abuts, the interface would be sealed, to prevent soil migration through a gap. The seal between the two structures would be done sensitively and would improve the extant interfaces that are failing due to the sinking and deteriorating walls. Therefore, the potential for an adverse impact to the interface during construction is low. The various views to and from the Memorial would temporarily be adversely affected during construction.</p>	<p>Design and construction would avoid any adverse effects to the Memorial Plaza seawall itself. The rehabilitated seawall would abut the southwest corner of the Memorial Plaza seawall, eliminating the bottom three of five steps that transition from the Tidal Basin walkway to the Memorial Plaza. By restoring the seawalls to their historic functional height, the proposed action would restore historic viewsheds around the Memorial.</p>
Franklin Delano Roosevelt Memorial	<p>During construction, no changes would be made to the Memorial. The proposed action would not result in a short-term adverse effect on the Memorial.</p>	<p>Views around the Memorial would not be adversely affected in the long-term. By restoring the seawalls to their historic functional height, the proposed action would restore historic viewsheds around the resource.</p>

Contributing Resource	Short-Term Effects	Long-Term Effects
Martin Luther King Jr. Memorial	No changes would be made to the Memorial as construction activities would be located south of the Franklin Delano Roosevelt Memorial. The proposed action would not result in a short-term adverse effect on the Memorial.	Due to distance of the view from the Memorial across the Tidal Basin to where the change in seawall height would occur, the rehabilitated seawall would be minimally noticeable and would be consistent with the current height of the wall to the north of the Jefferson Memorial, resulting in a minimal long-term adverse effect.
First Airmail Flight Marker	During construction, no changes would be made to the Memorial. The proposed action would not result in a short-term adverse effect on the Memorial.	Views to and from the marker would not be adversely affected in the long-term. By restoring the seawalls to their historic functional height, the proposed action would restore historic viewsheds from around the marker.
Views of National Mall from Virginia Shoreline	Views to the National Mall and its monuments from the Virginia shoreline, specifically Mount Vernon Memorial Highway Historic District and George Washington (GW) Parkway, would temporarily be adversely affected during construction.	Restoring the seawall to the historic functional height would not adversely affect these views in the long-term, as the change from that distance would be minimally noticeable and would be restoring a historic viewshed.
Japanese Pagoda	During construction, the Japanese Pagoda would be blocked from views, resulting in a temporary adverse effect; however, it would be retained in place and protected during construction.	Views to and from the Japanese Pagoda would not be adversely affected in the long-term. By restoring the seawalls to their historic functional height, the proposed action would restore historic viewsheds resulting in a beneficial effect.
Other Monuments, Memorials, and Markers Within APE, but Outside Limits of Disturbance	Views to and from other monuments, memorials, and historic markers within the APE but outside the construction limits of disturbance would be temporarily adversely affected during construction.	Due to distances from these resources to the rehabilitated seawall sections and/or existing line-of-sight interruptions, the change in seawall height within the project limits would be minimally noticeable and would restore historic viewsheds around these resources.
Ohio Drive Southwest (SW)	Portions of Ohio Drive SW may require closure during construction for material movements, resulting in a temporary adverse effect. However, the closure would be intermittent. Ohio Drive SW would be reopened following construction.	Views from Ohio Drive to the Potomac River would not be adversely affected in the long-term; the existing slope from the road to the water allows for the wall to be raised to its historic functional height without rising above the elevation of the road.

Contributing Resource	Short-Term Effects	Long-Term Effects
Kutz Bridge and Outlet Bridge	Outbound concrete and cement trucks over twelve feet high would use the Kutz Bridge during construction. The Outlet bridge may be used by both inbound and outbound trucks during construction. The various views to and from the bridges would temporarily be adversely affected during construction.	Design and construction would avoid any adverse effects to the bridge itself. By restoring the seawalls to their historic functional height, in the long-term the proposed action would restore historic viewsheds to and from the bridge resulting in a long-term beneficial effect.

Cumulative Impacts

The Thomas Jefferson Memorial Seawall Repair Project, completed in 2012, resulted in beneficial effects on the historic structures, as the condition of the Memorial Plaza and seawall were improved and protected. Construction of the current and planned cumulative impact projects in **Table 2** would be expected to temporarily alter the historic visual character of the area from construction, demolition, and/or renovation activities. The NPS signed Section 106 Programmatic Agreements for the Potomac River Tunnel and Long Bridge projects to ensure all physical development fosters the cultural landscapes within the APEs for each project, protects cultural resources, and preserves the existing historic architectural fabric (DC Water, 2020a, FRA and DDOT, 2020b). The NPS, DC SHPO, and NCPC have developed a MOA that defines the continued Section 106 consultation process for the proposed undertaking and stipulates mitigation of adverse effects to historic properties.

All undertakings would be planned, developed, and executed by the project proponents in consideration of the recommended approaches contained in the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (i.e., preservation, rehabilitation, restoration, and reconstruction) and Guidelines for the Treatment of Cultural Landscapes, and other prevailing applicable standards and guidelines. Overall implementation of the proposed action, combined with the past, present, and reasonably foreseeable future projects, would result in minor adverse cumulative effects on historic resources or cultural landscapes.

VISITOR USE AND EXPERIENCE

Affected Environment

For this analysis, visitor use and experience includes the enjoyment and satisfaction of park resources, access and circulation, and safety. The study area is similar to the Section 106 APE, including the entire Tidal Basin and West Potomac Park, the Potomac River, as well as portions of the George Washington Memorial Parkway located across the river in Virginia where the proposed seawall rehabilitation has the potential for minimal visual impacts.

The study area affords many visitor use and experience opportunities for visitors which include multi-use trails, athletic fields, as well as iconic memorials and the Monument along with water-based activities such as paddle-boating and boating. There are key views to and from memorials and the Monument, such as the Thomas Jefferson Memorial, the Martin Luther King, Jr. Memorial, and the Franklin Delano Roosevelt Memorial (see **Figure 1** and **Figure 4**). Landscape trees, including American elms and flowering cherry trees, are enjoyed by visitors within the study area.

Based on visitation data for Thomas Jefferson Memorial, approximately 2.5 million visitors use and experience the Tidal Basin and West Potomac Park annually (NPS, 2022a). There are approximately 500 to 700 events held at West Potomac Park per year. Some of the most popular events held at West Potomac Park annually include the 4th of July Celebration, which attracts thousands of visitors and includes concerts and a firework display (NPS, 2022f); the National Cherry Blossom Festival, which occurs over four weekends in early spring and attracts over 1.5 million visitors annually (Trust for the National Mall, 2023); the Marine Corps Marathon, which draws approximately 30,000 runners annually (Marine Corps Marathon, 2022); and the Rolling Thunder First Amendment Demonstration Run, which attracts over 1 million riders and spectators, making it the world's largest single-day motorcycle event (Rolling Thunder Washington, D.C. Inc., 2023).

The study area includes roadway and bridge access to the Tidal Basin and West Potomac Park from the Arlington Memorial Bridge, Independence Ave SW, Ohio Drive SW, West Basin Drive SW, East Basin Drive SW, Maine Ave SW, 14th Street SW, and Interstate 395 (I-395). There is a water transportation landing located near the intersection of Ohio Drive SW and West Basin Drive SW. Ohio Drive SW has an existing traffic volume of approximately 2,700 vehicles per day (DC Water, 2022). Parking is provided

primarily along Ohio Drive SW and West Basin Drive SW, which have approximately 260 available metered parking spaces. There are also three public parking lots with 223 available spaces on the southeast side of the Thomas Jefferson Memorial.

West Potomac Park consists primarily of landscaped lawns and recreational fields. The athletic fields provide an outdoor gathering place for exercise and visitor use that is open to the public. Rock Creek Park Trail is an existing paved multi-use trail located on the southwest side of Ohio Drive SW between the road and the existing West Potomac Park seawall. It extends for approximately 0.85 mile within West Potomac Park.

The Tidal Basin seawalls are adjacent to an approximately 8-foot-wide concrete walkway encircling most of the Tidal Basin. A landscaped buffer, including the iconic Japanese cherry trees, lines this pedestrian walkway on the landward side. The Tidal Basin West portion of the project area is tightly packed with the walkway atop the extant seawall, dense trees, and steeper topography relative to the rest of the Tidal Basin. The Tidal Basin East portion of the project area is more open, with relatively flat topography and clusters of vegetation and lawn leading up to the Jefferson Memorial Plaza. Most existing walkways around the Tidal Basin are ABAAS compliant; however, there are currently some non-accessible segments within Tidal Basin East at the connections to the Thomas Jefferson Memorial Plaza and to East Basin Drive.

As described in **Chapters 1 and 2**, the existing conditions of the seawalls present a safety hazard. Visitor access is restricted when daily high tides overtop the seawalls and inundate portions of the walkway. Once the water recedes, the NPS must address mud and debris left by the tide along the pedestrian walkway to prevent hazards. Furthermore, there is an uneven ground surface that presents a visitor safety hazard.

The project area is located within the District of Columbia, which is an urban setting that experiences higher than typical ambient noise generated by airplanes, vehicular traffic, construction, and other noise generating activities. Noise-sensitive receptors within the study area include federal parkland as well as numerous memorials and the Monument. The study area is within the Reagan National Airport flight path. Vehicular noise is generated by local and interstate traffic along with city and tour bus use. Chapter 20-2802 of the District of Columbia Municipal Regulations (DCMR) limits weekday daytime (7:00 am to 7:00 pm) construction activities to not exceed an hourly Leq (1.) of 80 decibel A scale (dB(A)) at a residential property. Per the DCMR, the dB(A) is a measure of sound pressure level, in decibels, obtained from a sound-level meter using the A-weighting network or filter as specified in American National Standards Institute (ANSI) S1.4-1971 or the latest approved standard (DCMR Chapter 27-2799). For most other activities, with exceptions, Chapter 20-2701 of the DCMR provides the maximum permissible noise levels in residential, special purpose, and waterfront areas to be 60 dB(A) daytime (7:00 am to 10:00 pm) and 55 dB(A) nighttime (10:00 pm to 7:00 am). Noise monitoring was not performed at the Park for this environmental assessment; however, these qualitative statements provide an overview of the existing levels of noise at the study area.

Impacts of Alternative A: No Action

Under the no action alternative, the regular inundation from daily tides would continue, reducing visitor access. When the water does recede, the overtopped areas are littered with wood debris and other trash from the river that further limits the visitor access. The failing seawalls, standing water, and debris are concerns for visitor safety. The Tidal Basin and West Potomac Park experience thousands of visitors every day of the year with peak visitation during the spring with the blooming of the Japanese cherry trees. The current condition of the seawalls affect visitor use and visitor experience as the pedestrian trails in many areas have degraded, and the uneven terrain creates trip and fall hazards. Portions of the trails are regularly inaccessible due to standing water, mud and debris left behind from daily high tides. As a result, many visitors create social trails through the trees and landscaped areas to get around the inundation and damage on the concrete trails. Current maintenance practices would continue following flooding events.

Additional safety measures, including blockading affected areas, would be required by the NPS, and would further reduce visitor access, recreation, and experience. Noise levels would not change under the no action alternative.

Over the long-term, the regular inundation behind the seawalls would continue, resulting in limited access, potential extended walkway closures, and increased safety hazards. Therefore, the no action alternative would result in long-term adverse impacts on visitor use and experience.

Impacts of Alternative B: Action Alternative

As noted above, visitor use and experience includes visitor enjoyment and satisfaction with park resources, access and circulation, and safety. Analyses of potential impacts were qualitatively evaluated using information from previous studies, and took into consideration visitation patterns, activities available to visitors, and construction-related noise and traffic. The potential change in visitor use and experience was evaluated by identifying projected increases or decreases in recreational use, access to the project area, and whether or how the projected changes would affect the desired visitor experience, to what degree, and for how long. The discussion of noise and vibration impacts includes the types or sources of noise and the associated sensitive receptors. Noise in relation to protected species is discussed in **Chapter 3**, Rare, Threatened and Endangered Species. Effects on the quality and character of scenic views are evaluated in **Chapter 3**, Historic Resources and Cultural Landscapes. The analysis of potential impacts was performed by technical experts using information provided by Park staff, public comments, and experience with similar past projects.

Construction to rehabilitate the seawalls is planned to begin in late 2024 and is estimated to take three years. Seawall rehabilitation construction would likely be implemented in phases to minimize the occupied area. To establish the approximately 3.3-acre laydown area within West Potomac Park (South), two existing softball fields, as well as a portion of the larger open recreational area would be displaced. The approximate limits of the construction areas are presented on **Figure 4** (Project Area), **Figure 9** (Temporary Construction Laydown Area, Landing, and Pier), **Figure 10** (West Potomac Park Construction Limits of Disturbance), and **Figure 11** (Tidal Basin Construction Limits of Disturbance). These boundaries represent the anticipated total area needed for construction, including ground disturbance and the laydown area for vehicle, equipment, and material staging. The limits of construction presented on the figures also represent the maximum area that would be closed to the public while the work is being completed. The NPS would phase construction so that only smaller portions of the overall project area would be inaccessible to visitors at any given time. Construction areas would be cordoned off to protect visitors from the construction activities. Construction contractors would be required to implement all appropriate safety measures while performing work. Only a small portion of the Potomac River and Tidal Basin, approximately out to 25-feet from the seawall, would be off-limits to water-based recreation during construction. The NPS would ensure that measures are taken to clearly define and restrict access to in-river construction areas to ensure the safety of visitors enjoying water-based activities.

The Tidal Basin and West Potomac Park are where millions of people visit the nation's most iconic memorials and the historic Japanese cherry trees. Construction would be disruptive towards recreational activities and special events. Full visitor access to the Tidal Basin would be limited. In addition, views across the Tidal Basin to the Washington Monument and other landmarks, as well as views across the Potomac River to George Washington Memorial Parkway and Arlington National Cemetery would be disrupted while construction activities are in progress. The First Airmail Flight Marker would also be temporarily blocked from visitor experience. During construction, access to the west side of the Thomas Jefferson Memorial and the southeast end of the Franklin Delano Roosevelt Memorial may be restricted. During the Cherry Blossom Festival and Independence Day celebrations, access to portions of the project area may be restricted, while allowing less intrusive construction activities to continue during the events. The NPS would assist coordinators of events through the special use permit process to identify alternative

locations for event activities or to modify how the event is structured while taking construction into consideration. Watercraft access to the West Potomac Park shoreline from the Potomac River would also be restricted during construction.

As stated in **Chapter 2**, there are approximately 590 trees within the project area, including deciduous trees, evergreens, and cherry trees. Further detail on the existing trees can be found in **Appendix C**, Section 106 AOE Report. The total number of trees that would be impacted by the proposed action would be determined through additional design. It is anticipated that approximately 40 trees would be impacted in West Potomac Park, 160 in Tidal Basin East, and 60 in Tidal Basin West. As design progresses, the NPS would attempt to reduce tree impacts. Each tree removed would be replaced in kind, or with a more appropriate species, to minimize long-term impacts to visitors. Prior to construction, a qualified arborist would conduct a full tree survey within the limits of disturbance to confirm the exact number of trees to be removed. The final replacement ratio would be determined after the evaluation and coordination with the NPS and other stakeholder agencies, and in accordance with the Section 106 MOA for the project.

During the proposed seawall construction, DC Water would also be mining the Potomac River Tunnel and incorporating an emergency overflow structure into the existing West Potomac Park seawall from an approximately 11.5-acre construction site within West Potomac Park (North). From approximately 2023-2030, the portion of Ohio Drive SW between 23rd Street SW and West Basin Drive SW would be closed for the duration of Potomac River Tunnel construction. The closure includes the sidewalk and bicycle path on both sides of Ohio Drive SW. DC Water would construct a temporary detour roadway that would commence west of West Basin Drive SW and tie into Independence Avenue SW at a temporary signalized intersection near the pedestrian crossing for Daniel French Drive SW. The temporary roadway would have three travel lanes and one parking lane on the east side. Pedestrian and bicycle facilities would be provided parallel to the temporary road on the east side (DC Water, 2021). During construction of the proposed action, it is anticipated that construction trucks and worker vehicles would also utilize the temporary detour roadway. Additionally, the westbound lane of Ohio Drive SW between the Inlet Bridge and West Basin Drive SW would be reserved for seawall construction traffic and the eastbound lane would be used for non-construction westbound traffic. Non-construction eastbound traffic would be directed from Ohio Drive SW to Independence Avenue SW. Construction access plans associated with the proposed action are described in further detail and presented on figures provided in **Appendix E**. The NPS would coordinate with DC Water, DDOT, and other stakeholders to determine an approach to construction phasing that would allow for the seawalls to be rehabilitated efficiently while attempting to reduce impacts to traffic and parking, as well as avoiding conflicts with other potential projects within the vicinity.

The noise from the construction process would interfere with the visitor experience. Temporary noise and vibration would be generated near sensitive receptors more susceptible to the effects of noise, including the Monument, memorials, and other important Park sites. Construction activities are projected to temporarily generate noise that may exceed DCMR limits.

Noise levels would be temporarily elevated during operations at all the construction sites. Noise would be generated by heavy equipment, site preparation, and other construction-related activities. Typical noise levels generated by construction equipment generally range from 75 to 100 dB(A) 50 feet from the source of the noise (US Department of Transportation (USDOT), 2018). Based on noise attenuation over distance, noise levels at sensitive receptors located greater than 200 feet from construction equipment would comply with the DCMR weekday daytime 80 dB(A) Leq limit (USDOT, 2018).

For construction activities closer than 200 feet from noise-sensitive receptors, compliance with the DCMR limits would be possible for weekday daytime operations by limiting the timing of equipment operations or by installing temporary noise barriers around construction areas. Additional minimization measures that may be used to reduce noise levels during construction include specifying quiet equipment models, maintaining equipment mufflers, lubrication to prevent unnecessary noise, limiting the number

and duration of idling equipment, positioning loud equipment and activities as far as possible from noise-sensitive locations, minimizing the use of backup alarms, monitoring construction noise levels regularly, and providing a noise complaint hotline. It is anticipated that with the use of noise barriers and/or other mitigation measures, construction noise would be reduced to permissible levels.

Once the construction process is complete, the entire project area would be restored and reopened to visitors. Features and amenities of the Tidal Basin and West Potomac Park, including Ohio Drive SW, athletic fields, open spaces, and parking would be re-established. Special events would be able to revert to pre-construction event locations and organization. The study area would return to ambient background noise levels. The rehabilitated seawall alignment and design would improve the aesthetic of the area and benefit visitor enjoyment of the surrounding park space. The NPS would remove the temporary safety fencing and reopen areas currently restricted to the public. Tidal Basin walkways within the project area would be widened from approximately 8 feet to 12 feet and portions of the surrounding areas would be repaved or resurfaced to eliminate cracks and other tripping hazards, which would not only improve the visitor's appreciation of the site, but also make the site safer and more accessible for all visitors. The widened sidewalks would also help to minimize impacts to trees and the cultural landscape through reduced soil compaction and root damage from visitor overflow from the sidewalks.

Construction of the proposed action would result in minor, short-term, adverse impacts on the visitor use and experience. In the long-term, the proposed action would result in moderate beneficial impacts as the appearance and opportunities available within the site would be improved and protected following construction activities.

Cumulative Impacts

The previous Tidal Basin seawall renovations at the Jefferson Memorial added more historically accurate materials to the sites, restored damaged materials, and improved visitor experience. This provided the visitor with an enhanced understanding and appreciation of the Tidal Basin and the Thomas Jefferson Memorial, and improved pedestrian movement and safety through the area.

The proposed action would temporarily contribute a minor adverse, incremental, cumulative impact to visitor use and experience during simultaneous construction activities in the vicinity of the project area. The Potomac River Tunnel and Long Bridge project could introduce additional construction activities which would temporarily detract from the visitor experience through visual and noise intrusions, as well as increased levels of traffic.

DC Water's temporary detour road would provide continuous two-way vehicular access between Ohio Drive SW and Independence Avenue SW during construction of both the Potomac River Tunnel and the seawall rehabilitation projects. DC Water's truck hauling route to and from West Potomac Park utilizes Independence Avenue SW for all trucks. Should there be a need for an alternate truck route, Ohio Drive SW across the Inlet Bridge remains an alternative for dump trucks and would be coordinated with the NPS (DC Water, 2021). Construction of the seawall project would contribute negligible additional construction vehicle traffic and adverse cumulative impacts to travel times are expected to remain virtually the same as the background conditions. Truck hauling routes would also be coordinated with stakeholders to ensure adequate clearance under various bridges and reduce truck traffic across the Kutz and Inlet bridges based on the type of truck.

Over the long-term, all cumulative impact projects in **Table 2** would improve regional infrastructure that would benefit the overall Park visitor experience. Following construction, nearshore activities would be allowed to continue, and water-based recreational experiences would be enhanced by the water quality improvements primarily associated with the Potomac River Tunnel. These projects, along with the proposed action, would have a beneficial cumulative impact on the visitor use and experience.

WATER RESOURCES

Affected Environment

The NPS *Management Policies, Section 4.6 Water Resources Management* states that the NPS will “perpetuate surface waters and groundwaters as integral components of park aquatic and terrestrial ecosystems” and “take all necessary actions to maintain or restore the quality of surface waters and groundwaters within the parks consistent with the Clean Water Act and all other applicable federal, state, and local laws and regulations” (NPS, 2006).

The study area for water resources includes all surface waters and aquatic habitat potentially affected by the rehabilitation of the seawalls. It includes surface waters within the project area where direct effects would be experienced, as well as adjacent areas within 500-feet to address the potential for indirect effects to water quality and SAV. **Chapter 3, Rare, Threatened and Endangered Species**, addresses special status aquatic species and critical habitat for a similar study area. Issues related to wetlands and floodplains were not retained for detailed analysis in the EA, as explained in **Chapter 1**. The District of Columbia does not participate in the National Coastal Zone Management Program and does not have a coastal zone management plan (NOAA, 2022a).

The water resources study area is within the Chesapeake Bay Watershed. Water features within the study area include the Potomac River, and the Tidal Basin and Washington Channel on the northwest side of the Potomac River, which are man-made impoundments within the existing Potomac River channel. The Tidal Basin covers approximately 107 acres, with an average depth of 10 feet (NPS, 2018). The Potomac River is approximately 1,900-feet-wide and water depth is up to approximately five feet depending on location within the potential cofferdam work area. It is classified as a navigable waterway by USACE.

The project site is influenced by daily tides which reach up from the Chesapeake Bay, and by river discharge from the Potomac watershed. For further understanding of the water levels within the Tidal Basin for the proposed action, two water level gages were installed within the Inlet Bridge in July 2022 to measure water levels for two years. A tide gage in the Washington Channel, approximately one mile from the project area, has been recording hourly water levels for nearly a century (NPS, 2022d). The Tidal Basin was constructed to harness the power of the Potomac River tidal cycle to flush sediment from the Washington Channel. At high tide, approximately 250 million gallons of water enter the Tidal Basin through the inlet gate. When the tide turns, water trying to flow back out through inlet gate causes it to close, while the outlet gate to the Washington Channel subsequently opens. This rush of water out of the Tidal Basin helps clear sediment from the bottom of the Washington Channel so that it stays navigable (NPS, 2018).

DC Water maintains and operates two existing 72” and 96” diameter underground parallel sewer pipes, the Potomac Force Mains, located approximately 50 feet northeast of Ohio Drive in West Potomac Park and extending under the Tidal Basin northeast of the Inlet Bridge to East Potomac Park. The existing sewer infrastructure is old and structurally sensitive to loads. There are also multiple existing stormwater outlets that penetrate the seawall that are currently clogged and not functioning properly (NPS, 2022d).

Water quality in the District of Columbia is enforced at the local level, based on standards set by the DOEE and US EPA. The US EPA, under Section 303(d) of the Clean Water Act, requires states (including the District of Columbia and Tribal governments) to prepare a list of waterbodies or waterbody segments that do not meet US EPA-mandated water quality standards. The Section 303(d) listing requirement applies to waters impaired by point and/or nonpoint sources of pollution discharge. The Potomac River is included on the Section 303(d) list of impaired waters.

As the result of the surrounding urban environment, the Potomac River, Tidal Basin, and Washington Channel are generally impaired for all designated uses, excluding navigation. This includes impairment for primary and secondary recreation, protection and propagation of fish, shellfish, and wildlife, and protection of human health related to consumption of fish and shellfish. In addition, these waterbodies are

all impaired by a suite of chemical contaminants. Existing water quality in the study area exceeds standards for E. coli, pH, turbidity, and polychlorinated biphenyls (DOEE, 2020).

SAV are vascular plants that are rooted and grow completely underwater or up to the water surface in tidal and non-tidal waterways and are ecologically important to the Chesapeake Bay region. As noted in **Chapter 1**, SAV was last documented within the study area in 2017 and no SAV is anticipated to be present within the study area per the latest survey findings (DOEE, 2022).

The diversity and species composition of fish communities are often indicative of the health of the aquatic system. Anadromous, catadromous, estuarine, and tidal freshwater fish species use the part of the Potomac River that lie within the study area. A North American River otter was spotted in the Tidal Basin in 2021, which was rare due to their low tolerance for polluted water (NPS, 2021). A free-floating freshwater bryozoan colony was identified in September 2022 (NPS, 2022e). Bryozoans are tiny organisms that form free-floating round structures made up of thousands of individuals and feed on organic material and algae, filtering the water. Very little existing data on the benthic macroinvertebrate community (small aquatic animals and aquatic insect larvae that lack backbones) within the study area are available. However, the eastern bank of the Potomac River and the banks of the Tidal Basin within the study area are hardened with a seawall or riprap in areas where the seawall has failed. There are no natural shorelines.

Impacts of Alternative A: No Action

Under the no action alternative, sediment and rock or manmade materials would be deposited in the surrounding water bodies as the seawalls continue to deteriorate. Segments of the failing seawall could collapse into the Tidal Basin or Potomac River, causing disturbance to the substrate. This disturbance would increase sedimentation, resulting in a localized adverse impact to water quality and aquatic species.

Although temporary adverse impacts from construction would be avoided, the no action alternative would potentially result in significant direct long-term adverse impacts to surrounding water quality, and minor long-term indirect adverse impacts to aquatic resources by increasing erosion and sedimentation of the waterways.

Impacts of Alternative B: Action Alternative

Impacts to water resources are assessed based on the potential for detectible chemical, physical, or biological effects; consistency with applicable water quality standards or criteria; and alterations from historical or desired water quality and aquatic habitat conditions. Short-term water resource impacts were evaluated taking into consideration temporary construction-related disturbances; common practices to prevent soils, sediment-laden water, and pollutant constituents from being transported from construction areas into nearby waterbodies; the regulations enacted to protect water quality during construction activities; as well as professional judgement. Long-term impacts to water resources were analyzed based on the potential to provide long-term water quality and aquatic habitat benefits.

Construction activities would result in temporary adverse impacts to water resources. Activities such as ground disturbance, temporary stockpiling of loose soil, and dewatering practices to recover sediment-laden water from work areas have the potential to result in construction-related water quality and aquatic habitat degradation. Given the anticipated pollutant load from construction relative to the existing conditions and volume of the receiving surface water body, adverse impacts would be minor.

The NPS would employ strict erosion and sediment controls where ground disturbing activities occur. Methods to retain erodible materials within the limits of construction may include silt fencing, silt bags, cofferdams, hay bales, diversion channels and berms, temporary inlet protection, stabilized construction entrances, and vegetation stabilization to protect District of Columbia waterbodies from sedimentation. Water removed from inside the cofferdam would be treated in tanks, cofferdam cells, or passed through a filter bag to reduce sediment before discharging the water back to the river.

Utilizing cofferdams and dewatering a small portion of the river adjacent to the seawall would minimize the potential for a large sediment release into the river should a section of wall fail during construction activities, or a large flood event. The cofferdam and turbidity curtains would affect approximately 25 feet of Potomac River adjacent to seawall out of the entire 1,900 feet of the river width, or 1.3% of the river width. Barges operating outside the cofferdam would be anchored or spudded down during construction activities. The localized increase in suspended sediments would be temporary and minor, and therefore insignificant.

No SAV is anticipated to be present within the in-water construction area. The proposed action would not cause additional shading of existing or potential SAV beds, increased sediment loads that could result in sediment covering SAV and would not result in increased boat traffic that could negatively affect water clarity or cause propeller scarring of existing SAV beds. No short- or long-term adverse effects to SAV are anticipated. The NPS would coordinate with DOEE prior to construction to determine if a SAV survey is required.

All erosion and sediment control practices would be reviewed and approved by DOEE and the NPS prior to implementation. All necessary permits and authorizations would be obtained, including, but not limited to, DC Water Temporary Discharge Authorization, Section 401 of the Clean Water Act water quality certification, Section 404 of the Clean Water Act authorization for the discharge of dredged or fill material into waters of the United States, DOEE stormwater management plan authorization, and NPDES permit coverage for stormwater discharges under the EPA Construction General permit. Groundwater and/or surface water monitoring would be conducted during construction to ensure effectiveness of erosion and sediment control devices, and samples would be collected from sediment-laden waters discharged to the sewer system to determine pollutant constituents of recovered groundwater if stipulated in the Temporary Discharge Authorization. If waters containing one or more constituents at or above current DC Water discharge standards (21 DCMR 1501) are encountered, an alternative disposal method would be implemented. Alternatives could include offsite disposal or onsite wastewater treatment. Prior to any onsite wastewater treatment, the NPS would outline treatment procedures in a Water Treatment Plan approved by DOEE.

The NPS would coordinate with DC Water during final design to ensure the proposed action avoids or minimizes impacts to existing and planned infrastructure. This includes the existing Potomac Force Mains and the proposed Potomac River Tunnel assets.

The proposed action would significantly reduce the frequency that the seawalls are overtopped, thereby reducing the frequency and volume of sediment discharges from behind the seawalls. The overall increase in impervious surface area from widening the walkways within the project area is approximately 0.04 acre, which would result in negligible adverse impacts on surface water quality. In the long-term, the rehabilitated seawall and associated grading would reduce the volume and frequency of soil and sediment erosion into the Potomac River and Tidal Basin, resulting in beneficial impacts to surface water quality and aquatic resources.

Cumulative Impacts

The District of Columbia is served by a mixture of combined and separate sewer systems maintained and operated by DC Water. There are seven combined sewer outfalls that discharge a mixture of rainwater and untreated sewage into the Potomac River just upstream of the project area when storm events exceed the capacity of the combined sewer system. Combined sewer discharges contain a variety of pollutants, which contribute to the degradation of water quality in the Potomac River. These pollutants include coliform bacteria, suspended solids, oil and grease, metals, and organic matter. The discharge of these pollutants contributes to lower dissolved oxygen levels, which over time has adversely affected the health of aquatic organisms and quality of the surface waters in the project's study area. Reasonably foreseeable environmental trends and/or planned actions considered in the analysis include efforts being made in the

District of Columbia, primarily by the NPS, DOEE, and DC Water, to improve the quality of District of Columbia waters through restoration and combined sewer infrastructure improvement projects.

The Potomac River Tunnel and the Long Bridge project have the potential to result in cumulative impacts to water resources within the study area. Both projects require temporary construction work within the Potomac River or other District of Columbia waterbodies that may temporarily degrade water quality and adversely impact aquatic species and habitat. These and other projects within the District of Columbia would also require ground disturbance during construction that may result in the transport of sediments to District of Columbia waterbodies. It is anticipated that strict erosion and sediment controls would be employed during construction of all these projects as required by the USEPA and DOEE, resulting in minimal adverse cumulative impacts in the short- and long-term.

In the long-term, improvements to the combined sewer system implemented by DC Water as part of the DC Clean Rivers Project would significantly reduce combined sewer overflows that contribute to impairment of District of Columbia waterways (anticipated reduction of 98 percent by volume). The proposed action would contribute a small increment to the mostly beneficial impacts of other projects and actions that would result in an overall beneficial cumulative impact to water resources.

RARE, THREATENED, AND ENDANGERED SPECIES

Affected Environment

In addition to the NPS policies and management guidelines, the Endangered Species Act (ESA) of 1973, amended in 1982, provides for the protection of rare, threatened, and endangered (RT&E) species (floral and faunal). The project area is located within an urban park that includes terrestrial environment consisting primarily of maintained lawn, manicured tree lined areas, public ballfields, as well as tidally influenced freshwater aquatic environment within the Tidal Basin and the Potomac River. To consider potential direct and indirect impacts to RT&E species, this EA analyzes adjacent lands and waters within 500 feet of the project area. **Chapter 3**, Water Resources, addresses non-RT&E aquatic species and water quality for a similar study area.

Consultation in compliance with Section 7 of the ESA is ongoing. Correspondence to date with US Fish and Wildlife Services (USFWS) and NMFS is provided in **Appendix B**, Agency Consultation. A total of two threatened, endangered, or candidate species under USFWS jurisdiction may occur within the study area, and there is no USFWS-designated critical habitat. These include the federally listed endangered northern long-eared bat (*Myotis septentrionalis*) and the federal candidate monarch butterfly (*Danaus plexippus*). Additionally, the federally listed endangered shortnose sturgeon (*Acipenser brevirostrum*) and all five (5) of the Distinct Population Segments (DPS) of the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) may be present in the Potomac River within the local study area. This portion of the Potomac River is designated by NMFS as critical habitat for sturgeon and is over 100 miles upstream of areas designated as Essential Fish Habitat (EFH) in the Chesapeake Bay (NOAA, 2022b).

No Virginia state-listed species have been documented within a two-mile radius of the study area (VDWR, 2022). DOEE's *Wildlife Action Plan* outlines specific species of concern within the District of Columbia (DOEE, 2015). The Black-crowned night heron (*Nycticorax nycticorax*) is a District of Columbia Migratory Bird Species of Greatest Conservation Need known to nest at East Potomac Park between April and mid-August. In addition to the northern long-eared bat and tri-colored bat (*Perimotis subflavus*), several additional bat species are targeted within this plan, including the eastern small-footed bat (*Myotis leibii*), little brown bat (*Myotis lucifugus*), hoary bat (*Lasiurus cinereus*), evening bat (*Nycticeius humeralis*), eastern red bat (*Lasiurus borealis*), big brown bat (*Eptesicus fuscus*) and silver haired bat (*Lasionycteris noctivagans*).

Northern Long-Eared Bat: Potential summer habitat for the northern long-eared bat is present within the deciduous trees with a dbh of three inches or greater located in the study area. On November 29, 2022, the USFWS published a final rule to reclassify the northern long-eared bat as endangered under the

Endangered Species Act. The bat faces extinction due to the range-wide impacts of white-nose syndrome, a deadly disease affecting cave-dwelling bats across the continent. On January 26, 2023, the USFWS published that they are delaying the effective date of a final rule published on November 30, 2022, reclassifying the northern long-eared bat as an endangered species. The effective date of the final rule amending 50 CFR part 17, published November 30, 2022, at 87 FR 73488, is delayed until March 31, 2023.

Tri-colored Bat: The USFWS recently published an intent to list the tri-colored bat as an endangered species under the ESA in the September 14, 2022, Federal Register (USFWS, 2022). The tri-colored bat and other bat species utilize similar habitat as the northern long-eared bat. During the winter, tricolored bats are found in caves and mines, although in the southern United States, where caves are sparse, tricolored bats are often found roosting in road-associated culverts. During the spring, summer and fall, tricolored bats are found in forested habitats where they roost in trees, primarily among leaves.

Monarch Butterfly: The monarch butterfly utilizes a variety of habitat types; however, the dependence on milkweeds (*Asclepias spp.*) for the egg-laying and the primary food source for the larval stages of the species is a crucial component of their life cycle. Adult monarch butterflies can utilize nectar from a variety of plant species as a food source. The terrestrial vegetation within the study area is regularly maintained. Although vegetation is available that would provide a food source for the adults, open fields containing milkweeds that would provide suitable habitat for the egg-laying and larval stages of this species are absent.

Atlantic Sturgeon and Shortnose Sturgeon: In a final rule published in the Federal Register on August 17, 2017, NMFS designated this portion of the Potomac River as critical habitat for the Chesapeake Bay DPS of the Atlantic sturgeon under the ESA of 1973, as amended (NOAA, 2017). Atlantic sturgeon critical habitat consists of four physical or biological features:

1. Hard bottom substrate (e.g., rock, cobble, gravel, limestone, boulder, etc.) in low salinity waters (i.e., 0.0-0.5 parts per thousand (ppt) range) for settlement of fertilized eggs, refuge, growth, and development of early life stages;
2. Aquatic habitat with a gradual downstream salinity gradient of 0.5 up to as high as 30 ppt and soft substrate (e.g., sand, mud) between the river mouth and spawning sites for juvenile foraging and physiological development;
3. Water of appropriate depth and absent physical barriers to passage (e.g., locks, dams, thermal plumes, turbidity, sound, reservoirs, gear, etc.) between the river mouth and spawning sites necessary to support: Unimpeded movements of adults to and from spawning sites; seasonal and physiologically dependent movement of juvenile Atlantic sturgeon to appropriate salinity zones within the river estuary, and; staging, resting, or holding of subadults or spawning condition adults. Water depths in main river channels must also be deep enough (e.g., at least 1.2 meters (m)) to ensure continuous flow in the main channel at all times when any sturgeon life stage would be in the river (NRCS, 2019), and;
4. Water, between the river mouth and spawning sites, especially in the bottom meter of the water column, with the temperature, salinity, and oxygen values that, combined, support: Spawning; annual and interannual adult, subadult, larval, and juvenile survival; and larval, juvenile, and subadult growth, development, and recruitment (e.g., 13 °C to 26 °C for spawning habitat and no more than 30 °C for juvenile rearing habitat, and 6 mg/L or greater dissolved oxygen for juvenile rearing habitat) (PDA PDH and FHWA, 2019)

The first feature is not present in the action area because hard bottom substrates are not present. The second feature is present in the action area because although only freshwater (0 to <0.5 ppt) is present, soft substrates are present and could provide suitable foraging habitat. The third and fourth features are present within the action area, with suitable salinities, depths, passage, temperatures, and oxygen values

to support the survival and unimpeded passage of subadult and adult Atlantic sturgeon. Atlantic sturgeon spawning may occur in the Potomac River, and as such, adult, sub-adult, and juvenile Atlantic sturgeon in the action area may be migrating or foraging. Early life stages, such as eggs, are expected in this stretch of the river in a transient fashion. However, spawning is thought to occur further upstream. The distribution of Atlantic sturgeon is strongly associated with prey availability in areas where suitable forage (e.g., benthic invertebrates) and habitat conditions (e.g., submerged aquatic vegetation (SAV) beds) are present. Per Department of Energy and Environment's (DOEE) SAV surveys, no SAV has been present in the project area from 2018 through 2022 (DOEE, 2022). While Atlantic sturgeon and shortnose sturgeon are bottom feeders, they do use both deep water and shallow water habitats at various points throughout their life cycle, including tidally influenced mud and sandflats, as well as mixed cobble substrates which are present within the action area (NOAA, 2022a).

In April 2021, an endangered shortnose sturgeon was caught and released in the Potomac River near Chain Bridge approximately 10 miles upstream of the study area (Bay Journal, 2021). Shortnose sturgeon had not been previously seen in the Potomac River since 2007 according to the USFWS. The endangered shortnose sturgeon was notably caught in April, suggesting spawning activities.

Impacts of Alternative A: No Action

Under a no action alternative, there would be no new impacts. Terrestrial habitat and vegetation adjacent to the seawalls would continue to be stressed by daily tidal inundation. Trees and vegetation that die naturally due to this stress would require ongoing maintenance and removal activities by the NPS. Sloughing bark and cavities in dead trees provide suitable summer-phase habitat for bats. However, the necessary pruning and removal of dead trees by the NPS in the interest of public safety would present an undesirable interface between bat species and human activity.

Additionally, sediment or manmade materials would continue to be deposited in the surrounding water bodies as the seawalls deteriorate further. Segments of the failing seawall could collapse into the Tidal Basin or Potomac River, causing disturbance to the substrate. This disturbance would result in increased sedimentation and a localized decrease in water quality. Overall, the stressed vegetation and increased sedimentation in adjacent waterbodies would result in minor long-term adverse effects to RT&E species.

Impacts of Alternative B: Action Alternative

The analysis consisted of qualitative and quantitative methods to analyze the direct and indirect impacts of the proposed action on RT&E species. The analysis identified the impacts by assessing the potential to affect or disrupt habitat or designated critical habitats; change habitat conditions and quality for listed species due to proximity to the project; impact areas of seasonal importance for RT&E species; and change migration patterns and accessibility of habitat to protected species. Consultation with federal and local agencies under Section 7 of the ESA discussed in greater detail in **Chapter 4** of this EA and provided in **Appendix B**, Agency Consultation.

Northern Long-Eared Bat: Tree clearing would occur during implementation of the proposed action. The USFWS noted that recent survey work in the vicinity of the proposed project area has been negative for northern long-eared bat, and that USFWS does not consider trees within the area to be habitat for northern long-eared bat. Based on the scope of work and project location, the USFWS determined that the proposed action is expected to have no effect on northern long-eared bat, and no further consultation under Section 7 is required for this species unless project plans change.

Tri-colored Bat: If the tri-colored bat is designated as an endangered species, the NPS would adhere to the required actions for the protection of this species, including additional Section 7 consultation with USFWS.

Migratory Birds: The proposed action for the project would not result in an incidental take of a species protected under the Migratory Bird Treaty Act (MBTA) because the NPS committed to either seasonal a

time of year restriction for tree and vegetation removal or pre-construction nesting bird surveys conducted by a qualified biologist.

Monarch Butterfly: The proposed action would not remove or permanently alter open meadows that would contain milkweeds or provide suitable reproductive/larval habitat for this species. No adverse impacts to the Monarch Butterfly would result from the proposed construction activities.

Atlantic Sturgeon and Shortnose Sturgeon: The proposed project activities would require disturbance to the Potomac River during construction that may have the potential to affect shortnose sturgeon and Atlantic sturgeon and designated Atlantic sturgeon critical habitat. Only 1.3% of the river's width would be occupied by cofferdams and turbidity curtains leaving the remainder of the Potomac River width, including deeper channels mid-river, open to allow the passage and migration of sturgeon. Due to the minor, temporary increase in turbidity and unimpeded access to nearly 99% of the river width, any effects to normal behaviors would be too small to be detected, and therefore insignificant.

The action area is minimal compared to total available habitat in the Potomac River near the action area; therefore, the effects to sturgeon foraging and migration would be insignificant. The construction barges would follow existing frequent vessel traffic patterns, travel at slow speeds (approximately 2-3 mph), and would be stationary for a majority of the construction period allowing sturgeon the ability to avoid strikes by swimming around them. Effects due to the presence of the temporary construction barges are anticipated to be negligible and therefore insignificant.

To avoid or minimize potential impacts from cofferdam installation and related noise, the NPS would implement best management practices during the construction of the cofferdam. During installation and removal, the construction contractor would be required to deploy and maintain turbidity curtains outside of the cofferdam, monitor the effectiveness of turbidity controls, and treat water removed from inside the cofferdam in tanks, cofferdam cells, or by passing it through a filter bag before discharging water back to the river. To minimize potential noise impacts to RT&E species, the NPS would require the construction contractor to use of vibratory hammer in lieu of an impact hammer to install sheet piles and use a soft start. During a soft start, lower vibratory hammer energy levels would be used to start the pile driving process, and then the force of pile driving is gradually increased. This process allows all endangered sturgeon in the area to be alerted that work is beginning and gives them an opportunity to clear the area.

Long-term effects following seawall rehabilitation would be beneficial to water quality and sturgeon habitat. Soil and sediment behind the seawalls currently erode into the Potomac River every time the seawall is overtopped, which is twice daily in some sections. Upon completion of the proposed action, the seawalls would be overtopped significantly less frequently, thereby reducing the frequency and volume of sediment discharges from behind the seawalls.

Consultation with NMFS is ongoing and correspondence to date is provided in **Appendix B**, Agency Consultation. The NPS is seeking concurrence that the proposed action may affect but is not likely to adversely affect the federally endangered shortnose sturgeon and all five of the Distinct Population Segments of the Atlantic sturgeon, and Atlantic sturgeon critical habitat. The NPS is also requesting a waiver for time-of-year restrictions for in-river work. With implementation of best management practices, as described above, and adherence to any additional recommendations from NMFS, the NPS would ensure project impacts remain below the threshold for harm for the listed species.

Cumulative Impacts

Past, present, and reasonably foreseeable future action in the vicinity have and continue to contribute to impacts to local riverine systems. The Potomac River Tunnel and Long Bridge projects have the potential to impact riverine habitat from in-water work. The proposed action would contribute a minor amount to the adverse cumulative impacts of these projects. When added to the short-term minor impacts of the proposed action, the cumulative adverse impact would be short-term and minor. All projects would require Section 7 NMFS consultation and Section 404 CWA permitting to minimize impacts.

4.0 CONSULTATION AND COORDINATION

The NPS places a high priority on public involvement in the NEPA process and on giving the public an opportunity to comment on the proposed action. Consultation and coordination with federal, state, and local agencies, and American Indian tribes were also conducted to refine the alternatives and identify issues and/or concerns related to environmental impact topics. This section provides a summary of the public involvement, and agency consultation and coordination that occurred during planning. Agency consultation letters and responses are provided in **Appendix B**, Agency Consultation.

PUBLIC INVOLVEMENT

As part of the NEPA process and to comply with the requirement of Section 106 of the NHPA, the NPS involved the public in project scoping by holding a 55-day public comment period from July 19, 2022, to September 12, 2022. A virtual public scoping meeting was held on July 19, 2022, using the Microsoft Teams platform. The NPS communicated project information with the public, agencies, and other relevant stakeholders during scoping by transmitting scoping letters and a press release by email. The scoping letter was distributed by the NPS to the interested parties on July 14, 2022. The NPS prepared a press release that was sent to local media outlets on July 15, 2022 and uploaded to NPS press release webpages. The presentation used during the virtual public meeting and a recording of the meeting are available at: <https://parkplanning.nps.gov/SeawallRehabilitation>.

During the public scoping period, comments received covered a wide range of topics, summarized below:

- Alternatives (Proposed, No Action, and Dismissed)
- Purpose and Need
- Climate Change
- Cultural and Historic Resources (Includes Aesthetics)
- Visitor Use and Experience (Includes Safety)
- Vegetation
- Cumulative Projects
- Transportation and Traffic
- Wetlands and Waterways
- Water Quality
- Fish and Wildlife, Habitat
- Floodplains
- Geology and Soils
- Park Operations and Management
- Environmental Justice

The public will have a second opportunity to comment during public review of the EA from March 2, 2023, to April 1, 2023. The NPS prepared a press release and sent to local media outlets on March 2, 2023 and uploaded it to NPS press release webpages. Responses to comments will be

addressed in the decision document. The EA will be re-circulated for additional public comment if substantial changes are made in response to comments.

The external Planning, Environment, and Public Comment (PEPC) homepage for the project, <https://parkplanning.nps.gov/SeawallRehabilitation>, is the primary location to make project documents available for public review.

AGENCY CONSULTATION AND COORDINATION

NEPA Cooperating Agency Invitation

An agency (federal, state, local, or tribal government) is eligible to become a cooperating agency during the development of an EA if it has jurisdiction by law over actions included in an NPS proposal or alternatives under consideration, or special expertise regarding environmental issues related to an NPS proposal or alternatives under consideration (40 CFR 1508.5). The NPS transmitted one cooperating agency invitation letter to the NCPC on July 11, 2022, and NCPC responded their interest in being a cooperating agency on August 2, 2022 (see **Appendix B**).

Section 106 of the National Historic Preservation Act

Pursuant to Section 106 of the NHPA and its implementing regulations (36 CFR Part 800) “Protection of Historic Properties,” the NPS initiated Section 106 consultation with the District of Columbia and Virginia SHPOs on May 19, 2022.

The first Section 106 Consulting Party meeting was held virtually on August 2, 2022, using the Microsoft Teams platform, and included a presentation of the APE, existing conditions, and initial proposed concept. A second Consulting Party meeting was held virtually on December 15, 2022, using the Microsoft Teams platform, to review the draft AOE Report and MOA outlining all minimization and mitigation efforts of adverse effects to historic resources. The AOE Report and associated MOA are included within this EA as **Appendix C**. Section 106 consultation letters and responses are provided in **Appendix B**.

Tribal Consultation

Consultation initiation letters were sent to the Absentee Shawnee Tribe of Indians of Oklahoma Nation, Catawba Indian Nation, Cherokee Nation, Chickahominy Indian Tribe, Chickahominy Tribe Eastern Division, Delaware Nation, Monacan Indian Nation, Nansemond Indian Nation, Pamunkey Indian Tribe, Rappahannock Tribe, Shawnee Tribe, and the Upper Mattaponi Tribe on May 19, 2022.

The Shawnee Tribe responded that they were not aware of any tribal cultural resources that would be affected by the proposed action but requested to be contacted in the event of an inadvertent discovery. The Nansemond Indian Nation provided new tribal leadership contacts. The Catawba Indian Nation, Cherokee Nation, and Delaware Nation had representatives attend the consulting party meeting on August 2, 2022. In an email dated January 26, 2023, the Catawba Indian Nation noted they had no concerns with the draft AOE Report or MOA. In response to a consulting party meeting email, the Shawnee Tribe stated the project is out of the Tribe’s area of interest. No other Tribes responded.

Section 7 Consultation of the Endangered Species Act

Section 7 consultation with NMFS is ongoing. In a letter dated November 23, 2022, and delivered electronically to NMFS on November 30, 2022, the NPS initiated informal Section 7 consultation for the proposed action (see **Appendix B**). The Potomac River within the project area includes designated critical habitat where two species of endangered sturgeon may be present: the federally endangered shortnose sturgeon (*Acipenser brevirostrum*) and all five of the Distinct Population Segments (DPS) of the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). The NPS has requested concurrence from NMFS that the proposed activity may affect but is not likely to adversely affect the listed species.

On January 9, 2023, the NPS requested an IPaC project review from the USFWS Chesapeake Bay Field Office. The IPaC review identified two species that may be present within the project area: the federally endangered northern long-eared bat (*Myotis septentrionalis*) and the federal candidate monarch butterfly (*Danaus plexippus*). There were no critical habitats identified within the project area that fall under USFWS jurisdiction. In an email dated February 3, 2023, the USFWS stated that the proposed project area is not considered to be habitat for northern long-eared bat, thus the proposed action is expected to have no effect on the species. No further Section 7 consultation is required at this time for the northern long-eared bat. A copy of the IPaC project review results and referenced email correspondence are provided in **Appendix B**.

Clean Water Act and Rivers and Harbors Act

In accordance with Sections 404 and 401 of the CWA (33 USC 1344 and 33 USC 1341, respectively), as well as Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403), the NPS is seeking authorization from the USACE and DOEE for regulated activities proposed within jurisdictional wetlands and other waters of the U.S. located within the study area. Coordination regarding these authorizations is ongoing at the time of this EA. As part of the permit review processes, potential impacts to jurisdictional wetlands and other waters of the US would be avoided or minimized to the maximum extent practicable. As described in **Chapter 3**, the NPS would coordinate with USACE and DOEE to determine appropriate compensatory mitigation for any unavoidable adverse impacts to water resources.

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