FINDING OF NO SIGNIFICANT IMPACT

WASHINGTON, D.C., AND VICINITY FLOOD RISK MANAGEMENT PROJECT IMPROVEMENTS AT NATIONAL MALL AND MEMORIAL PARKS: SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT WASHINGTON, DISTRICT OF COLUMBIA

The U.S. Army Corps of Engineers, Baltimore District (Corps) has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The draft Environmental Assessment (EA) dated 13 March 2020, for the Washington, D.C., and Vicinity Flood Risk Management Project addresses flood-risk management (FRM) opportunities and feasibility in the monumental core, portions of Pennsylvania and Constitution Avenues, and other public and private facilities located south of the U.S. Capitol to Fort McNair. The project was authorized by the Flood Control Act of 1936, then modified by the Flood Control Act of 1946.

The draft EA, incorporated herein by reference, evaluated various alternatives that would reduce flood risk in the study area. The recommended plan is the National Economic Development (NED) Plan and includes:

- At the Potomac Park Levee, up to 4 feet of earth would be added along approximately 2,450 feet of the levee crest to raise it to approximately 18.7 feet elevation; sluice gates would be constructed in sewer lines crossing under the levee.

- At 23rd Street and Constitution Avenue, an earthen berm would be constructed to 20 feet elevation on the southwest side of the land parcel.

- Between the east and west bound ramps of the Theodore Roosevelt Bridge at Constitution Avenue, an earthen berm would be constructed.

- Up to about 55 mature trees would be removed that may threaten FRM feature integrity.

In addition to a “no action” plan, two additional alternatives were evaluated for the parcel on the southwest side of the 23rd Street/Constitution Avenue intersection. The alternatives included constructing a berm on the eastern/northern side of the parcel, and incorporating FRM features into the future National Desert Storm and Desert Shield Memorial.

For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan are listed in Table 1:

Table 1: Summary of Potential Effects of the Recommended Plan

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Aesthetics	☒	☐	☐
Air quality	☒	☐	☐
Aquatic resources/wetlands	☐	☐	☒
Invasive species	☐	☐	☒
Fish and wildlife habitat	☒	☐	☐
Threatened/Endangered species/critical habitat	☒	☐	☐
Historic properties	☐	☒	☐
Other cultural resources	☐	☒	☐
Floodplains	☒	☐	☐
Hazardous & toxic waste	☒	☐	☐
Hydrology	☐	☐	☒
Land use	☒	☐	☐
Transportation & Navigation	☒	☐	☐
Noise levels	☒	☐	☐
Public infrastructure	☒	☐	☐
Socio-economics	☐	☐	☒
Environmental justice	☐	☐	☒
Soils	☒	☐	☐
Tribal trust resources	☐	☐	☒
Water quality	☐	☐	☒
Climate change	☒	☐	☐

Practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. Best management practices (BMPs) as detailed in the EA will be implemented, if appropriate, to minimize impacts.

No compensatory mitigation is required as part of the recommended plan.

Public review of the draft EA and FONSI will be conducted, and comments submitted during the public review period will be responded to in the Final EA and FONSI.

Pursuant to Section 7 of the Endangered Species Act of 1973, as amended, the Corps determined that the recommended plan may affect but is not likely to adversely affect the following federally-listed species or their designated critical habitat: northern long-eared bat. The U.S. Fish and Wildlife Service (FWS) concurred with the Corps' determination on 31 January 2020.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the Corps determined that historic properties may be temporarily adversely affected by the recommended plan. The Corps and the NPS, National Capital Planning Commission, the

Commission of Fine Arts, the Advisory Council on Historic Preservation, and the Washington, D.C., Historic Preservation Office entered into a Programmatic Agreement (PA), dated 13 December 2018. All terms and conditions resulting from the agreement shall be implemented in order to minimize adverse impacts to historic properties.

Pursuant to the Clean Water Act of 1972, as amended, no discharge of dredged or fill material associated with the recommended plan will occur. No discharges into waters requiring District of Columbia water quality certification will occur. The project will follow stormwater management and erosion and sediment control procedures to be developed with the District of Columbia.

The District of Columbia does not have an approved Coastal Zone Management program pursuant to the Coastal Zone Management Act of 1972. No consistency determination is necessary.

All applicable environmental laws have been considered and coordination with appropriate agencies and officials has been completed. To avoid/minimize impacts to nesting birds and roosting bats, any tree removal would occur to the greatest extent possible during the period August 16th through March 14th.

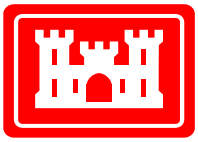
Technical and environmental criteria used in the formulation of alternative plans were those specified in the Water Resources Council's 1983 Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on this report, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

_____
Date

_____
John T. Litz
COLONEL, Corps of Engineers
District Commander

Washington, D.C. and Vicinity Flood Risk Management Project
Improvements at National Mall and Memorial Parks

DRAFT SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT



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April 2020

EXECUTIVE SUMMARY

The Baltimore District, U.S. Army Corps of Engineers (USACE) and National Park Service (NPS) propose to construct improvements to the Washington, D.C. and Vicinity Flood Risk Management (FRM) Project at the National Mall and Memorial Park (NAMA) that would improve reliability of the project under extreme flood events. The project provides FRM for portions of the monumental core, portions of Pennsylvania and Constitution Avenues, and other public and private facilities located south of the U.S. Capitol to Fort McNair. The NPS is a cooperating agency for the project. The project would be constructed by USACE and maintained by the NPS.

The project was originally authorized by Congress under the Flood Control Act of 1936 to provide FRM for downtown Washington D.C., for flood events up to 700,000 cubic feet per second (cfs) on the Potomac River. Such floods would originate from Potomac River flooding and could be exacerbated by coastal flooding. The original project was constructed in the late 1930s, but underwent modifications in the 1940s, 1970s, and 2010s. NAMA FRM features include a levee between the Lincoln Memorial and Washington Monument adjacent to the reflecting pool (the Potomac Park Levee), a post and panel closure system at 17th Street, and a temporary closure at 23rd Street (sandbags or inflatable bladders).

The project provides FRM adequate for the 1 percent annual chance flood event (426,900 cfs). With the 23rd Street and Constitution Avenue temporary closure installed, 17th Street post and panel closure erected, and P and Canal Streets temporary closure installed, the project would provide FRM for a discharge of up to 700,000 cfs, but with less than the required 1 foot of freeboard. This would make the levee vulnerable to overtopping and or failure. Accordingly, the project would require additional temporary closure efforts on the levee crest, likely by sandbag, for the project to provide FRM with adequate freeboard for the authorized 700,000 cfs event. The temporary closures needed at 23rd Street and Constitution Avenue, and on the Potomac Park levee crest, are now considered an unreliable and inadequate means to provide FRM for the authorized flows by USACE and the Federal Emergency Management Agency. The intent of the recommended plan is to provide long-term FRM to authorized levels for a discharge of 700,000 cfs with adequate freeboard.

At the Potomac Park Levee, up to 4 feet of earth would be added along approximately 2,450 feet of the levee crest to raise it to approximately 18.7 feet elevation. Sluice gates would be constructed in sewer lines crossing under the levee to prevent floodwater from entering into the sewer system. About 55 mature trees would be removed that threaten levee physical integrity. At 23rd Street and Constitution Avenue, an earthen berm would be constructed to 20 feet elevation with gentle side slopes on the southwest side of the land parcel on the southwest side of the 23rd Street and Constitution Avenue intersection. An earthen berm would also be constructed between the east and west bound ramps of the Theodore Roosevelt Bridge at Constitution Avenue on the west side of the intersection.

Proposed improvement to the FRM project components at the Potomac Park Levee and 23rd Street were evaluated in USACE environmental assessments (EA) prepared in 1992 and 1996. However, the improvements were not constructed due to lack of funding. NPS prepared an EA in 2009 addressing construction of the 17th Street closure structure, which had not been constructed yet. USACE has prepared the EA that supports this Finding of No Significant Impact in coordination with NPS because more detailed project designs have been prepared, and environmental regulations have changed since publication of previous EAs.

At NAMA, principal concerns focused on maintaining aesthetic character and views of the monument and memorial grounds. Presence of construction materials and equipment, and disturbance to lawns would cause temporary detrimental aesthetic impacts during construction. The project would cause temporary minor detrimental impacts to air quality, traffic, and noise. When completed, slopes of the raised levee and new berm would be gentle and conform to existing landscape character. Sight lines and views would be maintained, and no long-term detrimental aesthetic impacts would occur. A Programmatic Agreement was developed between USACE, NPS, National Capital Planning Commission, the Commission of Fine Arts, the Advisory Council on Historic Preservation, and the Washington, D.C., Historic Preservation Office to ensure that cultural and historic resources of NAMA are not adversely affected by the proposed action. USACE and NPS will continue to coordinate with agencies and organizations concerned with NAMA as the project proceeds through advanced design. Transport routes and times of construction activity would be planned in cooperation with the NPS and District Department of Transportation to minimize impacts to traffic, visitors, and residents. To avoid/minimize impacts to nesting birds and roosting bats, any tree removal would occur to the greatest extent possible during the period August 16th through March 14th.

The FRM project is designed to manage riverine and tidal flooding only. It will be incumbent upon Washington, D.C. to address remaining flooding threats to the downtown from heavy precipitation that could cause interior ponding and exceed sewer system pump capability.

Project cost is estimated to be $14,197,000. This includes the completed 17th Street post and panel closure structure and modifications to the Potomac Park Levee, and 23rd Street and Constitution Avenue parcel. Completion of the project will provide a positive benefit-to-cost ratio of 2.4, with an expected annual benefit of $354,000.

Adverse environmental, social, and cultural impacts associated with implementation of the project would be short term in nature. The project would produce a net long-term benefit to downtown Washington, D.C., by better managing flood risk.

Washington, D.C. and Vicinity Flood Risk Management Project Improvements

DRAFT SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

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Washington, D.C. and Vicinity Flood Risk Management Project Improvements as Proposed in 2013 Plans and Specifications. Estimate of Emissions of Clean Air Act Pollutants of Concern. Narrative, Summary Tables, and MOVES Output Files.

TABLE: SELECT ACRONYMS AND TERMS USED IN THIS REPORT

Acronym or Term	Explanation
BFE	Base flood elevation
cfs	Cubic feet per second
CO	Carbon monoxide
DC DOEE	Washington, D.C., Department of Energy and Environment
EA	Environmental assessment, document prepared to meet NEPA requirements
ESA	Endangered Species Act
EISF	Environmental impact screening form
FEMA	Federal Emergency Management Agency, Department of Homeland Security
FIRM	Flood Insurance Rate Map
FRM	Flood risk management
ft	Feet
Ft	Fort
GDM	General Design Memorandum. A USACE document. Formerly prepared to cover supplementary detailed engineering information developed after completion of a feasibility report.
HTW	Hazardous and Toxic Wastes
LRR	Limited Reevaluation Report. USACE document prepared to evaluate changes to a specific portion of an existing project.
MWCOG	Metropolitan Washington Council of Governments
NAVD88	North American Vertical Datum of 1988, vertical control datum for surveying elevation
NDSDS Memorial	National Desert Storm and Desert Shield Memorial
NEPA	National Environmental Policy Act
NH3	Ammonia
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NW	Northwest Washington, D.C.
O3	Ozone
PA	Programmatic Agreement
RCRA	Resource Conservation and Recovery Act
SW	Southwest Washington, D.C.
SWM	Stormwater management
USACE	U.S. Army Corps of Engineers
USFWS	US Fish and Wildlife Service
VOC	Volatile organic compounds
VR	Validation Report

1.0 INTRODUCTION

1.1 PURPOSE AND NEED

This Supplemental Environmental Assessment (EA) has been prepared to update and evaluate potential effects, beneficial or adverse, that may result from constructing improvements to the Washington, D.C., Local Flood Risk Management (FRM) Project[1] at the National Mall and Memorial Parks (NAMA) (Figures 1-1 and 1-2). The National Park Service (NPS) is a cooperating agency with the United States Army Corps of Engineers (USACE) in preparation of this EA. Previous EAs were prepared in 1992, 1996, and 2009 that evaluated proposed improvements to the FRM project. Currently, the project relies upon temporary flood barriers, such as sandbags, bladders, and earthen mounds, to prevent flood waters during extreme riverine or tidal flood events from entering downtown Washington, D.C., through NAMA or Fort McNair. Downtown District of Columbia locations at flood risk (Figure 1-3) include portions of the monumental core, portions of Pennsylvania and Constitution Avenues, and other public and private facilities located south of the U.S. Capitol to just north of Fort McNair . Temporary barriers may prove difficult to construct in a timely manner prior to an extreme event, and would be vulnerable to physical failure during the event. USACE and Federal Emergency Management Agency (FEMA) view such measures as an inadequate means of FRM. The purpose of this proposed action is to improve the reliability of project FRM at NAMA by reducing or eliminating the need to deploy temporary barriers.

[1] Formerly called the Washington, D.C., Local Flood Protection Project.

Figure 1-1: USACE Project Vicinity Map (prepared 1985).

Figure 1-2: NAMA Map.

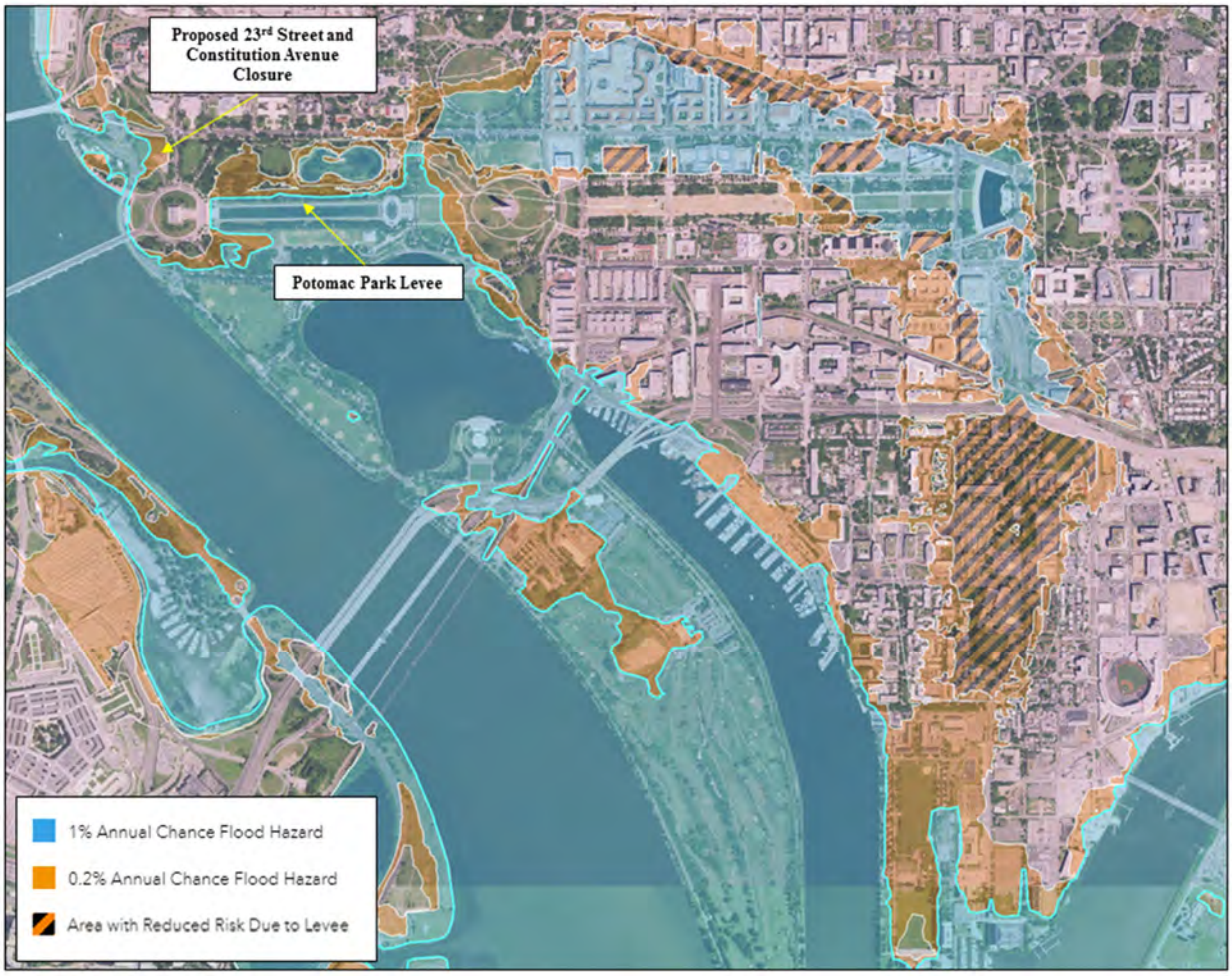

Figure 1-3: Map Showing Flood-Prone Areas in Vicinity.

In 1936, Congress authorized USACE to design and construct an FRM project for downtown Washington, D.C., to contain a flow of 700,000 cubic feet per second (cfs) (with one foot of freeboard) which could occur from tidal flood and river discharges[2]. In the late 1930s, USACE constructed an FRM project that consisted of a floodwall[3] from the Lincoln Memorial to the Washington Monument, a raised portion of P Street adjacent to Fort McNair, and floodgates on associated sewer pipes at both locations. The project required that during flood warnings, temporary earthen/sandbag closures be constructed at 23rd Street NW and Constitution Avenue, at 17th Street NW[4], and at P and Canal Streets SW. The floodwall was modified in the 1940s, and

[2] Discharges include effects of tidal flooding affecting water levels. In USACE analyses completed in 2016, the 700,000 cfs design event was determined to have approximately a 0.1 percent chance of occurring in any given year ("1,000 year flood event").

[3] The original floodwall was a concrete retaining wall with earth fill against its south side for most of its length.

[4] 17th Street, NW, is just written as "17th Street" from this point on in EA.

then in the early 1970s was partially removed with what remained being fully buried under the earthen levee that is visible today (the Potomac Park or Reflecting Pool Levee). In 2014, USACE and the NPS erected a post and panel closure structure at 17th Street such that the temporary earthen/sandbag closure would no longer be required there.

USACE analyses completed in 2016 determined that the 1 percent annual chance ("100-year") flood event would produce a discharge of 426,900 cfs. With the 23rd Street and Constitution Avenue temporary closure and the 17th Street post and panel closure structure installed, the existing FRM project can contain with a freeboard of greater than 3 feet the 1 percent annual chance event. This level of FRM meets FEMA requirements such that downtown Washington, D.C., qualifies for national flood insurance. With the 23rd Street and Constitution Avenue temporary closure installed, 17th Street post and panel closure erected, and P and Canal Streets temporary closure installed, the project would provide FRM for a discharge of up to 700,000 cfs, but with less than the required 1 foot of freeboard for the levee. This would make the levee vulnerable to overtopping and or failure in such an event. Accordingly, the project would require additional temporary closure efforts on the levee crest, likely by sandbag, for the project to provide FRM with adequate freeboard for the authorized 700,000 cfs event[5]. This inadequate freeboard would occur because of settling of the levee, as well as inaccuracies in elevation data and limitations of modeling utilized in original design and construction.

USACE completed a General Design Memorandum (GDM) in 1992 which contained plans and an EA for project improvements at 23rd Street and 17th Street on NAMA, as well as at Fort McNair. USACE then prepared an EA in 1996[6] that covered proposed construction of a portable dam at 17th Street. Subsequently, the proposed portable dam proposal was determined inappropriate and other alternatives sought. A plan for construction of a post and wall closure structure at 17th Street was subsequently formulated, and NPS completed an EA in 2009 for this FRM project component. The 2009 NPS EA provided consideration of impacts of completing construction of FRM improvements at the Potomac Park Levee and 23rd Street and Constitution Avenue, but did not include consideration of Fort McNair. The 1992 USACE EA and 2009 NPS EA are incorporated by reference into this supplemental EA. The proposed project improvements at 23rd Street and Fort McNair contained in the 1992 GDM were not constructed because funding to do so was not provided by Congress.

In 2013, USACE developed more detailed plans and specifications (65 percent level) for these proposed improvements. In 2016, USACE determined based upon updated hydrologic and hydraulic modeling and more accurate topographic data that the 700,000 cfs event would rise to 0.8 feet lower in elevation than previously thought in the vicinity of Fort McNair. The water surface elevation would rise to 14.4 feet[7] rather than 15.2 feet. Topographic survey work showed elevations of 15.0 to 15.2 feet in this vicinity. One foot of freeboard is required above the 14.4 feet water surface elevation, but considering the location and infrequency of the event, this small

[5] At discharges greater than 700,000 cfs, floodwaters would overtop and flank the FRM project and enter the downtown from numerous locations.

[6] FONSI signed June 1996. EA originally included in June 1996 "Supplement to GDM Addressing Feasibility of Portadam Closure Structure for 17th Street." EA was then subsequently included as Appendix F of January 1997 "Washington, D.C. Local Flood Protection Project Modifications LRR."

[7] Elevations NAVD88 unless otherwise specified.

needed height of less than 1 foot can be managed using temporary measures that Washington, D.C., would deploy in accordance with its Emergency Response Manual. The existing project there (raised P Street) combined with temporary measures would prevent floodwaters from flowing northward into the city. Accordingly, plans to investigate FRM project improvements at Fort McNair ceased.

Passing of substantial time and changes in site conditions and regulations since finalization of previous National Environmental Policy Act (NEPA) documents have occurred that require preparation of a supplemental EA for construction of the proposed FRM project improvements. The project is not currently funded for construction by the Federal government. This EA and the associated Validation Report (VR) are anticipated to serve as documents providing a basis by which Congress could fund project completion.

This EA presents information to determine if any adverse impacts associated with the project are of a significant nature and warrant the preparation of an Environmental Impact Statement (EIS). If the impacts are determined not to be significant, a Finding of No Significant Impact (FONSI) will be made. If the potential impacts are determined to be significant, a Notice of Intent (NOI) will be published, leading to the preparation of an EIS. Included in this EA is a discussion of the various alternatives evaluated and the reasons for the selection of a plan.

The project does not provide FRM for flooding that could occur from interior ponding resulting from precipitation accumulating in low areas of the city, or from sewer system failure. Project improvements evaluated in this EA do not cover means to remediate that risk. As part of a Levee System Evaluation Report, Tetra Tech analyzed interior flooding for the 2 through 500-year flood events. They present the interior flooding methodology and tables of resulting ponding elevations in the Federal Triangle and Constitution Gardens areas (USACE 2016). See Annex B for Tetra Tech's 2016 Interior Drainage Analysis. It is vital that Washington, D.C., further investigate FRM for interior ponding.

1.2 EXISTING PROJECT DESCRIPTION

The Washington DC Local FRM project includes features at three separate locations: Potomac Park Levee system at NAMA in NW Washington, D.C., P Street Closure at Fort McNair in SW Washington, D.C., and Anacostia Levee in SE Washington, D.C. (Figure 1-1)[8]. The Anacostia Levee was not evaluated in the 1992 USACE GDM, and no improvements were proposed. Accordingly, the Anacostia Levee is not considered further in this EA. As was described in Section 1.1, improvements to the Fort McNair components of the project were determined to be unnecessary. Accordingly, the Fort McNair component is not considered further in this EA.

[8] Washington DC is divided into quadrants radiating out from the capitol building. NAMA is split between Southwest and Northwest DC. Northwest DC is located west of North Capitol Street and north of a line running from the capitol building westward through the Reflecting Pool within NAMA. SW Washington DC is located south of the Reflecting Pool and west of South Capitol Street.

The Potomac Park Levee system at NAMA (Figure 1-2) currently includes an earthen levee along the north side of the Reflecting Pool, a post and panel closure structure at 17th Street, and a temporary closure structure at 23rd Street and Constitution Avenue (Figure 1-4). The levee extends from the vicinity of 23rd Street, parallel to the Lincoln Memorial Reflecting Pool in Constitution Gardens, and ends on the Washington Monument Grounds east of 17th Street. The levee is approximately 4,500 feet long with a crest elevation of 18.7 to 19.1 feet. The existing levee has a 10-foot crest width and 4 horizontal : 1 vertical side slopes. Total levee width varies as a function of ground elevation, but generally ranges from about 25 to 75 feet. Contained buried within the levee is the earlier project floodwall (see Section 1.1). NPS maintains the levee as mowed lawn to prevent woody plants from growing on the levee which could threaten levee physical integrity. Roots of woody plants growing on the levee could create flow paths for water through the levee after the roots die. Also, root masses of trees that fall down during storms or floods can remove substantial chunks of earth from a levee. Mature trees occur along (but off) the northern and southern sides of the levee.

Figure 1-4: Potomac Park Levee System Map.

The post and panel closure structure at 17th Street has a top elevation of 18.75 feet to provide FRM for a 700,000 cfs event. The closure structure has curvilinear walls with a stone exterior on the sides and top to maintain aesthetic integrity of NAMA. The 17th Street structure was designed and constructed in expectation that improvements at the 23rd Street closure and Potomac Park Levee would eventually be constructed to provide FRM for a 700,000 cfs event.

NPS is responsible for operation and maintenance of the 17th Street closure structure, 23rd Street temporary closure, and Potomac Park levee. If a severe flood event is forecast, NPS would install the 23rd Street Closure, erect the 17th Street post and panel closure, and deploy a temporary closure (likely sandbags) on levee low spots if warranted. No sandbags would be needed on Constitution

Avenue itself. USACE inspects the Potomac Park levee and 17th Street closure structure annually to ensure that these structures would perform their FRM functions in event of severe flooding. The Potomac Park Levee system is in acceptable condition other than for inadequate height of the levee and reliance upon temporary closures at 23rd Street and Constitution Avenue as discussed in Section 1.1.

No records were located in preparation of this EA indicating that the temporary closures at 23rd and Constitution have ever been installed, so presumably they have not. No sandbags have ever been deployed on the levee crest.

1.3 FUTURE LAND USE AT PROJECT LOCATIONS

The 23rd Street and Constitution Avenue parcel is open space now, but proposed for several possible future long-term temporary and permanent uses. The parcel could possibly be used as a temporary but long term drilling site for Washington, D.C., Water and Sewer Authority's Potomac River Tunnel. The parcel could also temporarily be used as a staging area for Arlington Memorial Bridge rehabilitation. In June 2018, the parcel was selected as the location of the future National Desert Storm and Desert Shield Memorial[9] ([NDSDS Memorial] discussed in Sections 2 and 3). Additionally, parcel landscaping and roadside features may be permanently modified as part of Lincoln Memorial cultural landscape restoration. Cultural landscape restoration would most likely focus in the portion of the parcel immediately adjacent to 23rd Street, as well as along Lincoln Circle. Where appropriate, key landscape features that are integral to the original design of the Lincoln Memorial grounds and belong to the period of historical significance, 1914-1933, may be preserved, restored or reconstructed. Across 23rd Street (east) from the parcel is the proposed future site of the Vietnam Veterans Memorial Center.

Constitution Gardens on the northeast side of the levee may undergo major renovation in the future that includes import of substantial fill material to raise the elevation of portions of the area. Incorporation of landscaped gardens would be likely in the levee vicinity.

1.4 OTHER ONGOING USACE INVESTIGATIONS

USACE has executed a Feasibility Cost Sharing Agreement with the Metropolitan Washington Council of Governments to investigate coastal FRM in the Washington, D.C., Metropolitan Area. This study - the "DC Coastal Study" (formally titled "Middle Potomac Watershed and Tributaries, Metropolitan Washington, District of Columbia Study") will investigate solutions to reduce future flood risk in ways that support the long-term resilience and sustainability of the District of Columbia metropolitan region communities (The study area is broad and includes the NAMA area of Washington, D.C.). The DC Coastal study will consider coastal FRM under future climate and sea level change scenarios. It is anticipated that the study will recommend actions to reduce coastal

[9] The NPS and National Desert Storm War Memorial Association have begun preparation of a separate EA to plan the memorial. USACE requested by letter on November 21, 2017 to be a cooperating agency in preparation of that separate EA.

flood risk to vulnerable populations, properties, infrastructure, and environmental and cultural resources. Actions are anticipated to include those that can be undertaken by USACE as well as other federal and non-federal entities. The DC Coastal Study is one of nine focus areas identified in the USACE North Atlantic Coast Comprehensive Study. A USACE Chief's Report is anticipated to be completed for the DC Coastal Study in 2022.

2.0 DESCRIPTION OF PROPOSED ACTION

The proposed actions evaluated in this EA include FRM improvements at the Potomac Park levee and the 23rd Street and Constitution Avenue temporary closure site. Section 2.1 provides a description of the proposed project features at the levee based on 2013 USACE plans and specifications. For the 23rd Street and Constitution Avenue temporary closure site (descriptions are provided in Section 2.2), project features to be constructed would depend on future parcel use (Section 1.3). Sections 2.1 and 2.2 provide a description of how the improvements at both sites may be constructed based on best-professional judgment to facilitate consideration of impacts later in this EA. Construction methods often have major bearing on impacts. Actual construction methods may differ. Section 3 provides information on alternatives considered. Section 5 provides information on effects of implementing the proposed action.

For both sites based on 2013 plans, trucking in of fill material, asphalt, concrete, forms, pipes, and landscaping materials would be necessary. USACE and NPS will coordinate with appropriate Washington, D.C., agencies regarding scheduling time of year when construction would occur to minimize impacts to NAMA events, traffic, and other activities in downtown Washington, D.C. Construction crews would generally work 5 days a week, 8 hours a day. If the levee raising and earthen berm at 23rd Street and Constitution Avenue are constructed together as per the 2013 plans, then construction would take approximately 6.5 months to complete. Construction duration has not been determined if FRM improvements at the levee and 23rd Street and Constitution Avenue parcel are constructed separately in time or if FRM features at the 23rd Street and Constitution Avenue are incorporated into the future NDSDS Memorial (Section 3.3).

USACE and NPS will coordinate with Washington, D.C., Department of Energy and Environment (DC DOEE) when preparing final designs to determine stormwater management requirements. Final designs will either avoid or minimize impacts that would trigger extensive or intrusive stormwater best management practices (BMPs). It is anticipated that construction would be sequenced such that small portions of the project would be completed at a time to minimize ground disturbing activity.

If not in other long-term temporary use (Section 1.3), a staging area could be established on the southwest side of the 23rd Street and Constitution Avenue parcel. In that event, the staging area in the parcel would be stripped of grass and topsoil and have a temporary gravel layer placed over it. Details of preparing the 23rd Street and Constitution Avenue parcel for use as a staging area were not determined in the 2013 plans because of uncertainty over whether the parcel would be used. In the event the parcel is under another use, then an alternative staging location would be sought.

2.1 POTOMAC PARK LEVEE

The levee crest would be increased in height by as much as four feet to raise it to 18.7 feet elevation along approximately 2,450 feet of its length (Figures 2-1 and 2-2).

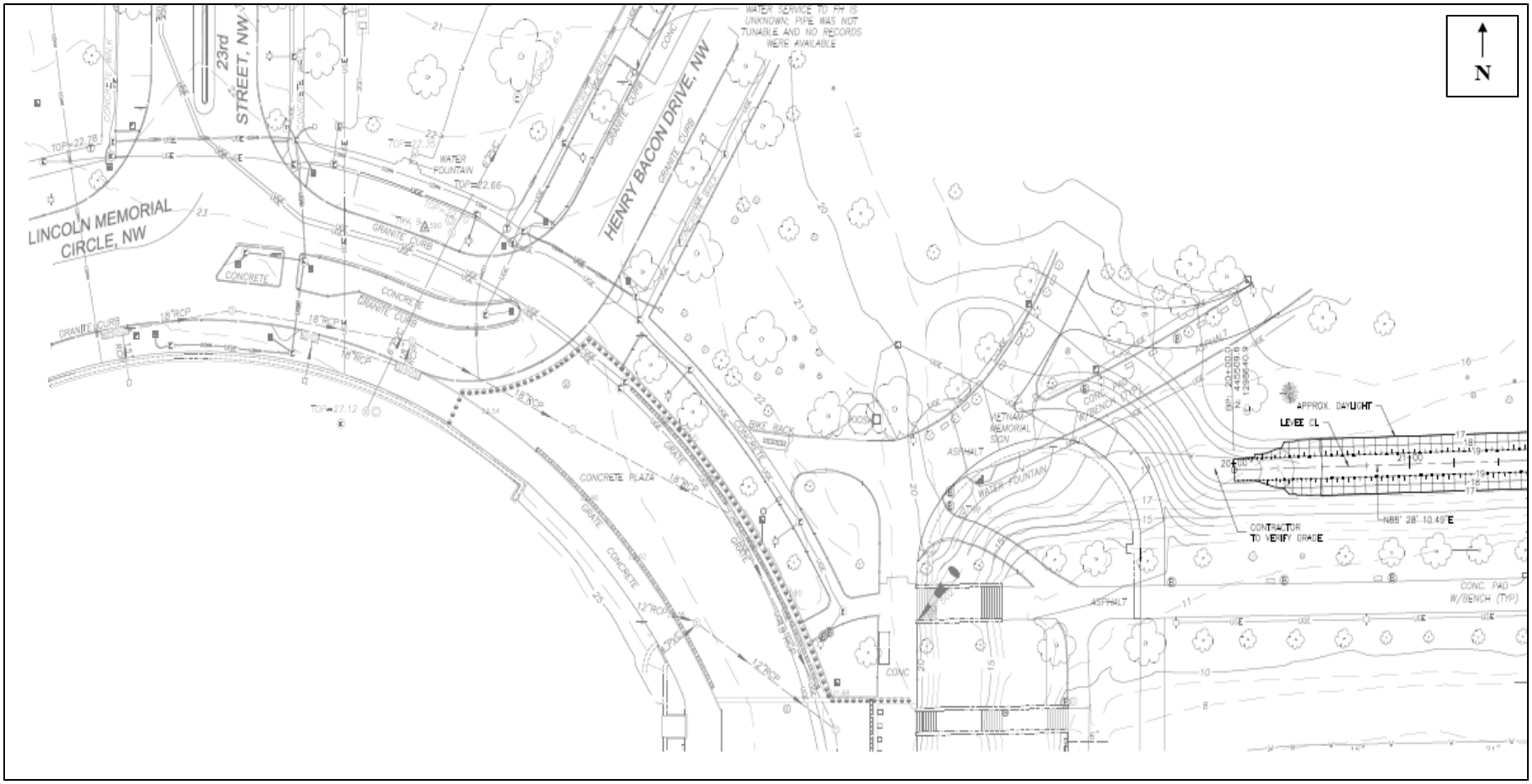

Figure 2-1a: NAMA Levee Proposed Project Plan View.

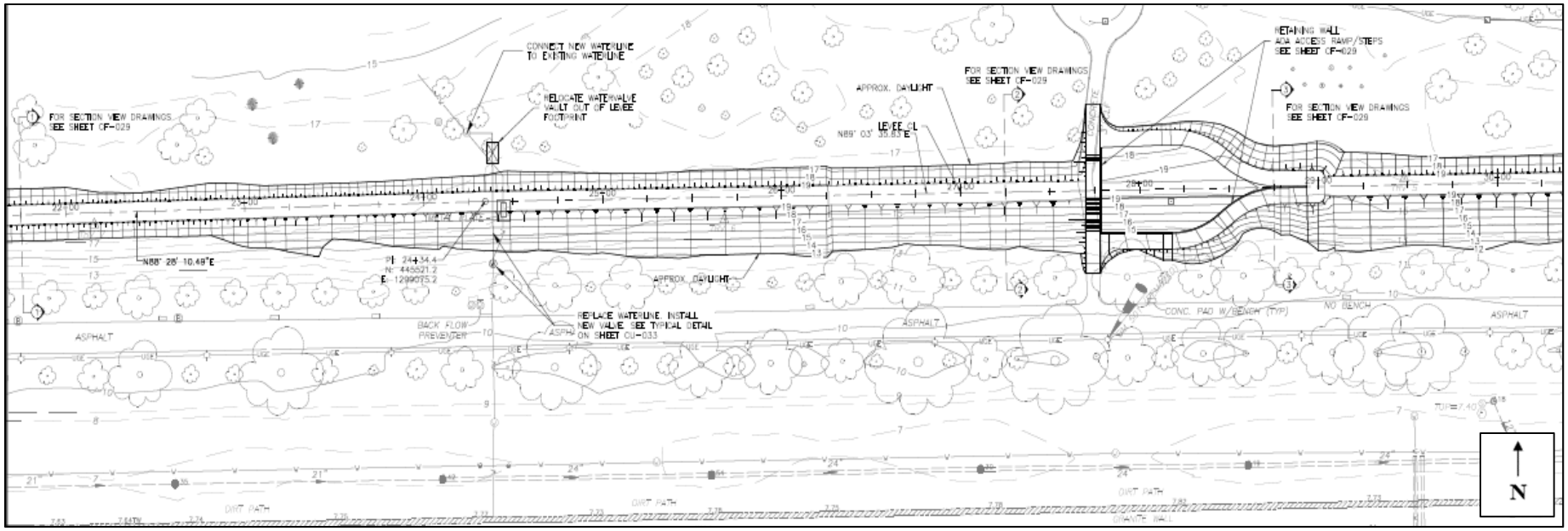

Figure 2-1b: NAMA Levee Proposed Project Plan View.

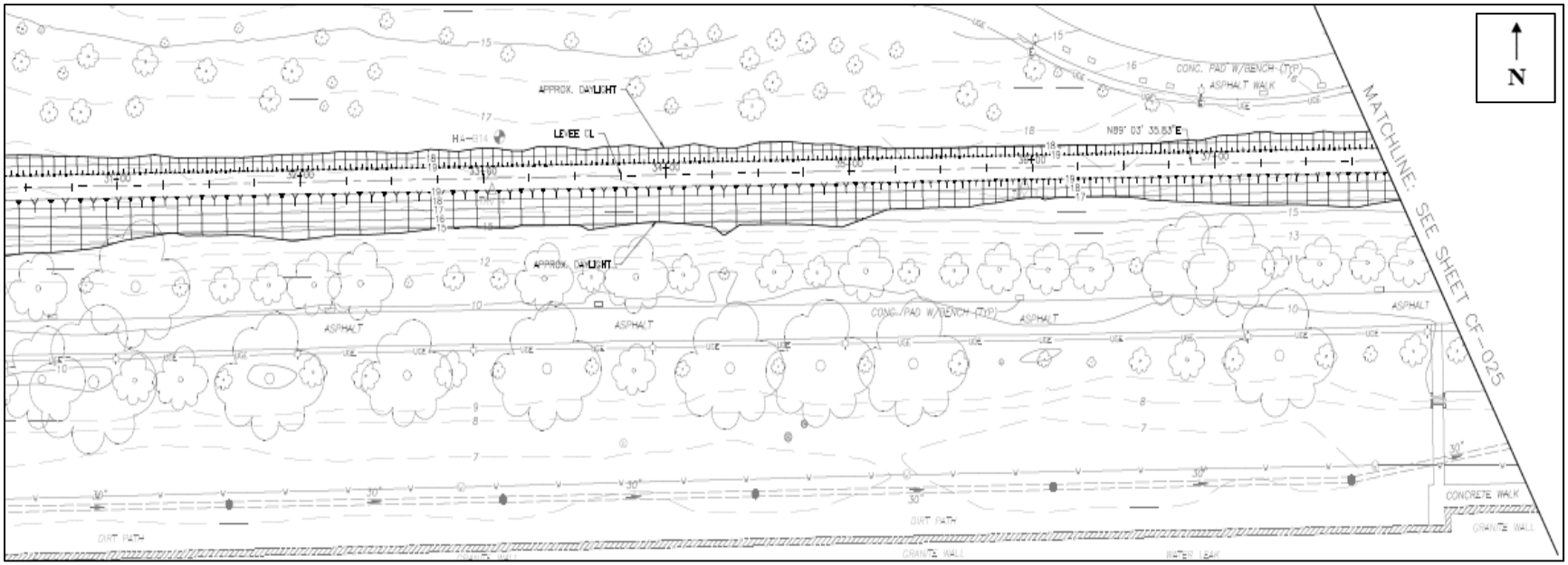

Figure 2-1c: NAMA Levee Proposed Project Plan View.

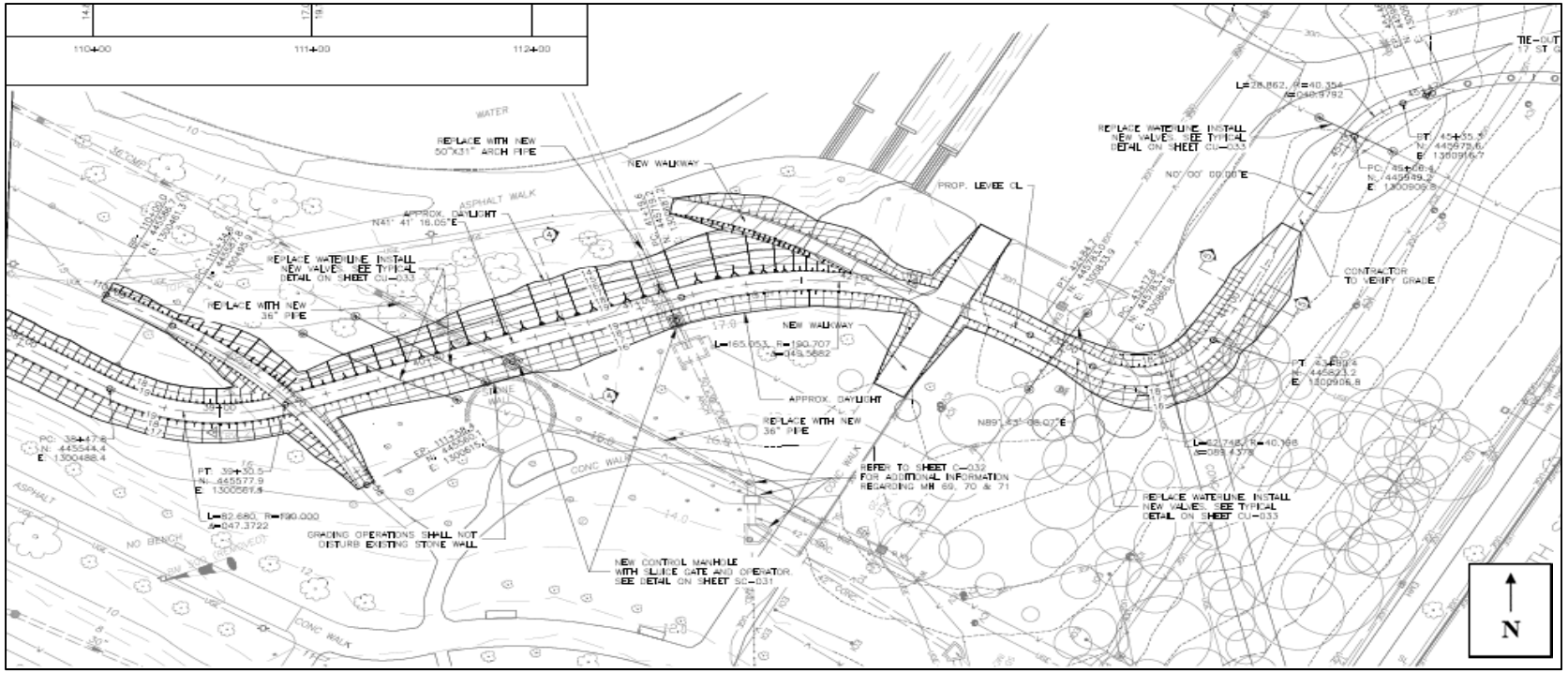

Figure 2-1d: NAMA Levee Proposed Project Plan View.

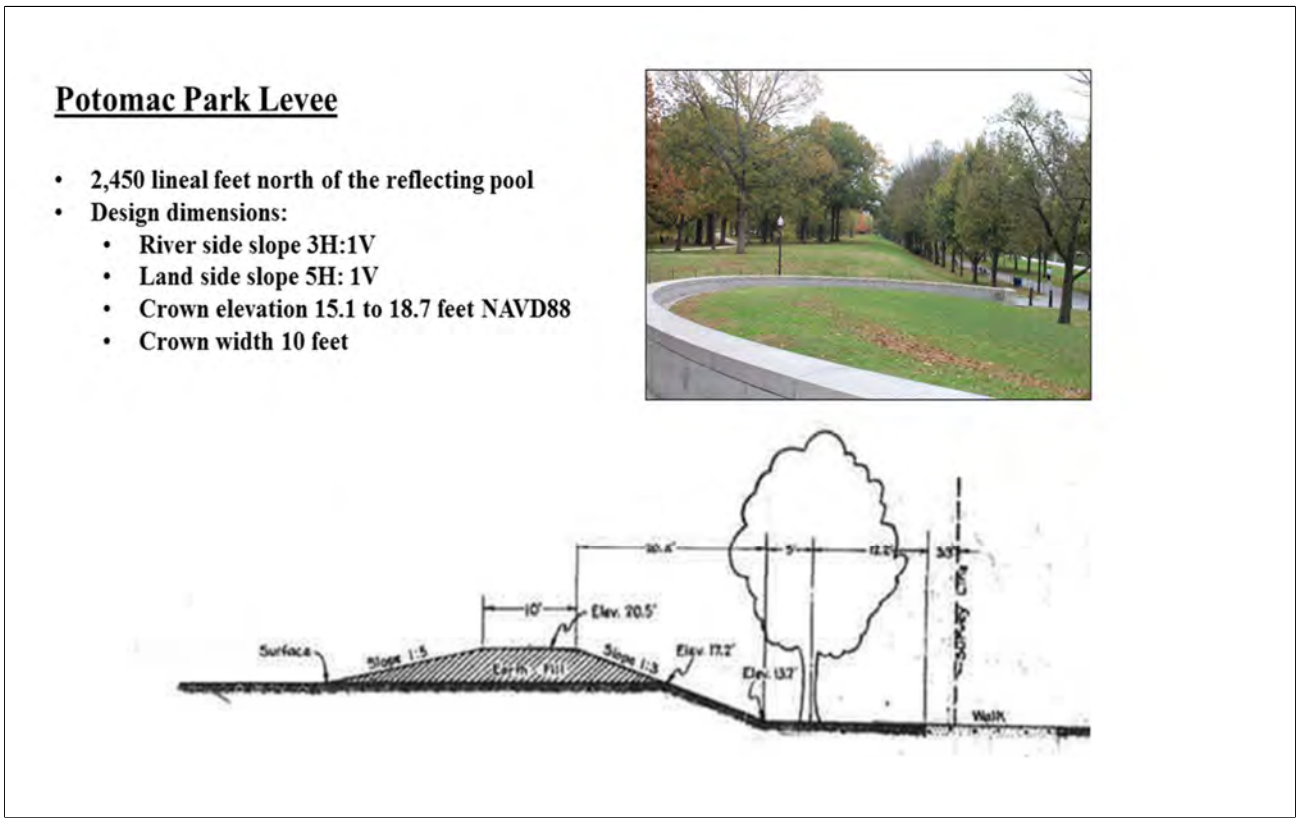

Figure 2-2: NAMA Levee Proposed Project Typical Cross-Section

For construction, the Potomac Park Levee would likely be accessed from both its west side (from vicinity of NE side of Lincoln Memorial) and east side (17th Street). Once accessed, construction equipment would traverse the levee area for construction, there would be no need to construct a separate access roadway. Raising the levee would likely proceed in several construction steps. Work at the levee site would occur within an area of approximately 4.0 acres. A temporary limit-of-disturbance fence would be erected to contain the area. The project footprint area would be stripped of topsoil and grass, and trees and shrubs on and adjacent to the levee would be removed. Woody plants along the levee crest as well as within a 15 foot buffer zone from the toe of slope would be removed[10]. This would be performed to prevent future damage to the levee from tree fall and prevent water flowing through large root passageways if the woody vegetation dies. Approximately 55 woody plants would be removed, which range from mature shade trees to shrubs (Annex B). Excavated earth would be stockpiled. Asphalt and concrete walkways would be removed.

[10] As per USACE Engineer Pamphlet 1110-2-18, "Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures"

Impervious fill of specification grade would be trucked in, placed, and shaped to raise the levee. The impervious fill would be obtained from a commercial source. Stockpiled earth would be placed on the top and sides of the specification fill to establish topsoil on the improved levee.

During construction of the levee improvements, several structures would need to be replaced, and local excavations would be made in areas previously disturbed during construction of the original structures. Water main and pipe at several locations along the levee would be replaced. Two concrete control manholes would be installed, and a backflow preventer would be relocated. Sluice gates would be constructed in sewer lines crossing the levee to prevent floodwater from backing up into the sewer system.

After construction of the levee raising is complete, a new asphalt walkway would be placed and associated concrete work completed, and the area would be landscaped. Trees would be planted in disturbed areas off the levee.

2.2 23RD STREET NW/CONSTITUTION AVENUE NW

In June 2018, the 23rd Street and Constitution Avenue parcel was selected as the location of the NDSDS Memorial. Other long-term temporary and permanent future use of the parcel, as discussed in Section 1.3, have not yet been determined[11]. None of the potential parcel uses are mutually exclusive and it would potentially be possible to utilize the parcel for multiple uses in sequence over time. The proposed FRM action presented herein would allow for two possible futures: 1) Construction of an earthen berm on the west/southwest side of the 23rd Street and Constitution Avenue parcel with construction of the NDSDS Memorial, or 2) incorporation of FRM features into the grounds and structure of the new NDSDS Memorial. (Rationale for formulating these plans is provided in Section 3).

2.2.1 Earthen Berm on West/Southwest Sides of Parcel

When the NDSDS Memorial is constructed, USACE and NPS could construct an earthen berm on the west/southwest side of the 23rd Street and Constitution Ave parcel (Figure 2-3). The berm would be constructed to 20 feet elevation with gentle side slopes to provide FRM to the project authorized level[12]. At its southern end, the berm would need to tie in to high ground located along the western side of Constitution Avenue north of the Lincoln Memorial. At its northern end, the berm would need to tie-in to high ground at Constitution Avenue. However, because mature American elms fundamental to the aesthetic character of NAMA are present along Constitution Avenue, the berm would need to be designed to protect the American elms. Conceptually, this alternative anticipates a 50 foot gap in the berm at its northern end along the southern side of Constitution Avenue to accommodate the American elms. The NPS would accommodate the temporary closure needs on land under NPS jurisdiction. This gap would require temporary closure

[11] Design options under consideration and up-to-date information available at https://parkplanning.nps.gov/projectHome.cfm?projectID=62216 and https://parkplanning.nps.gov/ndswm

[12] Similar to 2013 plans, but moved from NE corner of parcel to SW/W side of parcel.

measures in the event of a severe flood. While this would not eliminate concerns regarding temporary closures, the length of the closure and the risk of failure would be reduced.

This alternative may also require an approximately 75 foot long berm to be constructed between the east and west bound lanes of Constitution Avenue to the west of the 23rd Street and Constitution Avenue intersection[13]. In the event Lincoln Memorial cultural landscape restoration work is undertaken, any portion of the new berm in close proximity to Lincoln Circle may need to be positioned in accordance with those restoration efforts.

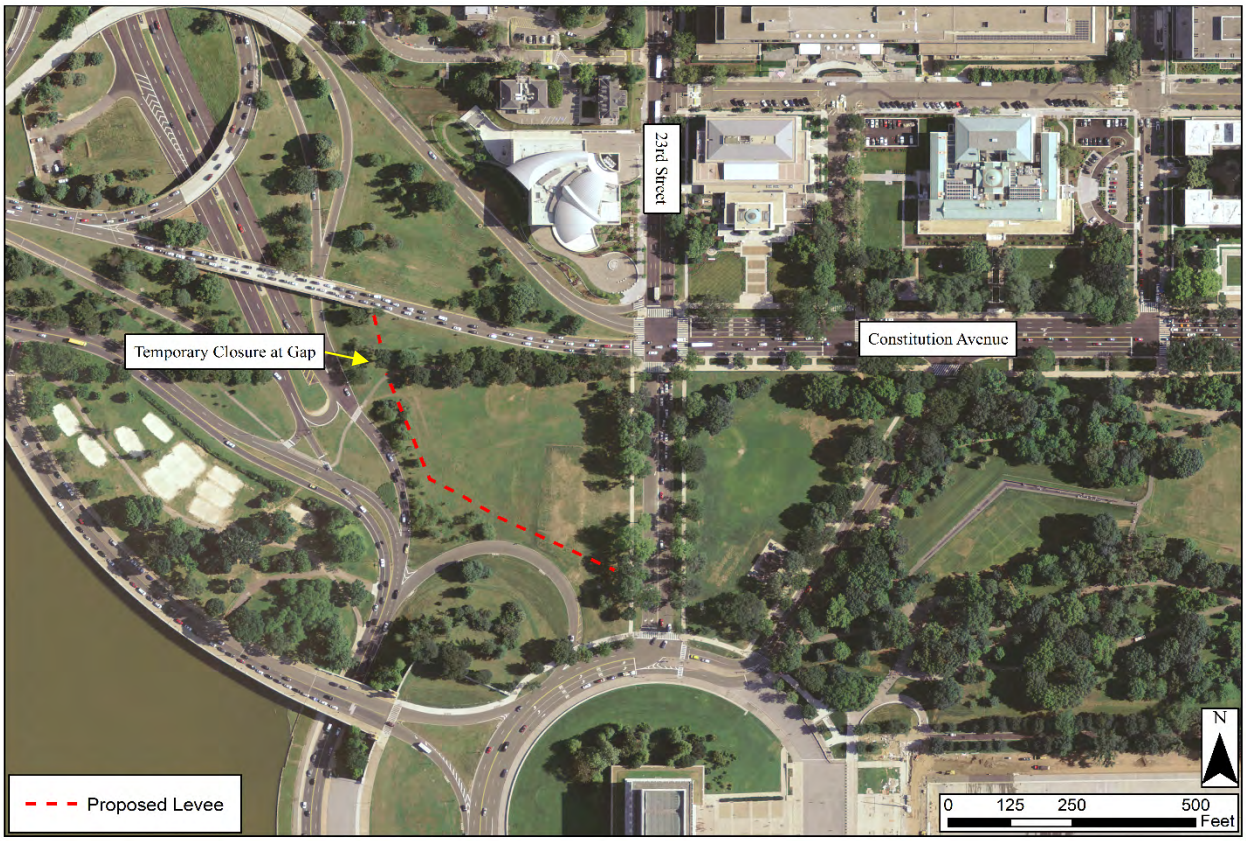

Figure 2-3: 23rd Street and Constitution Avenue Conceptual Project Plan View.

2.2.2 Closure Incorporated into NDSDS Memorial

It is possible that FRM features would be incorporated into the design of the future NDSDS Memorial. The memorial and or its grounds could include earthen and or built environment (structural) features to provide the needed level of FRM. In that event, USACE, NPS and other

[13] Equivalent to 2013 plans for this site.

stakeholders would coordinate to determine an acceptable FRM solution[14]. No figure is provided because this possibility has not been explored in detail.

2.3 Differences Between Proposed Action and Actions Evaluated in Previous NEPA Documents

The currently proposed action as described above for the levee improvements north of the Reflecting Pool and new berm at the 23rd Street and Constitution Avenue parcel differs in several respects from work proposed in the 2009 NPS EA and 1992 USACE EA. The 2009 NPS EA identified that low spots along several hundred feet of the levee crest would be levelled out to increase the crest elevation. The 1992 USACE EA stated that remedial grading would be performed along low areas of the existing levee.

The NPS 2009 EA described 23rd Street and Constitution Avenue work as only raising ground levels 1 to 2 feet with the ball fields being avoided. The 1992 USACE EA recommended plan for 23rd Street and Constitution Avenue would place three and a half feet of fill widely in the central and northeastern portion of the parcel to create a broad low berm.

The 1992 EA identifies that fugitive dust would be released when fill is trucked in, as well as from construction activities. Trucking in specification grade fill to raise the levee and construct a berm, and impacts of this upon air quality and traffic, were not covered in the 2009 NPS EA. Additional information on NEPA document differences is provided in Annex B.

[14] Including through preparation of the separate EA being prepared by NPS and Desert Storm War Memorial Association with USACE as a cooperating agency.

3.0 ALTERNATIVES CONSIDERED

Of the FRM projects proposed at NAMA in the 1992 GDM, only a closure at 17th Street has been constructed (Section 1.2). Further detailed development of plans for increasing elevation of the Potomac Park Levee and 23rd Street and Constitution Avenue closure berm languished for many years. Then, in 2013, 65 percent designs for the levee and 23rd Street closure were completed. However, since the 2013 designs were completed there have been changes in proposed future use of the 23rd Street and Constitution Avenue parcel (Section 1.3). Additionally, it was identified in preparation of this EA that the 2013 designs for 23rd Street and Constitution Avenue would not be preferred by NPS (described in Section 3.3 below).

Effects on the 2013 designs of accelerated sea-level rise rates on flood water levels in accordance with USACE requirements (USACE Engineering Regulation 1110-2-8162, and USACE Engineering Technical Letter 1100-2-1) were considered in 2016. The FRM project as proposed in 2013 designs with a top of protection at 18.7 feet elevation should provide sufficient freeboard (1 foot) for the 700,000 cfs event until the sea rises approximately 1.87 feet above its 2015 elevation, which would be expected in the year 2100 under conditions of the USACE medium sea-level rise curve[15]. In the event sea-level rises at a more rapid rate, insufficient freeboard conditions would occur at whatever point in time sea level reaches 1.87 feet above its 2015 elevation.

Analysis of potential effects of climate change that could alter river discharge independently of sea-level rise were not conducted. The 700,000 cfs discharge was authorized by Congress as the design event with one foot of freeboard based on professional judgment using the March 1936 event, rather than based on event frequency. Recent analyses conducted by USACE (Section 1) determined that this discharge would be an extremely rare event (Section 4.1.3). Changes in river flows that could result from climate change for 1 percent annual chance events for which FRM projects are typically designed would still produce flows substantially less than 700,000 cfs. Thus, no detailed analysis of altered river flows from the watershed that could result with forecast climate change was determined to be necessary (USACE Engineering and Construction Bulletin No. 2014-10).

No consideration was given in formulating alternatives to impacts of flooding from interior ponding from precipitation and inadequate pumping capacity in downtown Washington, D.C., as addressing such interior ponding is not included in the project authorization language. Interior ponding could still produce extensive flood damage as occurred in the Federal Triangle in 2006.

3.1 NO FEDERAL ACTION

The FRM project in its existing condition provides FRM for the 1 percent annual chance event. The no action alternative would postpone improving the FRM project at NAMA to meet the 700,000 cfs discharge authorized by Congress until some future date or not improve the project, and therefore postpone or avoid impacts that would be associated with project construction. The existing project features would remain in their current condition, and NPS would install temporary

[15] The medium curve corresponds to a sea-level rise of 1.0 m over the period 1986-2100.

flood closure structures at NAMA before large flooding events as described below (and in Sections 1.1 and 1.2) to protect downtown Washington, D.C.

When the USGS gauge at Wisconsin Avenue is forecast to reach or exceed an elevation of 12.0 feet, NPS would install temporary flood panels at the 17th Street closure structure. NPS would deploy a closure structure (likely bladder and or sandbags) at the 23rd Street location if the flood could meet or exceed the 1 percent annual chance water level. With the 23rd Street and Constitution Avenue sandbag closure and the 17th Street closure installed, the existing FRM project would contain the 1 percent annual chance event and provide the required 3 feet of FEMA freeboard for the downtown District locations otherwise vulnerable to flooding.

In the event a flood event substantially more severe than 500,000 cfs occurs, low areas in the middle and east end of the Potomac Park Levee would possess less than 1 foot of freeboard as was described in Section 1.1. In such an event, NPS would (in addition to undertaking the efforts described above), place a temporary closure structure, likely sandbags, along the Potomac Park Levee crest as was described in Section 1.2.

It is anticipated that full implementation of the temporary closures would provide FRM for the authorized 700,000 cfs event. However, reliance upon temporary closure structures would not meet current USACE nor FEMA requirements. Timely construction of temporary closure structures for extreme flood events could prove to be challenging because of difficulty mobilizing personnel, equipment, and materials in emergency conditions. Also, once constructed, the temporary structure would be at greater risk of failure than a permanent FRM structure. In summary, if the FRM project is not improved, the low-lying areas of the District would remain at risk of flooding from events more severe (less frequent) than the 1 percent annual chance event.

3.2 POTOMAC PARK LEVEE FRM IMPROVEMENTS

The 1992 GDM only considered increasing levee height in place. Alternative means to improve FRM that the levee provides were given reconsideration in preparing this EA. It would be physically possible to improve FRM by other means. Levee height could be increased by construction of a flood wall on its crest or the levee could be relocated elsewhere on NAMA and reconstructed to a higher elevation. However, these alternatives were rejected because they would detrimentally impact aesthetics and likely public use of NAMA. Accordingly, the only viable alternative identified was to improve the levee in accordance with the 1992 GDM designs by increasing levee crest elevation with earth, but with designs developed to a greater level of detail to better consider local conditions.

3.3 23RD STREET AND CONSTITUTION AVENUE FRM IMPROVEMENTS

Formulating alternatives for the 23rd Street and Constitution Avenue parcel for this EA required consideration of possible future uses of the parcel. It is possible that the parcel may be used temporarily for an extended period of time (although not permanently) as a staging ground for

various area construction projects (Section 1.3). In that event the parcel would again become open space in the future and possibly be suitable for future construction of an earthen berm FRM feature as per the 2013 plans.

Since preparation of the 2013 designs, future long-term potential use of the parcel at 23rd Street and Constitution Avenue now includes the selected location of the NDSDS Memorial. This memorial would presumably be built to last for centuries. When the NDSDS Memorial is constructed, it is possible that FRM features could be incorporated into the physical structure of the memorial and its grounds. In that event, the berm as proposed in the 1992 EA would not need to be constructed. Conversely, it is possible that the NDSDS Memorial would be constructed such that it and its grounds would not perform FRM functions. In that event, assuming public access to the memorial would be from 23rd Street and Constitution Avenue, it would be necessary to shift the berm to the south and west side of the parcel.

The 2013 plans would position the earthen berm at the northeast corner of the southwest intersection of 23rd Street and Constitution Avenue. This would require physical removal of several mature American elms along Constitution Avenue and impact the aesthetic character of NAMA that were determined to be of concern to the NPS in preparing this EA. USACE developed this design to eliminate the need for temporary closure measures. In 2017, the study team considered modifying the 2013 designs to protect American elms by leaving a 50 foot gap at the berm's connection to Constitution Avenue. This gap would need to be filled by a temporary closure (such as sandbags). However, NPS did not support any alternative with a berm at the northeastern corner of the parcel because of the effects it would have on the integrity of the NAMA cultural landscape.

In 2018, NPS developed a vision for future use of the 23rd Street and Constitution Avenue parcel for FRM purposes that would better maintain the overall integrity of the NAMA landscape. NPS developed a preferred alternative that would relocate the proposed berm to the west/southwest side of the parcel. Conceptually, this alternative anticipates a need for a 50 foot gap at the northern end of the berm along the southern side of Constitution Avenue to accommodate the American elms. This gap would require temporary closure measures. While this alternative would not eliminate concerns regarding a need for temporary closures, the length of the closure and the risk of failure would be reduced. The NPS would accommodate the temporary closure needs on land under the NPS jurisdiction. USACE and NPS have not prepared plans for this proposed alternative.

If Lincoln Memorial cultural landscape restoration work is undertaken, it is anticipated that such work would be compatible with either constructing the earthen berm with a gap to protect American elms or incorporating the FRM project into the NDSDS Memorial. This landscape restoration work would likely occur immediately along 23rd Street and Lincoln Circle adjacent to the Lincoln Memorial.

3.4 RECOMMENDED PLAN

The no action alternative was rejected because the project would fail to provide FRM that meets USACE adequacy and reliability standards. Downtown Washington, D.C., would remain vulnerable to severe flooding if the temporary closures could not be erected in time or failed. The value of downtown Washington, D.C., to the nation is incalculable because of its political, social, and historical importance. This risk is unacceptable.

Instead, improving the FRM project was selected as the recommended plan. For the existing levee, the alternative of increasing levee height with earth was selected. For the 23rd Street and Constitution Avenue parcel, constructing an earthen berm on the west/southwest side of the parcel with anticipation of a gap at its tie-in to Constitution Avenue to protect American elms was selected as the recommended USACE and NPS plan. However, incorporating FRM features into the NDSDS Memorial would also be a preferred alternative.

Based on topography, FRM improvements at NAMA would provide benefits to a large low-lying area of the downtown District that contains portions of the monumental core, portions of Pennsylvania and Constitution Avenues, and other public and private facilities located south of the U.S. Capitol and north of Fort McNair. Improved FRM for this area is in the national interest.

It should be noted however, that downtown Washington, D.C., still remains vulnerable to flooding from interior ponding as was described in Section 1.1. Flooding from ponding of precipitation or sewer system backup could cause incalculable damage during a severe flooding event even with improvements made to the USACE FRM project.

4.0 AFFECTED ENVIRONMENT

Existing conditions of the potentially affected environment represent the base from which changes discussed in this document are measured in Section 5.0. The potentially affected area included in this draft EA is determined by the nature of the alternatives considered. Because FRM measures evaluated are located at two specific locations in NAMA, these locations and their immediate vicinities are the area of interest focused on in Section 4. For some effects, impacts of FRM improvement work could extend over a greater area and that larger area is then considered.

The potential area to be protected from flooding (indirectly benefit) by the Washington, D.C., Local Flood Protection Project was described in Sections 2 and 3 and is given consideration in Section 5.4.

4.1 PHYSICAL ENVIRONMENT

4.1.1 PHYSIOGRAPHY AND TOPOGRAPHY

NAMA lies in the Coastal Plain physiographic province in the broad valley of the Potomac River.

Historically, much of NAMA south of Constitution Avenue, north of Independence Avenue/Jefferson Drive SW, and west of 4th Street was tidal flats and shallow water of a vanished tidal arm of the Potomac River called Tiber Creek. Beginning in 1882, USACE changed the shape, size, and shoreline of the Potomac River for flood control, to reduce stagnant conditions, and create parkland. Material was dredged from the Potomac River bottom and placed over the former Tiber Creek to create ("reclaim") land. Much of what is now NAMA, including the Reflecting Pool and Potomac Park Levee, overlies these former tidal waters. At 23rd Street and Constitution Avenue intersection, land south of Constitution Avenue was also formerly tidal river bottom.

Today, NAMA possesses nearly flat topographic conditions, other than for the hill that the Washington Monument is located upon. Land to the north of the mall on the north side of Constitution Avenue slopes upward proceeding to the north. Land to the west of the Washington Monument slopes downward towards the Potomac River. Ground elevations on the southern (upstream) side of the Potomac Park Levee are less than on the northern (downstream) side of the levee. Ground elevations on the south side of the levee range from about 8 to 10 feet. On the north side of the levee, ground elevations range from about 15 to 17 feet. Levee crest relief (see Section 1.2.1 for levee description) above ambient ground is several feet on its northern side, but about 10 feet on its southern side. Ground elevation on the southeast side of the 23rd Street and Constitution Avenue intersection ranges from about 15 to 19 feet elevation. Constitution Avenue on both east and west bound lanes just west of 23rd Street has elevations greater than 20 feet.

4.1.2 GEOLOGY AND SOILS

Interbedded layers of gravel, sand, and mud deposited in ancient riverine and estuarine environments underlie the study area at depth. Based on subsurface studies conducted in 2009 at NAMA, bedrock lies approximately 30 to 60 feet below the ground surface in the levee vicinity. By virtue of its former condition as a tidal arm of the Potomac River, NAMA contains riverine and intertidal sediments buried beneath the fill materials that make up the present surface. Additional information on geology and cut and fill history for the sites is presented in the 1992 GDM and 2013 Detailed Design Report.

No areas of soils classified by the U.S. Department of Agriculture (USDA) as important farmland occur in the vicinity of the Potomac Park Levee or the 23rd Street and Constitution Avenue intersection. No farming occurs in either area. The Natural Resources Conservation Service (NRCS) maps no wetland soils as occurring in the vicinity of these areas of interest. Any wetlands that historically occurred have been lost as consequence of cut and or fill activities, as well as drying via redirection of drainage elsewhere.

Historically, a system of canals within the city, called the Washington Canal, provided for navigation between the Potomac River, Chesapeake and Ohio Canal, and Anacostia River through the city by small boats. The canal crossed NAMA approximately along what is today Constitution Avenue. The Washington Canal operated from 1815 until the mid-1800s. The canal was subsequently filled in beginning in the 1870s.

A complex mix of dredged material and fill underlie the Potomac Park levee and proposed 23rd Street closure site. Subsurface investigations conducted in 2009 found fill material thickness ranged from 9 to 21.5 feet in the levee vicinity. The 1996 EA states that approximately 12 to 14 feet of fill was placed in the vicinity of West Potomac Park, which includes the 23rd Street and Constitution Avenue parcel. Placement of dredged and fill material to reclaim Tiber Creek was completed by 1908 (also see Section 4.1.1). Subsequently, additional cut and fill occurred in association with development and construction of West Potomac Park roads and the Lincoln Memorial and Reflecting Pool. This construction was largely completed by 1925. Construction of storm drains and pipes in the vicinity of the levee also disturbed previous fill and soil. Additional road building occurred in vicinity of 23rd Street site in 1930s and 1960s. The proposed closure berm site between the lanes of Constitution Avenue likely contains soils and geologic material that were excavated and moved in construction of the highway, as well as during construction of an underground storm drain in that area (see Section 4.3.5).

All soils in NAMA in the levee and proposed 23rd Street closure vicinities are mapped as Udorthents. This soil type occurs in areas where soils have been cut or filled to depths in excess of two feet. Fill in this soil type includes material added to build up areas for development, recreational use, or highway construction.

4.1.3 HYDROLOGY AND FLOODPLAIN

The Potomac River is freshwater tidal in the NAMA vicinity. The mean tidal range in the Washington Channel northwest of Fort McNair is 2.8 feet (NOAA Station 8594900). Tidal conditions extend only about 1/2 mile upstream in the Potomac River from NAMA (to Theodore Roosevelt Island). Further upstream, the river is nontidal.

No natural surface waters (stream or wetlands) occur in the areas of concern at NAMA (Potomac Park Levee, or 23rd Street and Constitution Ave). Potomac Park Levee has manmade water bodies in close proximity. At Potomac Park Levee, the Reflecting Pool and Constitution Gardens Pond lie to the south and north, respectively, of the levee. Neither of these manmade water bodies has surface connections to other tidal or nontidal waters. The Reflecting Pool can be filled with potable water or water from the tidal basin. Constitution Gardens Pond is filled with potable water and receives some minor stormwater runoff from the surrounding area; it drains to the Tidal Basin.

Constitution Gardens Pond lies about 125 feet north of the levee within Constitution Gardens. The pond is mapped by the National Wetlands Inventory as PUBHx (freshwater pond), and 6.6 acres in size. About 125 feet south of and parallel to the levee lies the Reflecting Pool. The levee lies about 1,000 feet northwest of the Tidal Basin. The latter is mapped as a lake (L1UBH) by the National Wetlands Inventory. The 23rd Street and Constitution Avenue intersection lies about 1,000 feet east of the Potomac River shoreline.

Subsurface investigations in 2009 found groundwater at NAMA about 10 to 15 feet below the current surface (at elevations between 1 and 9 feet).

Downtown Washington, D.C., is vulnerable to flooding originating from the Potomac River, and conditions can be exacerbated by tidal flooding (storm surge) from Chesapeake Bay. In 2015 and 2016, USACE updated hydrologic and hydraulic modeling for downtown Washington, D.C., to better estimate discharges that would occur under various severe infrequent flood events (Table 4-1)[16].

Table 4-1: Frequency and discharge of severe flood events.

Discharge Volume (cfs)	Percent Chance Occurrence Annually	Average Recurrence Interval (years)
700,000	0.1	1,000
603,100	0.2	500
426,900	1.0	100

[16] Detailed information available in the Levee Safety Evaluation Report (Appendix E: Interior Drainage, Risk & Uncertainty, and Sea Level Rise Analysis) prepared in 2016. Riverine discharges producing these flood flows were modeled using data from the U.S Geological Survey gauge on the Potomac River near Washington DC, located near the Little Falls Pump Station. Coastal effects were taken into account by adjusting the starting water surface elevation using data from the Haines Point Tidal gage located on the Southwest (SW) Waterfront of the Washington Channel.

From these discharges (Table 4-1) for extreme flood events, water surface profiles that provide a means to estimate water surface elevations were prepared. Using the new discharges and authorized flow values, modeled water surface profiles have lower water surface elevations for severe flooding in NAMA and Fort McNair areas than was estimated in previous USACE studies (see Section 1.1).

4.1.4 CLIMATE

Washington, D.C., has a humid subtropical climate. Winters are generally cool with light snowfall. Summers are hot and humid. The combination of heat and humidity in the summer brings very frequent thunderstorms, some of which occasionally produce tornadoes. The most violent storms are Northeasters which often affect large sections of the U.S. East Coast. Remnants of hurricanes occasionally track through the area in late summer and early fall, but are often weak by the time they reach inland to Washington.

The National Weather Service reports that based on recordings at Reagan National Airport, the average monthly temperatures in Washington, D.C. over the period 1981-2010 ranged from 36ºF in the coldest month of the year (January) to about 80ºF in the warmest month of the year (July). Precipitation occurs throughout the year, but with seasonal variation. Average annual precipitation is approximately 40 inches; winter is the driest season while spring is the wettest. February is the driest month with annual average precipitation of 2.6 inches. May is the wettest month annually on average, with an average monthly precipitation of 4.0 inches. Snowfall based on monthly averages occurs from November through March, with January and February having average monthly totals of 5.6 and 5.7 inches, respectively. During a typical year, the city averages about 37 days at or above 90ºF and 64 nights at or below freezing. Extreme minimum and maximum temperatures and precipitation totals differ substantially from the averages.

In the Chesapeake Bay Watershed, climate trends in the last two decades have shown wetter conditions, on average, than in previous decades. Increased precipitation has produced higher annual minimum flows and slightly higher median flows during summer and fall. With forecast climate change, hydrologic simulations predict greater wintertime flows and depressed summer flows (Najjar and others, 2010).

The US Department of Agriculture has determined plant hardiness zones across the country useful to determine which plants are most likely to thrive at a given location. Washington, D.C., along the Potomac River, lies in plant hardiness zone 8a, meaning that the average annual extreme minimum temperature over the period 1976-2005 was 10 to 15ºF. Further inland from the rivers, the district lies in plant hardiness zone 7b, meaning that average annual extreme minimum temperature over the period 1976-2005 was 5 to 10ºF.

Increased concentrations of carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) gases produced directly or indirectly as a consequence of human activity are a global concern because of their cumulative indirect impact on climate. The Washington, D.C., Department of Energy & Environment tracks greenhouse gas emissions in CO_2 equivalents in order to measure progress

toward meeting emission reduction goals of the district's comprehensive sustainability plan. According to the District of Columbia Greenhouse Gas Inventory Update 2012-2013, major sources of greenhouse gas emissions in the District include energy used by non-residential buildings (57 percent), transportation (23 percent), residential buildings (17 percent), and solid waste (3 percent). On-road transportation, which includes passenger vehicles, trucks and busses, contributes 94 percent of emissions from the transportation sector. Electricity used by Metrorail contributes 6 percent.

4.1.5 AIR QUALITY

Six criteria[17] pollutants are evaluated by the USEPA under the auspices of the Clean Air Act to determine outdoor air quality in an area. These pollutants can injure health, harm the environment and cause property damage. There are National Ambient Air Quality Standards (NAAQS) for each of the criteria pollutants that apply to the concentration of a pollutant in outdoor air. If the air quality in a geographic area meets or has lower concentration of the pollutant than the national standard, it is called an attainment area; areas that don't meet the national standard are called nonattainment areas.

Areas (by state) that fail to meet the NAAQS for a criteria pollutant are required to develop a state implementation plan (SIP) to improve air quality. A SIP outlines the measures that the state will take to improve air quality, and include emission inventories, air quality projections, and control measures designed to reduce emissions.

Two criteria air pollutants are of particular concern in the District currently: ground-level ozone, and very fine particulate matter (PM2.5). Ground-level ozone is created by sunlight-driven chemical reactions between oxides of nitrogen and volatile organic compounds that themselves derive from emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents. PM2.5 forms in the atmosphere as a result of complex reactions of other pollutants emitted from power plants, industries and automobiles. Particulate matter is also emitted directly from sources such as construction sites, unpaved roads, and smokestacks.

Metropolitan Washington Council of Governments (MWCOG), acting for the District, prepared a SIP for the district and adjacent metropolitan areas in 2004. Once a nonattainment area meets the standards and additional redesignation requirements in the Clean Air Act, USEPA will designate the area as a "maintenance area".

The District was previously designated as a severe nonattainment area under the previous 1-hour ozone national ambient air quality standard (NAAQ). The district was redesignated as being in attainment of the 1-hour ozone standard in 2008. The district was also designated as being in nonattainment of the 1997 annual PM2.5 NAAQS, but then attained that standard in 2009. The

[17] The USEPA calls these pollutants criteria air pollutants because the agency has developed science-based guidelines as the basis for setting permissible levels.

district was redesignated to attainment, and now has a maintenance plan to assure that the PM2.5 standard continues to be met in the future.

MWCOG routinely publishes air quality forecasts with information on particulate matter and ground-level ozone. Generally, air quality in the District is good such that pollution poses little or no risk in cooler weather months. In warm weather months, air quality is often impaired for 10 to 15 days each month such that it poses a moderate health risk for those unusually sensitive to air pollution. Less frequently, air quality is degraded to levels for a day or two a month in warm weather such that it is unhealthy for sensitive groups.

4.1.6 NOISE

NAMA is located in a busy urban setting with notable manmade noises. Vehicular traffic along adjacent roads generates substantial noise. Noises produced by aircraft are also notable. At NAMA events, substantial noise is generated by performers and crowds, amplified music, and fireworks. Natural sounds produced by strong wind and precipitation can mask noises produced by anthropogenic sources when human activities are minimal.

4.2 HABITATS, PLANTS, AND ANIMALS

4.2.1 AQUATIC HABITATS

Potomac Park Levee has manmade water bodies in close proximity, as described in Section 4.1.3. Constitution Gardens Pond provides freshwater pond habitat, and has non-jurisdictional gardened wetland vegetation along the pond margin. The Reflecting Pool is comparable to a swimming pool in physical character and provides minimal habitat for aquatic life. The 23rd Street and Constitution Avenue intersection lies about 1,000 feet east of the Potomac River shoreline. No other waters or wetlands mapped by the National Wetlands Inventory occur in close proximity to the 23rd Street and Constitution Avenue intersection. No wetlands are mapped to occur in NAMA area of interest in the Known Wetlands within the District of Columbia map prepared in 1997 in association with the District's wetlands conservation plan.

4.2.2 VEGETATION

The cultural landscape of NAMA is maintained predominantly as lawn with large mature shade trees, particularly along streets and paths. The use of American elms to line major streets and walkways is specified in historic plans for the area. The grounds include numerous ornamental gardens.

The Reflecting Pool levee is maintained predominantly as mowed lawn without woody vegetation, as the latter presents a threat to levee physical integrity and may cause levee failure. Several trees

are located on the levee edge, however. Mature shade trees occur off the levee parallel to the levee's north and south sides. Along the southern edge of Constitution Gardens in the vicinity of the levee, the predominant landscaping consists of native trees and shrubs planted in an irregular pattern.

Mature American elm trees line the sidewalks along 23rd Street and Constitution Avenue, north of the Lincoln Memorial. The interior of the parcel is used for playing fields and is consequently maintained as lawn. Trees occur at the perimeter of these ball fields along their western edge. Mature shade trees, particularly American elm, are integral to the character of the NAMA cultural landscape.

4.2.3 FISH AND WILDLIFE

Constitution Gardens Pond contains fish. Fish found in the pond could be from past stocking, or illegal release. No recent survey has been conducted to determine species composition or population. There are no fish purposefully stocked in the Reflecting Pool although people illegally place them in the pool (fish are discovered when the pool is occasionally drained).

The Maryland Ornithological Society compiles information on birds at NAMA and vicinity. Migratory birds can occur in large numbers at NAMA in spring and fall. Because it constitutes a large green space in the city, it serves as a magnet to transient birds. The gardens and landscaping around the mall area, and the various gardens are attractive to numerous species of migratory songbirds. Constitution Gardens Pond attracts migratory waterfowl and water birds. NAMA also provides breeding habitat for about 10 species of common birds, according to findings of a 1997 citywide breeding survey.

Mammals of the project areas include species tolerant of urban conditions such as mice, rats, opossums, squirrels, and raccoons.

4.2.4 RARE, THREATENED, AND ENDANGERED SPECIES

An online search of the U.S. Fish and Wildlife Service (USFWS) "Information for Planning and Conservation" (IPaC) website prepared in May 2016 found no federally-listed endangered species or critical habitat for such species occurring in the NAMA area of interest. USFWS concurred with this determination by email. An updated IPaC species list prepared in January 2020 identified that northern long-eared bat should be considered in project effects analysis (Annex A). Northern long-eared bat occurs over a broad area of the eastern US and southern Canada, including the District of Columbia. Its populations have declined due to disease (white-nose syndrome) since 2006, and it was federally-listed as threatened in 2015 (USFWS, 2020). Informal consultation with USFWS in January 2020 determined that there are no known bat habitats of concern (maternal roosts or hibernacula) within the project site (Annex A).

The District of Columbia maintains its own threatened and endangered species list. Three species are currently district-listed: the Bald Eagle, Hay's Spring amphipod, and the Atlantic shortnose sturgeon. Bald Eagle was formerly federally listed, but was delisted in 2007 because the population showed substantial recovery from historic lows in previous decades. Bald Eagle are protected federally under the Bald Eagle Protection Act and Migratory Bird Act. Bald Eagle occasionally forage along the Potomac River and would occur as occasional transients flying over NAMA. No natural aquatic habitats occur in the areas of interest at either site, thus no Hay's Spring amphipod nor shortnose sturgeon could occur there.

4.3 COMMUNITY SETTING

4.3.1 LAND USE AND LAND COVER

Land cover at both the levee and proposed berm site consists of mowed lawn bordered by trees. Additionally, the levee has paved walkways adjacent to it and that cross over it, and the proposed berm area has cement and asphalt walkways bordering Constitution Avenue and 23rd Street.

NAMA in the vicinity of the levee provides open space parkland, memorials/monuments, and gardens used by people as walking, assembly, contemplative, and recreational space. Cultural events are held regularly on NAMA (including folk festivals, musical events, and July 4th fireworks) in close proximity to the levee on its north side. Large crowds sometimes gather along the Reflecting Pool to the immediate south of the levee. The levee is not used by vendors or performers during events, however. Land at the proposed 23rd Street Closure Berm provides open space used for ballgames and Frisbee, while the walkways provide pedestrian routes. The parcel at 23rd Street and Constitution Avenue is used as a temporary construction equipment storage and or staging area when major construction projects are occurring on NAMA and vicinity.

4.3.2 LANDSCAPE AESTHETICS AND VISUAL CHARACTERISTICS

NAMA includes monuments and landscaped grounds with paths, lawns, and tree-lined spaces that create an urban park atmosphere. Lighting and NPS signs border roads and many of the paths consistent with the urban setting. The pattern of streets, paths, and mature trees create visual corridors that have been present since the earliest plans for the city. Today, these visual corridors continue to provide views from key cultural resources such as the Washington Monument.

The levee is located along the northern edge of the Reflecting Pool, a prominent rectangular water feature centered along the axis of the Washington Monument, Lincoln Memorial, and World War II Memorial. At ground level, the levee is a subtle landscape feature when viewed from the west, north, or east because it has relief generally of only several feet above ambient ground and is gently sloped. Many visitors to NAMA do not even realize that a levee is present. Viewed from the south, the levee is visually obvious, but appears to be a very low hill with trees along it that fits conformably into the landscaped setting. Trees along the levee create a visual edge to the levee. The levee is most visible from the south in winter when leaves are off the trees. At ground level, mature trees along the levee obstruct vistas. During times of year when deciduous tree leaves are

off, distance of sight is greater, but by virtue of the large number of mature trees, long-distance views at ground level across and along the levee are limited.

The 23rd Street and Constitution Avenue intersection parcel contains a typical NAMA flat landscape with large lawns lined by trees. The parcel functions as a visual backdrop to the Lincoln Memorial. The proposed berm site between the two lanes of Constitution Avenue lies along a major point of entry from the west to the mall and is highly visible from vehicles entering or leaving Washington, D.C., along this route. The proposed berm site between the two lanes of Constitution Avenue consists of roadside mowed lawn with large trees that is aesthetically consistent with NAMA views, although the multiple separated lanes of Constitution Avenue are prominent.

4.3.3 CULTURAL RESOURCES AND HISTORIC STRUCTURES

Section 106 of the National Historic Preservation Act (NHPA) requires Federal agencies to evaluate the effects that projects have on cultural resources. Cultural resources are locations of human activity, use, or occupation, and can be defined by expressions of human culture and history in the physical environment. These could be prehistoric or archaeological sites, buildings, structures, objects, districts, sacred sites, among others. Cultural resources may also include natural features, plants, and animals that are deemed important or significant to a cultural group or community. Described in this section are cultural resources in the vicinity of the project area.

Archaeological Resources

The modern landscape associated with NAMA reflects the filling of Tiber Creek and the creation of formal landscapes. According to the 2009 NPS EA, because most of the land in the area of potential effect consists of fill deposits and formal landscapes, the potential for archeological sites is limited but not nonexistent. Archeological resources associated with earlier historical landscapes, if present, would be found in buried contexts. The 1992 GDM noted that fill material in the NAMA area of interest is normally more than 7 feet deep.

Structures

Numerous monuments, memorials, and other structures of historical and cultural significance are located on NAMA and vicinity and create a cultural landscape of national significance. In recognition of the national significance of the area and its monuments, numerous individual monuments, memorials, and historic structures are listed on the National Register of Historic Places, and multiple historic districts that contain concentrations of these occur in the project area. Additionally, numerous historic buildings occur along the north side of Constitution Avenue approximately 800 feet north of the Potomac Park Levee.

Multiple nationally iconic structures occur in the vicinity of the proposed FRM project sites (Table 4-2; Figure 4-1). The Lincoln Memorial lies immediately to the south of the 23rd Street and Constitution Avenue parcel. The western terminus of the Potomac Park levee lies approximately

450 feet to the east of the Lincoln Memorial. The levee was constructed parallel to the Reflecting Pool, which lies approximately 75 feet south of the levee. At the east end of the levee lies the WWII Memorial. Immediately to the north of the levee on its eastern portion are the Constitution Gardens. These gardens contain a memorial to the 56 Signers of the Declaration of Independence located on an island in the pond. Along its western portion, the levee is bounded to the north by the Three Servicemen Memorial and the Vietnam Women's Memorial. The Vietnam Veterans Memorial lies somewhat further to the north of the levee along its western portion. The southeastern terminus of the 17th Street closure structure ties in to high ground of the Washington Monument.

Table 4-2: National Icons Located in the Project Area Vicinity

Icon	Year Construction Completed
Washington Monument	1884
Lincoln Memorial and Reflecting Pool	1922 and 1923
Vietnam Veterans Memorial	1982
Korean War Veterans Memorial	1995
World War II Memorial	2004

The proposed project sites lie within the East and West Potomac Parks Historic District. This district is bounded on the north by Constitution Avenue, on the east by 17th Street and extends to the Potomac River on the west (Figure 4-1). This historic district contains all the national icons listed in Table 4-2 except for the Washington Monument (which lies outside district boundaries to the east). The East and West Potomac Parks Historic District contains numerous other National Register-listed historic structures in addition to the icons presented in Table 4-2. Among these, the former Lock Keeper's House for the now buried Washington Canal lies north of the eastern terminus of the Potomac Park levee, and is currently being moved somewhat to the west to better protect it from vehicle and pedestrian traffic. The Washington Monument and large lawns surrounding it between 14th and 17th Streets south of Constitution Avenue lie within the recently proposed Washington Monument and Grounds Historic District (The National Register currently lists the Washington Monument as a structure only).

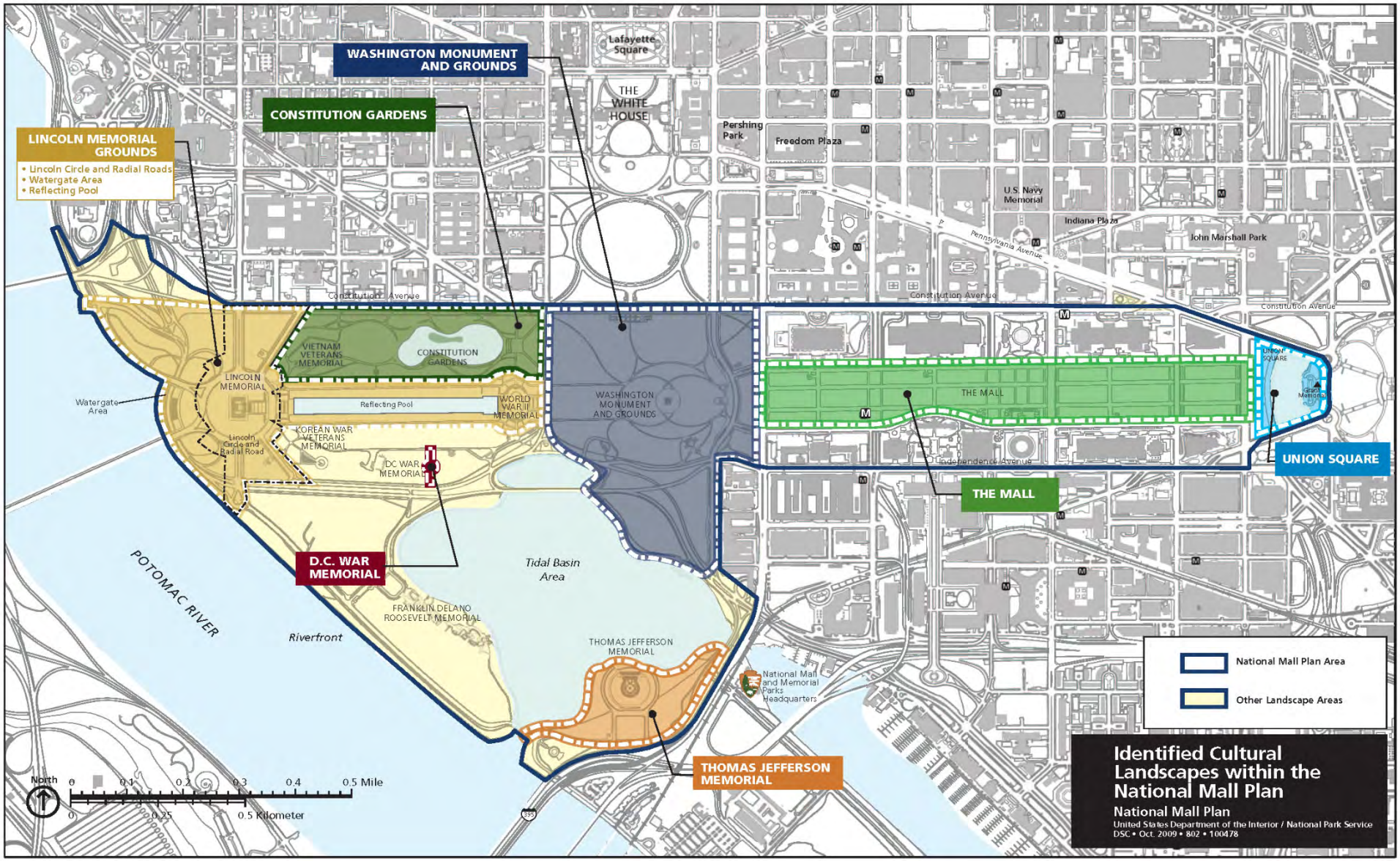

Figure 4-1: National Icons in Vicinity of Project Area. Taken from the NPS National Mall Plan, 2010.

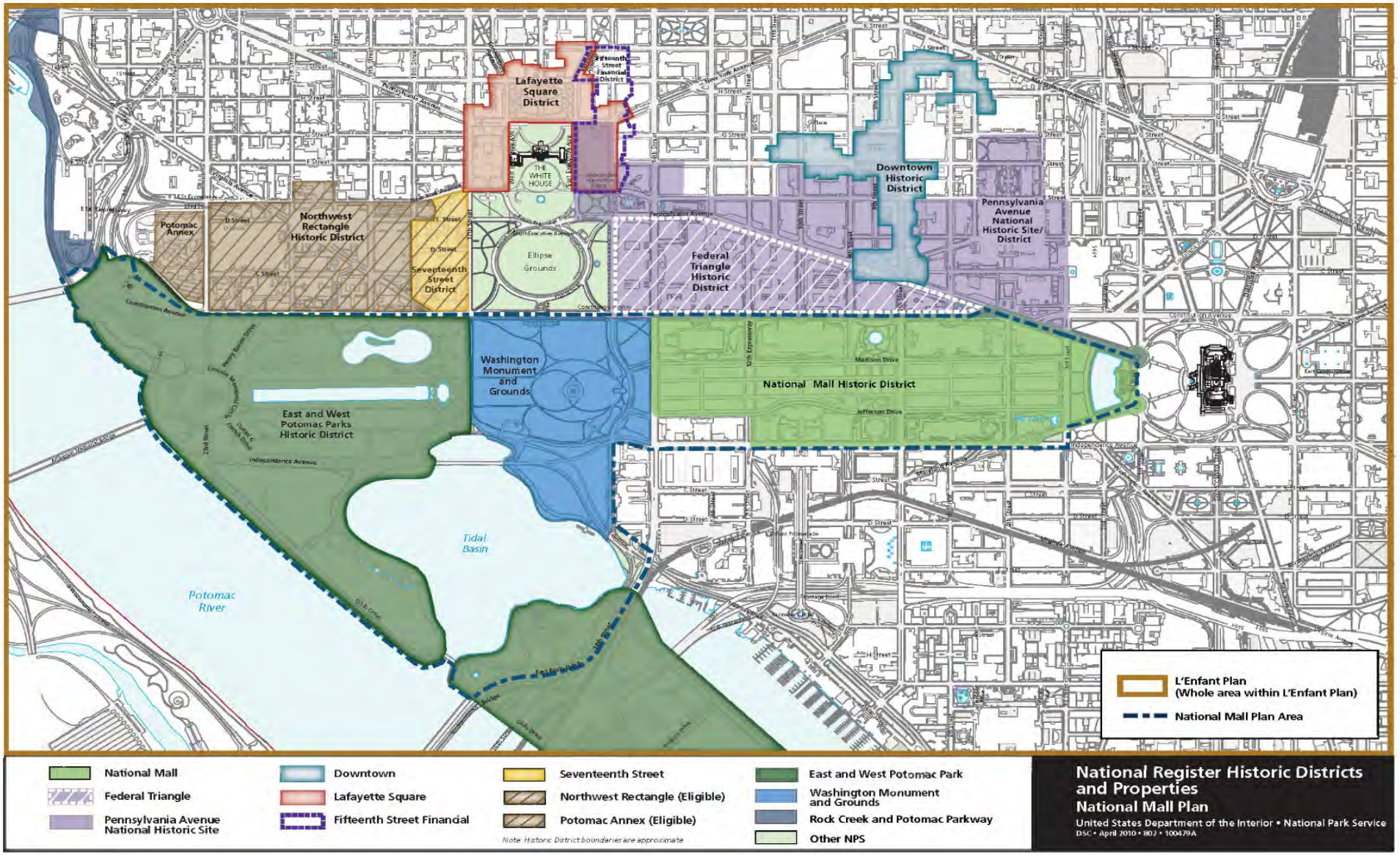

Figure 4-2: National Register Historic Districts. Taken from the NPS National Mall Plan, 2010.

The concentration of historic buildings and statues on the northern side of Constitution Avenue between 17th and 23rd Streets north of the Potomac Park Levee lies within the Northwest Rectangle Historic District. One building within this historic district, the American Pharmaceutical Association Building, lies northeast of the northeast corner of the 23rd Street and Constitution Avenue intersection.

Much of the NAMA area was formed by reclamation of what had previously been tidal water and wetlands in a project initiated in 1882 and completed in 1908 (see Sections 4.1.1 and 4.1.2). The reclaimed land was designated "West Potomac Park" in 1897. The Lincoln Memorial, Reflecting Pool and associated roads and plantings were constructed in the 1910s and 1920s, with development largely completed by 1925 (1992 GDM HTW).

4.3.4 HAZARDOUS AND TOXIC WASTES (HTW)

Concerns over soil contamination focus on health risks from direct contact with the contaminated soil and vapors from contaminants, as well as escape of contaminants into the environment. Soil contamination is typically caused by industrial activity, agricultural chemicals, or improper disposal of waste.

An HTW evaluation of the NAMA proposed project areas was completed in 1992 as part of the GDM. The assessment determined that there is no direct evidence of HTW contamination at the project sites. However, there is uncertainty whether fill and likely contaminated groundwater at the sites contain HTW and whether surface soils could pose a potential HTW concern for construction workers, the environment, and excavated material disposal. No site-specific sampling was identified in preparation of this EA.

As was described in Section 4.1.2, substantial fill material was placed over a former tidal tributary of the Potomac River to create what is now NAMA. Some soil borings into the fill have recovered demolition debris and cinders.

During World War I, large temporary Navy office buildings were constructed south of Constitution Avenue and north of the Reflecting Pool between 17th to 21st Streets. The equipment, maintenance, and machining activities associated with these buildings could possibly have resulted in the release of HTW in the area. The temporary Navy office buildings were removed by 1971, and demolition debris was removed offsite for disposal. Addition of topsoil, regrading, and landscaping in the area occurred during construction of Constitution Gardens, the Vietnam War Memorial, and National World War II Memorial.

The 1992 HTW evaluation identified the Reflecting Pool levee area as being a low risk site because no excavation into underlying fill was required for levee height increase. Conversely, the 1992 GDM evaluation identified the 23rd Street closure area as posing moderate risk. This higher risk level was determined based on need to excavate below existing top soil (into historic fill) for berm construction, plus need to excavate below the water table for manhole construction that could hit

contaminants in groundwater. The 23rd Street and Constitution Avenue project plans still pose a moderate risk for HTW because some top soil stripping and excavation below the water table would take place for sewer and water line work. This risk determination is also true given the future construction of the NDSDS Memorial and any FRM features that may be incorporated into it.

A desktop review for pollutant and contaminant concerns was conducted in 2016 by reviewing the USEPA website Enviromapper. This website provides information about EPA-regulated hazardous waste, toxic and air releases, and water discharges, as well as impaired surface waters. Facilities generating pollutants (such as gas stations and municipal public works departments) as well as contaminated sites (such as superfund and brownfields) are included in the EPA databases.

EnviroMapper identifies no sites of concern in close proximity to NAMA in the vicinity of the Potomac Park Levee and in the vicinity of the 23rd Street and Constitution Avenue intersection. Somewhat further from the levee, two facilities reporting hazardous waste under the Resource Conservation and Recovery Act (RCRA) were identified: the lock-keeper's house at the corner of Constitution Avenue and 17th Street and the South Interior Department building on the north side of Constitution Avenue. EnviroMapper contains no information on HTW associated with former Navy activities on NAMA.

4.3.5 TRANSPORTATION AND NAVIGATION

Washington, D.C., has a complex surface transportation network consisting of roads, surface rail, and subway rail. Roads support private and public transportation of people and goods. Surface rail provides for public transportation and transportation of goods. Subway (Metro) rail provides public transportation. Reagan National Airport lies about 2 miles south of NAMA on the west bank of the Potomac River. Dulles Airport lies approximately 20 miles west of NAMA. Military airports also occur in the area. Joint Base Andrews lies about 10 miles southeast of NAMA. Joint Base Anacostia-Bolling (which has only rotary aircraft) lies about 3 miles to the south of NAMA on the east bank of the Potomac River.

A Metro subway stop lies about 0.7 miles east of the eastern end of the levee at 12th Street and Independence Avenue. Washington, D.C., Metropolitan Area Transit Authority operates a network of bus routes in the city. DC Metro Bus Maps depict several bus routes that utilize Constitution Avenue: the DC Circulator, H1, L1, and 7Y.

Roads in NAMA and vicinity have substantial vehicular traffic (Table 4-3). This includes commercial, commuter, and visitor traffic. Constitution Avenue and 23rd Streets are major commuter roads in/out of the city from Virginia. Washington, D.C., classifies 17th Street, Constitution Avenue, Independence Avenue, and 23rd Street as principal arteries.

Table 4-3: Average daily vehicle traffic. DC Department of Transportation (2016).

Street	Average Daily Traffic Volume
17th Street	18,900
Independence Avenue	36,200
Constitution Avenue	24,000
23rd Street	18,400

4.3.6 INFRASTRUCTURE

Infrastructure includes built features of the environment that provide conduits for communication, energy supply, or water supply, or manage waste or stormwater generated from or passing through the area of interest. An underground 11 foot box culvert combined storm sewer drain (Easby Point Sewer) passes between the east and west bound lanes of Constitution Avenue in the area of the proposed berm. This storm sewer drains to the Potomac River. During periods of heavy rain, this storm drain becomes a combined stormdrain/sanitary sewer. Water lines occur along the southern side of Constitution Avenue. A 3-foot diameter storm drain sewer pipe and an arch culvert cross underneath the levee near its eastern end. Multiple water lines cross the Potomac Park Levee near its center and eastern end.

4.3.7 WILD AND SCENIC RIVERS/ AMERICAN HERITAGE RIVER

Federal and state designation of rivers as wild and or scenic is for the purpose of protecting specific rivers from development that would substantially change their wild or scenic nature. The Potomac River in the Washington, D.C. area is not designated as wild nor scenic by the Federal Government nor by the states of Maryland or Virginia.

American Heritage Rivers are designated by the USEPA to coordinate efforts of multiple governmental entities to further natural resource and environmental protection, economic revitalization, and historic and cultural preservation. The Potomac River is designated as an American Heritage River over its entire length.

4.3.8 RECREATION, VISITOR USE, AND PUBLIC SAFETY

The Potomac Park levee and 23rd Street and Constitution Avenue parcel lie within NAMA managed by the NPS (Figure 1-3). NAMA is one of the most important open spaces in the United State of America. NAMA hosts more than 33 million visitors a year, according to the NPS. The area is adjacent to and visible from some of the nation's most important cultural features, as described in Section 4.3.2. NAMA hosts major cultural events. Visitors come to recreate, commemorate historic people and events, honor our nation's veterans, make their voices heard,

and celebrate our nation's accomplishments and commitments. NAMA provides open space for area residents. Walkways of the NAMA multiuse system of paths provide walking opportunities.

Park rangers conduct frequent inspections of visitation areas. Areas determined to be unsafe are identified and marked off. Park rangers and other staff frequently provide visitors with information or instructions about safety measures and behavior. The majority of visitor incidents within NAMA are related to visitors walking and tripping over curbs, uneven surfaces, or steps to the memorials.

The United States Park Police (USPP) are the law enforcement arm of the NPS in Washington, D.C., and are present on NAMA to protect park resources. Officers patrol by foot, bicycle, motorcycle, horseback, in cruisers and as plainclothes. Central District officers specialize in a variety of enforcement efforts that include crimes against resources and persons, theft from automobiles, drug and alcohol violations, and traffic and vending enforcement. They also assist visitors from around the world to navigate the parks and memorials. In 2016, the USPP handled 19,330 cases on NAMA and other Washington, D.C., parks (Rock Creek Parkway, Dupont Circle, and other parks) that are part of the central station's patrol area.

An asphalt walkway lies along the southern toe of the Potomac Park Levee immediately north of the Reflecting Pool. Visitors are free to also use the lawn on top of the levee. Paved walkways lie along the south side of Constitution Avenue and west side of 23rd Street. Immediately north of the levee lies Constitution Gardens, which contains the historic canal Lockkeeper's House and an artificial lake (Constitution Gardens Pond). Rows of trees surround the park on all sides while lawns and informal groupings of trees create a pastoral setting. There is a terraced paved area at the eastern edge of the lake and curvilinear pathways provide pedestrian access to and passage through the gardens. The levee was incorporated into the design of Constitution Gardens as a feature separating the park from the Reflecting Pool.

The parcel SW of the 23rd Street and Constitution Avenue intersection has an asphalt foot path that runs along the southern side of Constitution Avenue's east-bound lane. The parcel has a concrete walking path along the western side of 23rd Street in the eastern part of the parcel. The parcel has two softball fields with backstops. One backstop is located south of the asphalt foot path paralleling Constitution Avenue about 200 feet west of 23rd Street. The ball field length from the backstop south of the asphalt path is about 270 feet (as measured in Google Earth) to the nearest large trees to the west and southwest. The other backstop is located west of the concrete path paralleling 23rd Street. This backstop has a maximum field length of about 280 feet to the nearest large trees to the southwest. These field lengths are adequate for adult softball. The D.C. Department of Parks and Recreation limits use of the field by permit only from April 1 through September 30. The remainder of the year the fields are open to use on a first-come, first-serve basis. Construction equipment and temporary structures are often located on the west side of 23rd Street occupying substantial portions of the southern end of the ball field. During such conditions, the backstop west of the concrete path along 23rd Street is of limited suitability for ball or completely unusable.

4.3.9 POPULATION AND SOCIOECONOMIC CONDITIONS

NAMA contains no permanent residents or businesses. As described previously, NAMA has numerous visitors that constitute a transient population contributing substantially to the city economy and utilizing goods and services of area businesses, including many mobile businesses located on the margins of NAMA.

5.0 ENVIRONMENTAL CONSEQUENCES

This section of the EA provides an analysis of potential impacts comparing the recommended plan to the no action under non-flood conditions for each of the topics considered in Section 4 "Existing Conditions." The recommended plan (Section 2) for the existing levee north of the Reflecting Pool would increase the levee's height to 19.1 feet elevation. The recommended plan for the parcel southwest of the 23rd Street and Constitution Avenue intersection allows for two possibilities. FRM features could be incorporated into the NDSDS Memorial structure and or grounds. As of March 2020[18], memorial design includes a levee contour across the memorial that connects to a 20 foot elevation contour to the south of the site. This contour does not fully connect to the 20 foot elevation contour to the north of the memorial by Constitution Ave. If the memorial does not incorporate FRM features, the recommended plan would be to construct an earthen berm on the parcel's south/southwestern side. Where effects would differ notably between these two possibilities, then effects are provided by site below. Effects of non-selected alternatives were briefly discussed in Section 3. Effects of the NDSDS Memorial are being evaluated in a separate EA being prepared by NPS and the Desert Storm War Memorial Association. USACE is a cooperating agency in preparation of that EA. Because it has not yet been determined what the design of the memorial will be, it is not possible in this EA to evaluate environmental consequences of construction of the NDSDS Memorial in detail. Accordingly, potential effects of construction of the memorial are considered only in the cumulative impacts section of this EA.

Potential impacts of alternatives are described to the degree applicable in terms of type (beneficial, neutral, or adverse); context; duration (short- or long-term); intensity (negligible, minor, moderate, major); and whether direct or indirect. Direct impacts are those impacts that will occur at each construction site at the time of construction. Indirect impacts are those impacts that occur after construction and/or are removed in distance from the direct impact locations. Cumulative impacts result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts are discussed separately in Section 5.4.

Project designs at the 65 percent completion level for NAMA completed in 2013 prior to preparation of this EA, and information as compiled in the existing condition and description of proposed actions sections of this document serve as the basis for forecast impacts discussed in this section. For those topics for which quantitative data are not available or that require subjective analyses, best professional judgment was used. In general, effects were determined through consultation and collaboration with a multidisciplinary team of USACE and NPS staff. Coordination with other Federal and District of Columbia agencies (Section 6 and Annex A) also provided information to assess impacts.

FRM benefits during severe flood conditions (particularly greater than 500,000 cfs) are addressed in the cumulative effects section as they would be derived from combined effect of the proposed project improvements with already existing project components, other features of the built

[18] Planning of the NDSDS Memorial is underway. For updated information, see https://parkplanning.nps.gov/projectHome.cfm?projectID=62216 and http://www.ndswm.org/

environment, and natural topographic controls. The actual risk of failure of the existing project without improvements in a severe flood event has not been determined.

5.1 PHYSICAL ENVIRONMENT

Project impacts to non-living components of the physical environment are reported in this section. Value judgments over whether these impacts are positive or negative to physical environment topics are included for water quality and air quality based on how these impacts relate to established standards to protect human beings and aquatic life

5.1.1 PHYSIOGRAPHY AND TOPOGRAPHY

For the Potomac Park Levee, two to three feet of height would be added along approximately 2,450 feet of the levee crest to raise it to 18.7 feet in elevation (Figure 2-1 a-d; and see Section 2.1). Raised areas of the levee would have gentle slopes comparable to portions of the existing levee (see Section 1.2). As such, raising the levee would have a minor impact on physiography and topography.

At the 23rd Street and Constitution Avenue parcel, construction of an earthen berm closure would raise ground elevation by up to several feet along the west/southwest side of the parcel, as well as between the east and west bound lanes of Constitution Avenue (Figure 2-4; and see Section 2.2). The earthen berm would have gentle side slopes of several percent, and would constitute a new topographic feature where currently the ground is flat. No change in topography would occur at the northern end of the berm where a gap would be left immediately south of Constitution Avenue. In that gap, a temporary closure structure would be constructed in the event a severe flood is forecast. Impacts to this area due to construction of an earthen berm are expected to be minor.

5.1.2 GEOLOGY AND SOILS

No impacts are anticipated to underlying geologic material because they lay at relatively great depth under the site compared to grading and fill foreseen for construction (Section 2).

For the Potomac Park Levee, the recommended plan would add 8,254 cubic yards of specification-grade impervious fill material to the levee from off-site. This imported specification fill material would subsequently be buried under soil and not exposed at the surface.

At the 23rd Street and Constitution Avenue parcel, construction of an earthen berm would require importing thousands of cubic yards of specification-grade impervious fill material from off-site that would be placed to construct the berm. This fill volume has not yet been estimated. This imported specification fill material would also be buried under soil and not visible at the surface. No impact to soils would occur from construction in the gap at the northern end of the berm left to minimize impacts to American elm trees. However, during severe flood events, a temporary

closure structure would be constructed on top of soils between the north end of the berm and Constitution Avenue. Soils would be anticipated to be compacted somewhat from temporary structure placement, but otherwise recover to pre-project conditions following temporary closure structure removal.

Erosion and sediment control measures during construction would be planned and implemented in accordance with DC DOEE regulations, and the project would be constructed in compliance with stormwater management and sediment/erosion control requirements. Construction sequencing and BMPs would minimize erosion of soils and exposed earth. Following re-establishment of lawn cover, vulnerability to erosion would be minimal as under pre-project conditions.

5.1.3 HYDROLOGY AND FLOODPLAIN

No project features lie in or tie in to tidal or nontidal waters, and no direct effects on surface waters would occur. Thus, the project would have no direct effect on Potomac River flows or water quality. The recommended plan would not impact floodwater flow in the conveyance zone of the special flood hazard area as mapped by FEMA (Annex B).

In coordination with DC DOEE, it will be determined whether measures to manage stormwater runoff during construction are needed to protect downstream waters. Because project features would replace existing earth with earth and existing impervious surface with new impervious surface, no change in runoff or impacts on water quality are anticipated. It is anticipated that construction sequencing and completing small portions of the project at any given time would limit the need for sediment traps, diversion berms, and other disturbances. This would avoid the need for stormwater runoff mitigation by minimizing ground disturbing activity. It is not anticipated that either proposed earthen structure would require any permanent stormwater management facilities. However, if determined to be necessary in review by DC DOEE, stormwater management measures to remediate effects of already unmanaged existing impervious surfaces could be incorporated into project designs subject to close coordination with NPS to ensure that the integrity of the cultural landscape is not detrimentally impacted.

5.1.4 CLIMATE

The quantities of emissions from project construction would not cause measurable climate change. However, emissions from fossil fuel combustion would contribute cumulatively to concentrations of anthropogenic greenhouse gases driving climate change.

The 700,000 cfs event of the 1930s congressional authorization was a best-professional judgment determination of what a probable maximum flood (PMF) might be (although the term PMF wasn't used at that time). Because this event is already an extreme event much less frequent than what most FRM projects are designed for, no consideration was given as to how the frequency of the 700,000 cfs event might change due to climate change.

5.1.5 AIR QUALITY

Combustion of fossil fuels by construction equipment and worker vehicles during construction would directly emit air pollutants of concern, as well as emit precursors of air pollutants of concern. An emissions estimate was prepared for this EA using US Environmental Protection Agency Motor Vehicle Emission Simulator (MOVES) software (Annex B) for the designs included in the 2013 plans assuming that both would be constructed within a year. The 2013 plans for the Potomac Levee height increase are the same as the recommended plan of this EA. However, the 2013 plan would have included additional work: construction of an earthen berm approximately 490 feet long at the northeast corner of the 23rd Street and Constitution Avenue parcel with no gap at its tie-in to Constitution Avenue, and a construction of a berm 75 feet long between the east and west bound lanes of Constitution Avenue. The simulation for the 2013 plan found that total emissions of the pollutants and precursors of concern were all substantially below the de minimis thresholds of concern (Table 5-1).

Table 5-1: Estimated Emissions in Tons of Pollutants of Concern and Their Precursors if 2013 Plans Constructed.

Category	Pollutant			
	NOx	VOC	SO2	PM2.5
de minimis Threshold	100	50	100	100
Recommended Plan Construction	59	14	0.09	1.9

At this writing, it appears likely that the earthen berm proposed to be constructed along the west/southwestern side of the parcel at 23rd Street and Constitution Avenue would probably be somewhat longer, perhaps by 10 to 100 feet and require additional fill material. Total levee and berm length would be increased by perhaps 3 percent from 3,015 feet to perhaps 3,115 feet. This would presumably increase emissions somewhat over the 2013 plan. Simplistically assuming that emissions are proportional to total levee and berm length, then this 100 foot increase in length would produce a 3 percent increase in emissions. Even with this increase, emission would still be below de minimis thresholds. If the levee and berm are constructed at different points in time, emissions would be spread out over a greater period of time, thus reducing annual emissions. If only the levee is constructed (FRM at the 23rd Street and Constitution Avenue parcel provided by the NDSDS Memorial), the emissions would be less than presented in Table 5-1.

While the project would temporarily degrade air quality, impacts would be minor and temporary, and not undermine regional efforts to improve air quality as captured in the SIP. Accordingly, no mitigation measures that could reduce or minimize impacts of air pollutants of concern or their precursors were given consideration. It is anticipated that a soil erosion and sediment control plan will be developed with DC DOEE. This plan would address dust that would be produced during land-disturbing activities. It is anticipated that the plan would include measures to keep fugitive dust to a minimum by using control methods such as the use of water for dust control during

construction operations and from material stockpiles; covering open equipment for conveying materials; and promptly removing spilled or tracked dirt or other materials from paved streets.

5.1.6 NOISE

The project would cause a minor short-term adverse impact upon the character of noise in the construction sites at NAMA and along material transport routes. Noise would be produced by physical construction activities and construction vehicles transporting materials along city roads. The project would be coordinated with district authorities and planned in accordance with District noise ordinances if applicable. Details of construction scheduling are anticipated to be determined during preparation of a traffic management plan in accordance with District government. It is anticipated that construction would typically occur during weekday business hours with minimal to no work occurring on holidays or weekends. Thus, noise produced by construction activities and material transportation would occur at times when substantial noise is already being created by human activity in the city. Following construction, the project features would produce no noise.

5.2 HABITATS, PLANTS, AND ANIMALS

5.2.1 AQUATIC HABITATS

The project would have no effect on aquatic habitats because there are no waters or wetlands that would be directly or indirectly affected by any of the proposed actions. Construction sequencing and any BMPs installed for SWM and sediment/erosion control purposes would protect Constitution Gardens Pond from receiving construction sediment.

5.2.2 VEGETATION

The project would cause a short-term adverse impact to lawn vegetation. Work would disturb or destroy existing lawn within the limits of disturbance at each site. Lawns would re-establish within several months following construction completion, and the land maintained consistent with other lawns of NAMA. No indirect impact to lawn vegetation outside of the construction area would be expected. Details of impacts to vegetation at the staging area have not been determined because that site has not been selected. At the levee construction area, 4.0 acres of lawn would be impacted. If an earthen berm is constructed along the south/southwest side of the parcel at 23rd Street and Constitution Avenue, perhaps 1 acre of lawn would be impacted (impact area cannot be accurately determined until designs are prepared).

The project would cause a long-term adverse impact to woody landscape vegetation. Based on plans completed in 2013, approximately 55 trees and shrubs along the existing Potomac Park levee that would pose a threat to the structural integrity of the levee would be removed. However, it is expected that this number is an overestimate because removal of some trees from the levee has occurred since 2013. Sites where trees are removed would be planted with non-woody vegetation

such as grass. Annex B provides more information on individual trees that would be affected based on the 2013 plans.

If the berm along the west/southwest side of the parcel at 23rd Street and Constitution Avenue is constructed, mature trees along the berm route would be impacted. Mature American elm are absent from the west/southwest side of the parcel, and it is anticipated that the project would cause no direct impacts to American elm. Depending on where the southern end of the berm ties-in to higher ground, American elms along 23rd Street could be stressed by soil compaction during construction. In the future when the emergency closure temporary is installed at the north end of the berm along Constitution Avenue, soil compaction could occur, which could stress American elms in the immediate area. Stress to American elms from compaction would be a minor to moderate impact. As such, best management practices to avoid this stress would be to keep heavy equipment outside the canopy drip line. Further coordination with NPS will also be undertaken to determine how best to avoid stress to the American elms.

Shrubs or trees may be planted elsewhere in the vicinity if determined to be necessary to meet NPS or Washington, D.C., aesthetic or tree cover initiatives.

5.2.3 FISH AND WILDLIFE

No impacts to fish would occur as no aquatic habitats would be impacted. Construction sequencing and BMPs would control stormwater runoff and meet sediment/erosion control measures as required by DC DOEE and protect Constitution Gardens Pond.

Construction would cause a temporary minor adverse impact to wildlife. Wildlife are anticipated to temporarily relocate away from the project areas. It is anticipated that sensitive wildlife would relocate to other areas of NAMA and surrounding parklands. At the request of NPS, to avoid/minimize impacts to nesting birds and roosting bats, any tree removal would occur to the greatest extent possible during the period August 16th through March 14th. Following construction completion and reestablishment of lawn, urban wildlife would be expected to reoccupy the project sites. Because the area often has substantial human use and activity, wildlife of the project area are anticipated to be largely tolerant of disturbance, and capable to readily reoccupy the site when suitable conditions occur. The proposed action would cause only negligible effects on wildlife populations.

5.2.4 RARE, THREATENED, AND ENDANGERED SPECIES

The USFWS reviewed the proposed action in 2016 and found that impacts to federally-listed resources would be minimal, thus no further coordination on this project was determined to be necessary. The USFWS re-reviewed the project for potential impacts to federally-listed species, with focused consideration of northern long-eared bat, in January 2020. USFWS determined that the project is not likely to adversely affect northern long-eared bat because no known maternal roosts or hibernacula or present, and tree clearing would be less than 15 acres (Annex A).

The project wouldn't affect species listed by Washington, D.C. Bald Eagle may occur, but only as transients.

5.3 COMMUNITY SETTING

5.3.1 LAND USE AND LAND COVER

The project would cause a temporary adverse impact to land use and land cover within the limit of disturbance at the two parcels (Section 2.0). The disturbed area at the levee would be approximately 4.0 acres; the disturbed area at 23rd Street and Constitution Avenue if an earthen berm is constructed would be approximately 1 acre. During construction, public access to and use of the project sites, as well as access and staging areas, would be restricted. Use of the levee and berm would be restricted to construction workers. Passage of construction vehicles would likely require temporary limitations on uses of various trails and sidewalks in the construction areas. Vegetative land cover would be disturbed as was described in Section 5.2.2. Following completion of construction, resumption of previous land use and reestablishment of previous lawn is expected.

5.3.2 LANDSCAPE AESTHETICS AND VISUAL CHARACTERISTICS

A Programmatic Agreement (PA) was developed between USACE, NPS, National Capital Planning Commission, the Commission of Fine Arts, the Advisory Council on Historic Preservation, and the Washington, D.C., Historic Preservation Office to ensure that cultural and historic resources of NAMA are not adversely affected by the proposed action. A PA is an agreement document used as an alternative NHPA Section 106 procedure, typically developed for large or complex, phased projects. The PA covers the cultural landscape and monuments and structures of NAMA, and was signed in December 2018 (Annex B). An appendix to the PA available by request contains annotated photographs showing proposed new levee height along its full length to assist in assessing landscape impacts.

Construction activities would cause a minor and temporary negative impact to landscape aesthetic conditions in NAMA. These effects may be mitigated in coordination with the NPS by installing visual barriers, traffic routing, or undertaking other means to reduce visibility of project actions. Construction would temporarily impact lawns of the cultural landscape

It is anticipated that while the project would be fully compliant with DC DOEE stormwater management and sediment and erosion control requirements, any practices implemented would be reviewed to identify their potential effect to historic properties. USACE and NPS would coordinate with DC DOEE when final project designs are prepared in the future. It is anticipated that final designs would either avoid or minimize impacts that would trigger extensive or intrusive BMPs and thus not adversely affect the cultural landscape.

Following construction and reestablishment of lawn, the increase in height to the Potomac Park Levee would cause only a minor aesthetic impact in that the feature would remain subtle and not recognized to be an FRM structure by many people. The proposed 23rd Street and Constitution Avenue earthen berm would be more visible in that a grass-covered curvi-linear berm at the site with gentle relief would exist where only a flat lawn exists now. During leaf-on conditions in the growing season, trees at various locations on NAMA would limit visibility of the raised levee and berm to only limited vista points on the ground and to various vantage points on monuments where trees do not obstruct the view. During leaf-off conditions, both topographic features would be visible from more vantage points. Although possessing positive relief and visibility, both features would be aesthetically consistent with the pre-project gentle topography and lawn character of the area. Neither structure would change scenic vistas, scenic resources, or visual character or quality of the site and its surroundings. Neither structure would detrimentally impact important visual corridors. The effects of the project would be detectable, but only slightly, and would minimally diminish overall integrity, or affect the character-defining feature(s) of the visual resources and aesthetic environment. Landscape shrubs and trees would be planted along (but not on) the levee and berm as appropriate to partially restore the cultural tree-lined corridor landscape setting. Following completion of construction, features would be managed by NPS consistent with the NAMA Plan and appear visually continuous/consistent with the monument landscape.

5.3.3 CULTURAL RESOURCES AND HISTORIC STRUCTURES

Aesthetic impacts to the landscape independent of specific monuments are covered in Section 5.3.2. As was stated in Section 5.3.2, a PA was developed to ensure that cultural and historic resources of NAMA are not adversely affected by the proposed action. No permanent adverse effects are anticipated due to this project.

The project would cause minor adverse aesthetic impacts to cultural and historic resources, but cause no physical impacts to cultural or historic structures. Limits of disturbance markings and barriers would be set up to ensure that construction activities would not physically impact any of the cultural or historic structures/resources on the mall, including the Lincoln Memorial, National World War II Monument, and Washington Monument.

Temporary adverse impacts to the visual character of the area would occur during construction and be visible in the vicinity of the Lincoln Memorial, Vietnam Veterans Memorial, National World War II Memorial, and Washington Monument. Construction activities would have a temporary, detrimental impact on the visual character of the East and West Potomac Parks Historic District (Figure 4-1). Additionally, construction traffic may temporarily adversely affect the visual character of the proposed Washington Monument and Grounds Historic District, and the Northwest Rectangle Historic District. Following construction completion and grass re-establishment, the berm and levee areas would be mowed lawns equivalent in appearance to pre-project conditions. The minor increase in levee height would not affect views to or from important national cultural or historic structures nor visual corridors, and the cultural landscape of NAMA would return to essentially pre-project conditions.

Because the sites were historically open water of the Tiber Creek, it is unlikely that any archaeological sites exist under the fill that was placed to reclaim the land that is now NAMA. Additionally, the area was disturbed with the construction of the various memorials, temporary Navy office buildings, the floodwall/levee, and Constitution Gardens. Deeper excavations at manhole, water, and sewer main sites would occur in materials already disturbed during construction of these structures. Otherwise, existing fill in the project area, as well as the fill comprising the levee itself, are sufficiently deep that any previously unrecorded prehistoric sites underlying the fill would not be affected by the proposed project improvements.

5.3.4 HAZARDOUS AND TOXIC WASTES (HTW)

Because no HTW materials are believed to be present at the Potomac Park Levee, it is not anticipated that any HTW materials will be encountered. Thus, no environmental or health hazards are anticipated at that site. Material would be evaluated for the presence of HTW at the 23rd Street and Constitution Avenue project site. The 1992 GDM evaluation recommended a preliminary assessment be conducted of surface ground materials that would be disturbed at the 23rd Street and Constitution Avenue closure area. It may be necessary to assess material below the water table. In the event that HTW materials are found to be present, appropriate measures would be taken to minimize risks to workers and the environment.

5.3.5 TRANSPORTATION AND NAVIGATION

The project would cause temporary minor adverse impacts to traffic on the arterial roads of NAMA. Temporary road lane closures and access restrictions may be required, which could impact traffic patterns that would produce additional congestion and delays. These actions could also affect city bus routes.

Construction workers and vehicles would produce increased traffic. An estimate of vehicle traffic that would be produced if the levee north of the Reflecting Pool was increased in elevation and a berm constructed at the northeast corner of the parcel at 23rd Street and Constitution Avenue was conducted. Although that alternative was rejected, the estimate provides information that is still useful for purposes of assessing potential magnitude of traffic effects. Based on an estimate that project work would occur on 142 days if both projects are constructed as described previously, and that 5 workers would travel 30 vehicle miles round-trip per day from work to home, then 21,300 vehicle miles would be traveled by construction workers commuting to the site. Construction vehicles travelling to and from the site would make about 1,150 round-trips with materials and equipment. This would likely equate to about 35,000 miles travelled on area roads. For additional information, see Annex B, “Estimate of Emissions of Clean Air Act Pollutants of Concern”.

As part of the permitting process, the contractor would submit Traffic Control Plans to the District Department of Transportation (DDOT) for review and approval prior to construction. The Traffic Control Plans would include measures, such as detour signs, to safely divert vehicle traffic,

bicycle, and pedestrian flows during temporary off-peak closures, or establish one-way traffic during peak periods to maintain partial peak directional flow. It is anticipated that the DDOT would provide any signalization, signs, and pavement marking improvements required at the adjacent intersections to accommodate increased vehicular and pedestrian traffic that resulted from the diverted traffic within the local area. USACE, NPS, and DDOT would coordinate Public Advisories to notify the public of any detours, delays, and alternate routes including transit. Beyond the "standard" measures for construction, additional mitigation measures may be undertaken by USACE and NPS in coordination with DDOT and the U.S. Department of Transportation (DOT) if necessary. These additional potential mitigation efforts include measures to improve traffic flow at the most heavily impacted intersections, measures to divert traffic to alternate routes before they reach the vicinity of NAMA, and measures to divert trips to transit or shared rides.

Following construction completion, no long-term impacts to traffic would occur at NAMA. Road damage would be repaired by the construction contractor, and no effects upon navigation would occur because no in-water work would occur.

5.3.6 INFRASTRUCTURE

The project would produce temporary adverse impacts to water lines in NAMA, but long-term beneficial impacts to storm drain infrastructure. Modifications to the storm drains would be made to prevent flood waters from going upstream under the levee and berm during severe flooding events. Underground sluice gates contained within existing manholes would be constructed, impacting storm drain culverts and pipes at both sites. Underground utilities in the project areas will be located in advance of construction to plan and implement construction in a manner that poses minimal risk to underground or aboveground utilities and provides for relocation where needed. Water lines in the vicinity of the levee would be relocated as necessary and have valves installed.

5.3.7 WILD AND SCENIC RIVERS/ AMERICAN HERITAGE RIVER

No impacts to the American Heritage Potomac River would occur.

5.3.8 RECREATION, VISITOR USE, AND PUBLIC SAFETY

The project would cause minor and adverse, but temporary impacts to recreation and visitor use, as well as potentially public safety. Some areas may be closed temporarily to recreational use by tourists and local residents during construction. Following construction, recreation, visitor use, and public safety conditions would return to pre-project character.

During construction, appropriate best management practices would be taken to minimize public risk at both construction sites and on construction vehicle travel routes in the vicinity. These include the anticipated use of limit of disturbance fencing at the construction sites, and conducting construction in accordance with an equipment and traffic management plan.

Pedestrian and bicycle use would be restricted within the limits of disturbance at both project sites. Walkways across the levee would be closed, and pedestrian and bicycle travel routes would need to detour around these closures.

In the event a closure berm at 23rd Street and Constitution Avenue with a gap to protect American elms is constructed, use of ball fields in the vicinity of the 23rd Street/Constitution Avenue berm site would likely be restricted during construction. It is anticipated that the ball fields would be repaired at completion of earthen berm construction. It is possible that ball fields would be shifted somewhat to the east/northeast. The earthen berm along the western/southwestern edge of the parcel would effectively serve to define the limits of play.

Visitor use during construction would be restricted within the limit of disturbance at both sites for the entire construction period, on both weekdays and weekends. Construction vehicle traffic would intermittently affect visitor use on roads in proximal areas of NAMA during daylight hours on weekdays. However, construction vehicle traffic would not be expected to impact visitor use during non-business hours nor on weekends or holidays.

5.3.9 POPULATION AND SOCIOECONOMIC CONDITIONS

The project would have a minor beneficial impact on socioeconomic conditions, but no effect on population. During construction, project workers would spend additional money in the project vicinity on food and supplies. Otherwise, the project would have no direct or indirect impact on the local economy. The NAMA project site is not located in close proximity to any communities. Traffic effects (described above) would not disproportionately impact any communities in the area. No adverse impacts to minority or low-income populations would result from the proposed action.

5.4 CUMULATIVE IMPACTS

Several proposed future actions by others will likely act cumulatively with the proposed project to impact NAMA (Section 1.3). At the 23rd Street and Constitution Avenue site these actions by others include NDSDS Memorial construction, probable long-term temporary Potomac Tunnel excavation/drilling, possible incorporation of parcel into Lincoln Memorial grounds rehabilitation, and possible staging area for Arlington Memorial Bridge rehabilitation. The timing of these proposed projects in relation to when the FRM berm would be constructed is not known. If the NDSDS Memorial is designed and constructed before the earthen FRM berm, the memorial design

would need to either include FRM features or allow space for future FRM features[19]. In the event the NDSDS Memorial structure or grounds aren't designed and constructed to incorporate FRM features, it is anticipated that space would be left on the west/southwest side of the memorial in the 23rd Street and Constitution Avenue parcel to allow for future berm construction by USACE/NPS.

For the Potomac Park levee, possible Constitution Gardens rehabilitation, which would increase ground elevation on the north (interior) side of the levee, would be expected to strengthen the levee and thus positively affect the FRM functions of the levee.

Multiple impact topics were considered in this EA that also warrant consideration for potential cumulative impacts to NAMA (Table 5-2). Among these, potential cumulative impacts to the cultural integrity of the NAMA landscape were the most important. Because uses of and development of NAMA are governed by the NPS, Commission on Fine Arts, and the National Capital Planning Commission, proposed FRM project improvements and any other future actions by others (Section 1.3) would be undertaken in a manner that impacts, yet maintains, the character of the cultural landscape and the value of this public open space to the nation while also improving FRM.

Table 5-2: Cumulative Impacts to NAMA.

Topic	Type	Context	Intensity
Physiography/Topography	Neutral	Long-term	Negligible
Geology/Soils	Neutral	Long-term	Minor
Hydrology/Floodplain	Neutral	Long-term	Minor
Climate	Negative	Short-term	Minor
Air Quality	Negative	Short-term	Minor
Noise	Negative	Short-term	Minor
Aquatic Habitats	None	Not applicable	Not applicable
Vegetation	Negative	Long-term	Minor
Fish/Wildlife	Negative	Short-term	Minor
Rare, Threatened and Endangered species	Negative	Short-term	Minor
Land Use/Cover	Negative	Short-term	Minor
Landscape Aesthetics/Visual Characteristics	Negative	Short-term	Minor
Cultural Resources/Historic Structures	Negative	Short-term	Minor
HTW	None	Not applicable	Not applicable
Transportation	Negative	Short-term	Minor
Infrastructure	Beneficial	Short-term	Minor

[19] This topic is anticipated to be considered in the separate EA being prepared by NPS and the National Desert Storm War Memorial Association. In its involvement as a cooperating agency, USACE will focus on FRM at the 23rd Street/Constitution Avenue parcel.

Topic	Type	Context	Intensity
Wild Rivers/American Heritage Rivers	None	Not applicable	Not applicable
Recreation/Visitor Use/Public Safety	Negative	Short-term	Minor
Population/Socioeconomic Conditions	None	Not applicable	Not applicable

The proposed project would also have cumulative long-term positive impacts beyond NAMA. The proposed FRM project would act cumulatively with other ongoing FRM efforts to improve public safety and reduce economic impacts of flooding in downtown Washington, D.C. Future FRM measures anticipated as products of the DC Coastal Study would likely expand the area of Washington, D.C., which has effective FRM. Currently, substantial areas of the city, particularly along the river shorelines, would be vulnerable to flood damage during severe events.

Because of the comparatively vast size of the Potomac River floodplain, exclusion of floodwaters from Washington, D.C., via the Local FRM project would cause no induced flooding elsewhere on the developed or natural floodplain as floodwater would be displaced over a large area. It is anticipated that future FRM measures that might be proposed and constructed under the DC Coastal Study would also have no induced flooding effects elsewhere because of similar circumstances.

6.0 COMPLIANCE WITH ENVIRONMENTAL STATUTES

Because there is no proposed discharge of dredged or fill material into waters of the United States, no 404(b)(1) Analysis was prepared for this EA. No Water Quality Certificate pursuant to Section 401 of the Clean Water Act would be required because no withdrawals of water or direct releases of pollutants into waters are proposed.

In addition to the environmental impacts discussed in this EA, a review of the proposed action has been made with regard to potentially relevant Federal statutes and regulations (Tables 6-1 and 6-2). Because of the location of the Potomac Park Levee and 23rd Street and Constitution Avenue Closure berm within NAMA managed by the NPS, potentially relevant Federal laws and statutes for these project components include a suite of laws and statutes applicable to national parks.

Table 6-1: Compliance of the Proposed Action with Potentially Pertinent Environmental Protection Statutes and Other Requirements of Concern to USACE and NPS.

Federal Statutes	Expected Level of Compliance[1]
Anadromous Fish Conservation Act	Full
Archeological and Historic Preservation Act	Full
Clean Air Act	Full
Clean Water Act	Full
Comprehensive Environmental Response, Compensation and Liability Act	Full
Endangered Species Act	Full
Estuary Protection Act	Full
Farmland Protection Policy Act	Full
Federal Water Project Recreation Act	Full
Fish and Wildlife Coordination Act	Full
Land and Water Conservation Fund Act	Full
National Environmental Policy Act	Full
National Historic Preservation Act	Full
Resource Conservation and Recovery Act	Full
Rivers and Harbors Act	Full
Submerged Land Act	Full
Water Resources Planning Act	Full
Watershed Protection and Flood Prevention Act	Full
Wild and Scenic Rivers Act	N/A
Executive Orders (EO), Memoranda, etc.	
Protection and Enhancement of Environmental Quality (E.O. 11514, 1977)	Full
Protection and Enhancement of Cultural Environment (E.O. 11593)	Full
Floodplain Management (E.O. 11988)	Full
Protection of Wetlands (E.O. 11990)	Full
Environmental Justice (E.O. 12898)	Full
Recreational Fisheries (E.O. 12962)	Full
Protection of Children from Environmental Health Risks and Safety Risks (E.O.13045)	Full
Chesapeake Bay Protection and Restoration (E.O. 13508)	Full
Stormwater Discharges 40 CFR 122.26 (B)(14), 19 Nov 1990	N/A

Table 6-2: Compliance of the Proposed Action with Additional Potentially Pertinent Environmental Protection Statutes and Other Requirements of Concern to NPS.

Applicable Federal Laws and Regulations	Expected Level of Compliance[1]
Flood Control Act of 1936	Full
NPS Organic Act	Full
National Parks Omnibus Management Act	Full
Redwood National Park Act of 1978	Full
Historic Sites Act of 1935	Full
Commemorative Works Act 1986	Full
Parks, Forests, and Public Property, NPS, 36 CFR, 2010	Full
Conservation, NPS, 16 USC Chapter 1	Full
Executive Orders (EO), Director's Orders	
Director's Order 28: Cultural Resource Management	Full
Director's Order 77-2: Floodplain Management	Full
Natural Resources Management Guideline, NPS-77, 1991	Full

1 Levels of Compliance

a. Full Compliance: having met all requirements of the statute, E.O., or other environmental requirements for the current stage of planning.

b. Partial Compliance: not having met some of the requirements that normally are met in the current stage of planning.

c. Non-Compliance: violation of a requirement of the Statute, E.O., or other environmental requirement.

d. Not-Applicable: no requirements for the statute, E.O., or other environmental requirement for the current stage of planning.

7.0 COORDINATION/PUBLIC INVOLVEMENT

In compliance with NEPA, the proposed action has been coordinated with concerned resource agencies and the public. The purpose of coordination is to ensure that environmental and social factors are considered while planning and executing a prudent and responsible action. Annex A contains a summary of coordination efforts, a copy of the study initiation notice, and responses from resource agencies.

USACE mailed out a public notice announcing preparation of the EA by first class mail in March 2016. The public notice was submitted to federal, state, and local agency representatives, elected officials, and leaders of local civic organizations anticipated to have an interest in the project. The public notice was also displayed on the Baltimore District website. The notice requested comments within the concerned agencies' areas of responsibility and citizens' interests by April 24th, 2016. Only limited agency responses were received.

USACE and NPS communicated throughout the action planning process. USACE requested that NPS become a cooperating agency in preparation of the EA by letter in March 2016. USACE prepared draft EA text iteratively and provided it to NPS for review during 2016 and 2017, and again in 2020. USACE incorporated revisions into the draft EA in accordance with NPS comments. USACE and NPS held occasional conference calls and meetings.

USACE coordinated with the USFWS during preparation of this EA to ensure compliance with the Endangered Species and Fish and Wildlife Coordination Acts. USACE coordinated with USEPA and DC DOEE to ensure compliance with the Clean Air Act.

USACE and NPS undertook extensive coordination with National Capital Planning Commission and the Commission of Fine Arts in 2008-2009 when the 17th Street Closure Structure (Section 1.1) was being planned and constructed. USACE and NPS reviewed the proposed improvements described in this EA with these commissions. In spring 2017, USACE and NPS coordinated with the Commission of Fine Arts, National Capital Planning Commission, and DC Historic Preservation Officer regarding the FRM improvements as contained in USACE 2013 plans. From this coordination, it was determined to be necessary to develop a new Programmatic Agreement to ensure that requirements of Section 106 of the National Historic Preservation Act would be met. A consulting parties meeting was held on March 23, 2018 between NPS, CFA, NCPC, DC SHPO, ACHP, DC DOEE, and USACE to develop the new PA. This meeting corroborated the need for a new PA and resulted in suggestions regarding the document's content. The PA was signed on December 17th, 2018 (Annex B).

Additional agency and public coordination will occur during agency and public review of this EA, which is anticipated in 2020. This will include coordination with Tribes and Nations representing Native Americans who formerly lived in Washington, D.C.

8.0 CONCLUSION

The environmental and social consequences associated with completion of the Washington, D.C., local FRM project have been evaluated and assessed by USACE and NPS. The alternative of taking no action was compared to the proposed action and the impacts were described and evaluated (Section 3). Undertaking improvements to improve FRM project reliability was selected as the recommended plan. This would include increasing the height of the Potomac Park Levee consistent with improvements originally proposed in 1992. For the 23rd Street Constitution Avenue parcel, the recommended plan is to improve FRM in a manner that would be consistent with future permanent use of the parcel that is at this time undetermined. Improvements to FRM would minimize impacts to mature American elm trees, be in accordance with future cultural landscape restoration efforts at the Lincoln Memorial, and allow for construction of the NDSDS Memorial at the site. Reliance upon a temporary closure at the levee would be eliminated. However, a temporary closure may still be required on a smaller scale at 23rd Street and Constitution Avenue depending upon future permanent use of the parcel. In the event a temporary closure is still required, it would be only on the order of about 50 feet in length instead of the hundreds of feet required currently. Construction of the proposed project would cause a variety of short-term and minor environmental and social consequences (Table 8-1), with minor adverse temporary aesthetic and access impacts to cultural and historic resources being the principal concern. However, following project completion, the FRM project would cause no permanent adverse social or environmental consequences but would instead serve to better protect Washington, D.C., from potentially catastrophic consequences of infrequent severe flooding events. It should be noted, however, that interior ponding risks remain unaddressed and catastrophic flooding resulting from this could occur even with perfect performance of the USACE FRM project.

Table 8-1: Summary Table of Environmental Consequences

Topic (Including Both Direct and Indirect Impacts)	Type of Impact (1)	Duration of Impact (2)	Intensity of Impact (3)
Physiography and Topography	*	Long-Term	Negligible
Geology and Soils	*	Long-Term	Minor
Hydrology and Floodplain	*	Short-Term	Minor
Climate	Adverse	Long-Term	Negligible
Air Quality	Adverse	Short-Term	Minor
Noise	Adverse	Short-Term	Minor
Aquatic Habitats	N/A	N/A	N/A
Vegetation	Adverse	Long-Term	Minor
Fish and Wildlife	Adverse	Short-Term	Minor
Rare, Threatened, and Endangered Species	*	Short-Term	Minor
Land Use and Land Cover	Adverse	Short-Term	Minor

Topic (Including Both Direct and Indirect Impacts)	Type of Impact (1)	Duration of Impact (2)	Intensity of Impact (3)
Cultural and Historical Resources	Adverse	Short-Term	Minor
Hazardous and Toxic Wastes	N/A	N/A	N/A
Transportation and Navigation	Adverse	Short-Term	Minor
Infrastructure	Beneficial	Short-Term	Minor
Wild and Scenic Rivers / American Heritage Rivers	N/A	N/A	N/A
Recreation, Visitor Use, and Public Safety	Adverse	Short-Term	Minor
Aesthetics	Adverse	Short-Term	Minor
Population and Socioeconomic Conditions	N/A	N/A	N/A
Cumulative Impacts	Adverse	Short to Long-Term	N/A to Minor

(1) Type: Adverse, Beneficial, *Neither adverse nor beneficial
(2) Long term (Years), Short term (Months or less), N/A = Not Applicable
(3) Intensity: Negligible, Minor, Moderate, Major. * = Change that is neither + or –

In light of the minor and short-term effects described above, and the anticipated lack of concerns from federal and state environmental agencies based on responses to the study preparation notice, it has been determined that the preparation of an Environmental Impact Statement is not warranted. A Finding of No Significant Impact (FONSI) was prepared, a copy of which is provided at the beginning of this EA.

NPS has determined that implementation of the USACE/NPS selected alternative will not constitute an impairment of the resources or values of NAMA. As described above, adverse impacts anticipated as a result of implementing the selected alternative on a resource or value whose conservation is necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, key to the cultural or natural integrity of the park, or to opportunities for enjoyment of the park, or identified as significant in relevant NPS planning documents, will not constitute impairment. This conclusion is based on consideration of the park's purpose and significance, a thorough analysis of the environmental impacts described in the EA, the comments provided by the public and others, and the professional judgment of the decision-maker guided by the direction of the NPS *Management Policies 2006*.

It is anticipated that FRM features would either be incorporated into the NDSDS Memorial structure and its grounds or that the proposed berm would be shifted riverward (along the southwest side of the parcel) to provide equivalent flood risk reduction. In the event that future alterations are made to the Constitution Gardens prior to the levee improvement, it is anticipated that the design of the garden improvements would be undertaken in a manner that has no effect on the levee or that improves FRM by improving the levee at that site.

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Annex A

PUBLIC AND AGENCY COORDINATION

Table of Contents

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Public Notice Announcing Availability of Draft FONSI & EA for Review

The public notice was distributed electronically to a mailing list that NPS provided USACE in January 2020 that NPS had utilized for a recent EA for a separate project at NAMA. (Various NPS NAMA NEPA documents are available at https://parkplanning.nps.gov/ndswm). The emailing list included agencies of particular concern to the proposed project: Washington, D.C., National Capital Parks and Planning Commission, US Fish and Wildlife Service, US Environmental Protection Agency. Additionally, the mailing list included organizations and entities interested in NAMA and Washington, D.C., historical preservation. These included the "Committee of 100 on the Federal City," "DC Preservation League," "National Mall Coalition," and "Preservation Action."

Additionally, the public notice announcing availability of the draft EA for review by agencies, organizations, and the public was posted on the USACE Baltimore District website.

Draft EA Electronic Distribution List

"info@Committeeof100.net" <info@committeeof100.net>,
info@dcpreservation.org,
ATD EOM3 <eom@dc.gov>,
oanc@dc.gov,
mail@preservationaction.org,
Charles Birnbaum <info@tclf.org>,
information@nationalmall.org,
Rebecca Miller <rebecca@dcpreservation.org>,
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Peter May <peter_may@nps.gov>,
Sean Kennealy <Sean_Kennealy@nps.gov>,
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David Maloney <david.maloney@dc.gov>,
Andrew Lewis <andrew.lewis@dc.gov>,
kpenrod@delawarenation.com
Thomas Luebke <tluebke@cfa.gov>,
"F.J. Lindstrom" <flindstrom@cfa.gov>,
"DARWINA L. NEAL" <darwina_neal@verizon.net>,
Yue Li <yue_li@nps.gov>,
sbatcheler@cfa.gov,
Genevieve LaRouche <genevieve_larouche@fws.gov>,
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planning@dc.gov,
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"Teresa Durkin (tdurkin@nationalmall.org)" <tdurkin@nationalmall.org>,
Catherine Townsend <ctownsend@nationalmall.org>,
nsmith@dccouncil.us,
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April Bebault <april_newman@nps.gov>,
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US Army Corps of Engineers
Baltimore District

April 13,2020

PUBLIC NOTICE

Washington, D.C. and Vicinity Flood Risk Management Project Improvements at National Mall and Memorial Parks

ALL INTERESTED PARTIES: The U.S. Army Corps of Engineers, Baltimore District (USACE) and the National Park Service (NPS), have prepared a draft Environmental Assessment (EA) and a Finding of No Significant Impact (FONSI) for proposed construction of improvements to the Washington, D.C., and Vicinity Flood Risk Management (FRM) Project at the National Mall and Memorial Park (NAMA). The existing project provides FRM for portions of the monumental core, portions of Pennsylvania and Constitution Avenues, and for other public and private facilities located south of the U.S. Capitol to Fort McNair. NAMA existing FRM features include a levee between the Lincoln Memorial and Washington Monument adjacent to the reflecting pool; a post and panel closure system at 17th Street; and a temporary closure at 23rd Street (sandbags or inflatable bladders). The existing project also includes a temporary closure at P and Canal Streets at Fort McNair.

The project was authorized by the Flood Control Act of 1936, then modified by the Flood Control Act of 1946. The project provides FRM for downtown Washington D.C., for flood events up to 700,000 cubic feet per second (cfs) from the Potomac River. The original project was constructed in the late 1930s, but underwent modifications in the 1940s, 1970s, and 2010s. Proposed improvements to the NAMA FRM project components at the levee and 23rd Street were evaluated in USACE EAs prepared in 1992 and 1996. However, the improvements were not constructed due to lack of funding. USACE and NPS have prepared this EA because more detailed project designs have been prepared and environmental regulations have changed.

With the 23rd Street and Constitution Avenue temporary closure installed, 17th Street post and panel closure erected, and temporary closures installed, the project would provide FRM for a discharge of up to 700,000 cfs, but with less than the authorized 1 foot of freeboard. Accordingly, the project would require additional temporary closure efforts on the levee crest, likely by sandbag, to provide FRM with adequate freeboard. The temporary closures at 23rd Street and Constitution Avenue, and on the levee crest, are now considered an inadequate means to provide FRM by USACE and the Federal Emergency Management Agency

The proposed improvements would provide long-term FRM to authorized levels with adequate freeboard to increase project reliability under extreme flood events. USACE is the lead agency for the improvement project; NPS is a cooperating agency. The project would be constructed by USACE and maintained by NPS. At the levee, up to 4 feet of earthen material would be added along approximately 2,450 feet of the levee crest to raise it to approximately 18.7 feet elevation[1]. Sluice gates would be constructed in sewer lines crossing under the levee to prevent floodwater from entering into the sewer system. An earthen berm would be constructed along the southwest side of the land parcel on the southwest side of the intersection of 23rd Street and Constitution Avenue. An earthen berm would also be constructed between the east and west bound ramps of the Theodore Roosevelt Bridge at Constitution Avenue on the west side of the intersection. These berms would crest at 20 feet elevation and have gentle side slopes. Approximately 55 trees would be removed that could threaten how the levee or berm functions.

In compliance with the National Environmental Policy Act (NEPA), USACE and NPS have prepared this draft EA and evaluated potential effects on the human environment. All applicable environmental laws have been considered. USACE and NPS have and will continue to coordinate with the National Capital Planning

[1] Elevations are with respect to the North Atlantic Vertical Datum of 1988, which is approximately mean sea level.

US Army Corps
of Engineers
Baltimore District

PUBLIC NOTICE

Commission, District of Columbia Historic Preservation Officer, and other agencies and entities concerned with NAMA. Project construction would cause temporary minor detrimental impacts to air quality, traffic, and noise. When completed, slopes of the raised levee and new berm would be gentle and conform to existing landscape character. The FRM project is designed to manage riverine and tidal flooding only. It will be incumbent upon Washington, D.C. to address remaining flooding threats to the downtown from heavy precipitation that could cause interior ponding and exceed sanitary sewer system pump capability.

USACE and NPS request comments regarding the draft EA and FONSI within 30 days of the date of this notice. For federal and district agencies receiving a copy of this notice, we request that you provide comments concerning your responsibilities. The draft EA and FONSI are available at the USACE website: https://www.nab.usace.army.mil/Missions/Civil-Works/DCandVicinityfloodriskmanagement/ Comments can be submitted electronically to: ethan.a.bean@usace.army.mil. Written comments can be sent to: U.S. Army Corps of Engineers, Attn: Ethan Bean, Planning Division, 10th Floor, 2 Hopkins Plaza, Baltimore, MD 21201. If you have any questions, please contact Ethan Bean by telephone at (410) 962-2173 or by email at the address above.

Daniel M. Bierly, P.E.
Chief, Civil Project Development Branch
Planning Division

Summary Record of Coordination Undertaken During Preparation of Draft EA

Coordination with government agencies and interested organizations for the proposed NAMA action was undertaken in 2016-2017 by USACE during preparation of the draft EA. Table A1 presents a summary of these efforts. Because NPS was a cooperating agency, substantial interagency coordination occurred following establishment of this relationship. Table A1 includes only notable USACE/NPS coordination efforts following cooperating agency establishment. USACE also undertook coordination focused on Fort McNair up until Fall 2016, however that coordination is not included in this environmental assessment in light of the fact that no work is proposed there.

USACE, NPS, and DC Water and Sewer Authority staff coordinated previously in 2009 through 2011 to aid in formulation of 65 percent designs for the NAMA projects. Records of that previous coordination area available in the document: Potomac Park Flood Risk Management Improvements, Phase 2, Washington, D.C., Design Documentation Report, 65% Submittal.

Table: Summary Record of USACE Coordination Undertaken During Preparation of Draft EA. Asterisk indicates copy of document provided in this EA.

Date	Person/Agency External to USACE	Mode of Contact	Summary
January through March 2020	Catherine Dewey and April Newman, NPS	Emails to Chris Spaur	Multiple emails providing update on status of draft EA, as well as NPS review and comments on updates.
February 18, 2020	April Newman and Leslie Frattaroli, NPS	Emails to Chris Spaur	NPS requests any tree removal occur to the extent possible between August 16 - March 14, to avoid interfering with breeding birds and roosting bats, although this time-of-year restriction not identified by USFWS.
January 31, 2020	Christopher Guy, USFWS	Email to CS	CS provided Chris Guy with Information for Planning and Conservation" (IPaC) report (including project description). Chris Guy stated the project as described would not likely adversely affect northern long-eared bat.
March 7, 2018	April Newman, Catherine Dewey, Joel Gorder (NPS)	Email from Dan Bierly	Acknowledged NPS concerns regarding SWM and integrity of NAMA cultural landscape impacts. Provided assurance that USACE would coordinate diligently with DC DOEE and NPS to ensure SWM requirements would not detrimentally impact NAMA. USACE has expectation of sequencing construction iteratively such that temporary SWM requirements would be minimized and no permanent SWM features would be required.

Date	Person/Agency External to USACE	Mode of Contact	Summary
March 5, 2018	April Newman (NPS)	Email to Chris Spaur	Provided DC DOEE contact to further explore SWM requirements, and provided summary of concerns over potential impacts to NAMA.
March 5, 2018	April Newman (NPS)	Email to Chris Spaur	Provided language for draft EA supporting NPS use of 23rd Street/Constitution Avenue parcel for FRM that would shift berm to W/SW side of parcel as preferred plan.
February 26, 2018	April Newman (NPS)	Email from Chris Spaur	Provided information from USACE engineer regarding SWM expectations.
February 16, 2018	April Newman, Catherine Dewey, Joel Gorder (NPS)	Conference Call with Chris Spaur (USACE)	Discussed NPS January 2018 comments on December 2017 draft EA. NPS staff stated that they would have better sense for 23rd Street/Constitution Avenue parcel future following March 2018 public scoping meetings regarding NDSDS Memorial. There is no schedule yet for production of that separate EA. NPS staff stated that NPS for the region need to further discuss their vision for that parcel. They would work on text related to this and provide back to USACE. NPS staff requested that stormwater management requirements that DC DOEE might require be explicitly dealt with in current FRM EA. Chris explained that USACE normally deals with SWM and sediment/erosion control details during preparation of more detailed designs.
February 6, 2018	Catherine Dewey and Mike Commisso (NPS), Andrew Lewis (DC SHPO), Chris Wilson (ACHP), Lee Web (NCPC), Fred Lindstrom (CFA)	Email to parties.	USACE sent email requesting availability for a consulting parties meeting. Purpose of the meeting is to discuss the development of the Programmatic Agreement for Section 106 compliance.
January 25, 2018	Catherine Dewey (NPS)	Email to Ethan Bean.	Provided interest in and guidance on setting up a consulting parties meeting to discuss the development of the new Programmatic Agreement.
January 10, 2018	Catherine Dewey, Mike Commisso (NPS)	Conference Call.	Discussed the development of a new Programmatic Agreement and what project components it should contain. USACE participants were Scott Watson and Ethan Bean.

Date	Person/Agency External to USACE	Mode of Contact	Summary
May 15, 2017	Catherine Dewey, Tammy Stidham, Mike Camiso (NPS)	Meeting at NPS NAMA Headquarters	Discussed meeting with NCPC and CFA to complete Section 106 process, as well as proposed future uses of 23rd Street/Constitution Ave parcel. NPS attendees were Ethan Bean, Jim Bemis, Carol Cain, Rolando Sanidad, Chris Spaur.
Feb 23, 2017	Catherine Dewey, Joel Gorder, Tammy Stidham (NPS)	Conference Call.	Discussed: necessity of EA in light of Ft McNair no longer being part of project, 2009 programmatic agreement and its status and applicability, coordination with NCPC, and review by NPS of rough preliminary FONSI and EA. USACE participants were Anna Compton, Rolando Sanidad, and Chris Spaur.
Jan 23, 2017	Brian Rehn, USEPA	Email to Chris Spaur.	Provided information on pollutants and precursors to address in conformity analysis. Provided information on de minimis thresholds to PM2.5.
Jan 19, 2017	Stephen Ours, Washington DC	Email to Chris Spaur.	Don't need to consider NH3 or VOC precursors for PM2.5 analysis, however do need to consider VOC as O3 precursor. District fully in attainment for CO, conformity analysis doesn't require a CO analysis in this case. Context for de minimis levels important. For new source review, significant thresholds lower than those required for NEPA analysis.
Sep 28, 2016	Jessica Daniels, Washington DC	Email to Chris Spaur.	Response to email from CS. District is no longer in non-attainment for CO. If project is federally funded, do NEPA. If project is district funded, need to prepare DCEPA (EISF) document.
Sep 28, 2016	Emily Chimiak, Washington DC	Email to Chris Spaur.	Response to email from CS. CO air quality studies are required when triggered by EISF response. A draft EA is needed instead of an EISF if NEPA is being submitted.
Aug 16, 2016	Melissa Mertz, NPS	Email to Chris Spaur	Response to email from CS. Did not think there would be significant public comment, meaning that a public meeting was not warranted.
Aug 16, 2016	Melissa Mertz, NPS	Email from Chris Spaur	CS inquired about whether or not holding a public meeting was warranted regarding the levee raising and 23rd Street and Constitution Avenue construction.
Jun 23, 2016	Melissa Mertz, NPS	Email to Chris Spaur.	Reviewed draft FONSI CS had emailed previously. NPS FONSIs typically have more information and include non-impairment determination. Provided example FONSI.
May 5, 2016	Jeff Hinkle, NCPC	Voice message to JH from CS	CS left voice message responding to May 3 email. USACE still interested in comments on public notice.

Date	Person/Agency External to USACE	Mode of Contact	Summary
May 4, 2016	Mark Murray-Brown, NMFS Protected Resources	Letter to Mr. Bierly	No federally listed or proposed threatened or endangered species under NMFS jurisdiction likely to be affected. No ESA Section 7 Consultation necessary.
May 3, 2016	Jeff Hinkle, NCPC	Email to CS	JH sent email inquiring about whether too late to respond to study initiation notice.
Apr 29, 2016	Catherine Dewey and Melissa Mertz, NPS	NAMA site visit with USACE staff	Walked proposed project footprints to discuss potential concerns.
Apr 14, 2016	Catherine Dewey and Melissa Mertz, NPS	Conference call with USACE staff.	Reviewed proposed project and ongoing efforts. Identified need for continuing coordination to determine responsibilities for EA preparation. NPS suggested NCPC should be coordinated with soon, and that they could perhaps become a cooperating agency.
Apr 12, 2016	Christopher Guy, USFWS	Email to CS	Reviewed March 24th letter to USFWS. USACE should re-run IPAC analysis as range of northern long eared bat is now considered to be more limited for the species in this area. If re-running IPAC generates no hits, USFWS concludes that impacts to USFWS trust resources and concludes that impacts will be minimal and no further coordination is necessary.
Apr 8, 2016	Kristy Beard, NOAA	Email to CS	NMFS has no concerns or comments if no in-water work.
Mar 24, 2016	Gay Vietzke, NPS	Letter from Edward Chamberlayne, District Engineer	Requesting NPS to be cooperating agency in preparation of EA.
Mar 24, 2016	NMFS, USFWS, DCFWD, DCWQD, DC Historic Preservation Office	Letters from Dan Bierly	Letters announcing USACE preparing EA for FRM project improvements and requesting information.
Mar 24, 2016	Multiple Elected Officials, Federal and District Agencies and Organizations	Notice from Dan Bierly	Notice announcing USACE preparing EA sent out to mailing list.
Mar 9, 2016	Catherine Dewey, Melissa Mertz, Michael Commisso NPS	CS email	Provided copies of 65 percent design reports for review.

Date	Person/Agency External to USACE	Mode of Contact	Summary
Mar 9, 2016	Jessica Daniels, DC DOEE	CS email	Stated proposed FRM projects don't meet requirements for performing air quality emissions analysis.
Mar 2, 2016	Ned Wallace, NPS	CS left voice mail	Requested NEPA contact.
Mar 2, 2016	Steven Ours and Jessica Daniels, DC DOEE	Email exchange with CS	If an EISF required, going through that process would determine whether or not air quality analysis required. If going through NEPA process, may be exempt from DC Government requirements.
Feb 23, 2016	Ned Wallace, NPS	CS sent email	Requested NEPA contact.
Feb 16, 2016	Olivia Achuko and Ram Tangirala, District DC DOEE	CS sent email	CS requested guidance on appropriate air quality impact assessment for project.
Feb 16, 2016	Jen Desimone, MWCOG	Email to Chris Spaur.	Responding to earlier email from CS. Stated air quality impact determination for this project outside of MWCOG's air quality role for the region. Provided to DOEE contacts.

Spaur, Christopher C CIV USARMY CENAB (USA)

From: Newman, April L <April_Newman@nps.gov>
Sent: Tuesday, February 18, 2020 10:07 AM
To: Spaur, Christopher C CIV USARMY CENAB (USA)
Cc: Cyran, Trevor P CIV USARMY CENAB (USA); Bean, Ethan A CIV USARMY CENAB (USA); Dewey, Catherine; Frattaroli, Leslie M
Subject: [Non-DoD Source] RE: [EXTERNAL] National Mall Project - Northern Long Eared Bat (UNCLASSIFIED)

Good Morning Chris,

This sounds great. I'm surprised USFWS did not bring this up during consultation. Anywho, I'm glad the language will be added. You could say "generally avoid" or "avoid and or minimize to the extent possible". We have guidance to mitigation if the timing restriction cannot be met, however of course we would prefer avoidance.

Thanks again,

April

-----Original Message-----
From: Spaur, Christopher C CIV USARMY CENAB (USA) <Christopher.C.Spaur@usace.army.mil>
Sent: Friday, February 14, 2020 7:19 AM
To: Newman, April L <April_Newman@nps.gov>
Cc: Cyran, Trevor P CIV USARMY CENAB (USA) <Trevor.P.Cyran@usace.army.mil>; Bean, Ethan A CIV USARMY CENAB (USA) <ETHAN.A.BEAN@usace.army.mil>
Subject: RE: [EXTERNAL] National Mall Project - Northern Long Eared Bat (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

April

Trevor and I discussed bird TOY restriction. As NAMA constitutes a big green space in the city, it could be that there's a concentration of native nesting birds* (and perhaps roosting bats [?]), so it could be of bird importance and thus environmentally beneficial to avoid/minimize disturbances during nesting (and roosting [?]). Also, it doesn't seem likely to pose too much challenge schedule-wise. So, we'll add to EA. Note though that USFWS didn't raise need for this TOY restriction (under MBTA authority), although we didn't explicitly ask them.

However, minor double-check. My preference would be to write it as "generally avoid" rather than absolutely avoid as we don't know what the future will bring with regard to other schedule conflicts/challenges. That way, it could allow for some flexibility.

The EA is now at our North Atlantic Division for re-review. Once they approve it, we can release it to the public. We can add language covering TOY restriction regarding nesting birds when we get it back (minor change) just prior to release.

Thanks,

Chris

*(although I don't think to degree of Central Park NY City)

-----Original Message-----
From: Newman, April L [mailto:April_Newman@nps.gov]
Sent: Tuesday, February 11, 2020 1:53 PM
To: Spaur, Christopher C CIV USARMY CENAB (USA) <Christopher.C.Spaur@usace.army.mil>
Cc: Cyran, Trevor P CIV USARMY CENAB (USA) <Trevor.P.Cyran@usace.army.mil>; Bean, Ethan A CIV USARMY CENAB (USA) <ETHAN.A.BEAN@usace.army.mil>
Subject: [Non-DoD Source] Re: [EXTERNAL] National Mall Project - Northern Long Eared Bat (UNCLASSIFIED)

Sounds good.

_____

From: Spaur, Christopher C CIV USARMY CENAB (USA) <Christopher.C.Spaur@usace.army.mil>
Sent: Tuesday, February 11, 2020 1:14 PM
To: Newman, April L <April_Newman@nps.gov>
Cc: Cyran, Trevor P CIV USARMY CENAB (USA) <Trevor.P.Cyran@usace.army.mil>; Bean, Ethan A CIV USARMY CENAB (USA) <ETHAN.A.BEAN@usace.army.mil>
Subject: RE: [EXTERNAL] National Mall Project - Northern Long Eared Bat (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

April

Thanks for forwarding; I hadn't received it. We're uneven in application of TOYs to protect breeding birds; I usually apply them only when there's concentrations of birds present. I will discuss that TOY restriction with folks here and get back with you if there's any concerns over schedule/budget impacts.

Chris

-----Original Message-----
From: Newman, April L [mailto:April_Newman@nps.gov]
Sent: Tuesday, February 11, 2020 8:00 AM
To: Spaur, Christopher C CIV USARMY CENAB (USA) <Christopher.C.Spaur@usace.army.mil>
Subject: [Non-DoD Source] Fw: [EXTERNAL] National Mall Project - Northern Long Eared Bat (UNCLASSIFIED)

Hi Chris,

Not sure if this got to you yet, so I'm forwarding it along. We just switched email programs and there has been some glitches. And than everyone trying to learn a new system.

Hope all is well. Is there a release date for the EA yet?

_____

From: Frattaroli, Leslie M <Leslie_Frattaroli@nps.gov>
Sent: Tuesday, February 11, 2020 7:24 AM
To: Newman, April L <April_Newman@nps.gov>
Subject: Re: [EXTERNAL] National Mall Project - Northern Long Eared Bat (UNCLASSIFIED)

Good morning April,

I apologize for the delay in response. We don't have Northern Long-eared bat roost sites at the National Mall.

We request that any tree removal occur from August 16 - March 14, to avoid interfering with breeding bird and roosting batsw.

Thanks,
Leslie

_____

From: Newman, April L <April_Newman@nps.gov>
Sent: Monday, February 3, 2020 10:00 AM
To: Frattaroli, Leslie M <Leslie_Frattaroli@nps.gov>
Subject: Fwd: [EXTERNAL] National Mall Project - Northern Long Eared Bat (UNCLASSIFIED)

---------- Forwarded message ---------
From: Spaur, Christopher C CIV USARMY CENAB (USA) <Christopher.C.Spaur@usace.army.mil <mailto:Christopher.C.Spaur@usace.army.mil> >
Date: Thu, Jan 30, 2020 at 8:07 AM
Subject: [EXTERNAL] National Mall Project - Northern Long Eared Bat (UNCLASSIFIED)
To: bryan.king@dc.gov <mailto:bryan.king@dc.gov> <bryan.king@dc.gov <mailto:bryan.king@dc.gov> >
Cc: Cyran, Trevor P CIV USARMY CENAB (USA) <Trevor.P.Cyran@usace.army.mil <mailto:Trevor.P.Cyran@usace.army.mil> >, april_newman@nps.gov <mailto:april_newman@nps.gov> <april_newman@nps.gov <mailto:april_newman@nps.gov> >

CLASSIFICATION: UNCLASSIFIED

Dear Mr King:

The US Army Corps of Engineers is planning improvements to the existing USACE "Washington DC Local Flood Protection Project" in the National Mall cultural landscape. USACE is working with the National Park Service and other agencies to plan the project. Work would involve adding earthen material to the existing levee north of the Reflecting Pool, and building a new berm in the parcel southwest of the 23rd Street NW/Constitution Avenue NW intersection. Earth would be hauled in by truck. Woody vegetation within 15 feet of the levee/berm would be cut down and removed. A draft environmental assessment is expected to be released for public/agency review this year.

This project has been in the planning phase for years and previous Endangered Species Act consultation is out of date. A web search for federally listed species using the US Fish and Wildlife Service's "Information for Planning and Conservation" website generates a "hit" for northern long-eared bat. The USFWS Chesapeake Bay Field Office "Endangered Species Project Review" website states that if IPaC identifies northern long eared bat it indicates that the project area is within 150 feet of a known maternity roost tree*. IPaC advises coordination with the applicable state natural heritage program, but doesn't list a heritage program for the District.

USACE will coordinate further with the Chesapeake Bay Field Office to determine if the project could result in prohibited take of northern long-eared bats and identify mitigation measures. However, I also want to determine whether the DC Department of Energy and Environment has information for the National Mall area that could inform consultation with the USFWS, and whether USACE should also include DOEE in coordination with USFWS regarding this project.

Thanks for your help,

Christopher Spaur
Ecologist
Planning Division

*(as the District is documented to have maternity roosts but not identified to have any documented hibernacula - which also generate "hits" in IPaC)

CLASSIFICATION: UNCLASSIFIED

--

April Newman
National Park Service

Environmental Compliance Program Manager

National Mall and Memorial Parks
900 Ohio Drive, SW
<BlockedBlockedBlockedhttps://maps.google.com/?q=900+Ohio+Drive,+SW%C2%A0Washington,+DC+%C2%A020024+Office:+202&entry=gmail&source=g>
Washington, DC 20024
<BlockedBlockedBlockedhttps://maps.google.com/?q=900+Ohio+Drive,+SW%C2%A0Washington,+DC+%C2%A020024+Office:+202&entry=gmail&source=g>
Office: 202-245-4681
Cell: 202-731-7342
CLASSIFICATION: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED

Spaur, Christopher C CIV USARMY CENAB (USA)

From: Guy, Chris <chris_guy@fws.gov>
Sent: Friday, January 31, 2020 11:49 AM
To: Spaur, Christopher C CIV USARMY CENAB (USA)
Cc: Thompson, Julie; Cullen, Kathleen M
Subject: [Non-DoD Source] Re: National Mall Project - Northern Long Eared Bat (UNCLASSIFIED)

There is no known maternal roost within the project site, and the project is smaller than 15 acres. For this reason The project, as described in your email, is not likely to adversely affect northern long eared bat. Should the project change or new information become available We would need to reevaluate this decision. give me a call if you have any questions.

Christopher P. Guy
Chier, Branch of Conservation Planning and Assistance Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, Md 21401
410-573-4529 (office)

443-758-8628 (cell)

_____

From: Spaur, Christopher C CIV USARMY CENAB (USA) <Christopher.C.Spaur@usace.army.mil>
Sent: Thursday, January 30, 2020 9:22 AM
To: Guy, Chris <chris_guy@fws.gov>
Cc: Cyran, Trevor P CIV USARMY CENAB (USA) <Trevor.P.Cyran@usace.army.mil>; Newman, April L <April_Newman@nps.gov>; Bean, Ethan A CIV USARMY CENAB (USA) <ETHAN.A.BEAN@usace.army.mil>
Subject: [EXTERNAL] National Mall Project - Northern Long Eared Bat (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Chris G:

USACE (Michele Gomez and myself) informally consulted with you in ~2016 under the Endangered Species Act regarding proposed improvements to the existing USACE "Washington DC Local Flood Protection Project" in the National Mall cultural landscape. The National Park Service is formally a cooperating agency for the project. This project has been in planning phases for years. The ~2016 ESA consultation is out of date and USACE needs to update it for draft EA public/agency release intended this year.

Work would involve adding earthen material to the existing levee north of the Reflecting Pool, and building a new berm in the parcel southwest of the 23rd Street NW/Constitution Avenue NW intersection. Earth would be hauled in by truck. Woody vegetation within 15 feet of the levee/berm would be cut down and removed. Total number of trees to be removed could be as many as 55 at scattered locations along about 3,000 feet of levee and berm (two parcels combined)*. Trees to be removed would range in diameter from 2 to 25 inches dbh.

A web search for federally listed species using USFWS IPaC generates a "hit" (excerpt attached) for NLEB (NLEB was also identified in ~2016 informal consultation). The USFWS Chesapeake Bay Field Office "Endangered Species Project Review" website states that if IPaC identifies NLEB it indicates for a District of Columbia project that the area is within

150 feet of a known maternity roost tree**. IPaC advises coordination with the applicable state natural heritage program. I sent an email to Bryan King in the DOEE Fisheries and Wildlife Division inquiring whether they have NLEB information and or want to be included in consultation. (I don't know whether the District has a heritage program in the sense that states do).

The IPaC report states that NLEB only needs to be considered for projects that have tree clearing of 15 acres or more. In light of the linear nature of this work and lawns below and between trees where it will occur, I'm not sure how to determine tree clearing acreage as none of the area constitutes woods or forest***. However, the total work area would be about 5 acres, so it's certainly well under 15 acres regardless of how it would be quantified areally.

Please let me know whether we should consult further with USFWS regarding NLEB impacts, and if so, who we should coordinate with on your staff (I recollect hearing that Trevor is no longer working at USFWS CBFO).

Thanks for your help,

Christopher Spaur
Ecologist
Planning Division

*Uncertain at this time whether or not USACE or some other entity would construct berm SW of 23rd Street NW/Constitution Avenue NW intersection. For purposes of ESA consultation, assuming for now it would be USACE.
(as the District is documented to have maternity roosts but not identified to have any documented hibernacula - which also generate "hits" in IPaC) *(some trees contiguous, some not, lots of open mowed lawn under and between trees.)

CLASSIFICATION: UNCLASSIFIED

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
Phone: (410) 573-4599 Fax: (410) 266-9127
http://www.fws.gov/chesapeakebay/
http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html

In Reply Refer To: January 30, 2020
Consultation Code: 05E2CB00-2020-SLI-0489
Event Code: 05E2CB00-2020-E-01273
Project Name: Washington DC LFPP

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
(410) 573-4599

Project Summary

Consultation Code: 05E2CB00-2020-SLI-0489

Event Code: 05E2CB00-2020-E-01273

Project Name: Washington DC LFPP

Project Type: LAND - FLOODING

Project Description: Haul in earthen material by truck to construct berm along western side of parcel SW of 23rd St & Constitution Ave. Add earth material to existing levee on north side of Reflecting Pool to increase height. Woody vegetation within 15 feet of berm/levee to be removed. All work within National Mall cultural landscape.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.890506717234416N77.04900672948672W

Counties: District of Columbia, DC

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis*	Threatened

No critical habitat has been designated for this species.

This species only needs to be considered under the following conditions:

- Projects with a federal nexus that have tree clearing = to or > 15 acres: 1. REQUEST A SPECIES LIST 2. NEXT STEP: EVALUATE DETERMINATION KEYS 3. SELECT EVALUATE under the Northern Long-Eared Bat (NLEB) Consultation and 4(d) Rule Consistency key

Species profile: https://ecos.fws.gov/ecp/species/9045

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER POND

- PUBHx

United States Department of the Interior

NATIONAL PARK SERVICE
National Mall and Memorial Parks
900 Ohio Drive, S.W.
Washington, D.C. 20024–2000

December 18, 2017

Department of the Army
Baltimore District, U.S. Army Corps of Engineers
Attn.: Edward P. Chamberlayne, P.E.
Colonel, U.S. Army
Commander and District Engineer
10 S. Howard Street
Baltimore, MD 21201

Subject: Establishment of the National Desert Storm War Memorial

Dear Mr. Chamberlayne:

The National Desert Storm War Memorial (NDSWM) Association, in cooperation with the National Park Service (NPS), proposes to establish a permanent memorial to commemorate and honor those who, as a member of the Armed Forces, served on active duty in support of Operation Desert Storm or Operation Desert Shield. The United States Congress authorized, in Public Law 113-291, the establishment of the memorial on federal land in the District of Columbia. In Public Law 115-18, the United States Congress authorized the location of the memorial within Area I as defined under the Commemorative Works Act.

In accordance with NEPA, the NPS will prepare an Environmental Assessment (EA) that will evaluate the proposed memorial's site selection and design. The site selection scoping period began on June 23, 2017 and extended through July 24, 2017. The site design scoping period will occur sometime in early 2018. For the EA, the NPS plans to elicit comments through its Planning, Environment, and Public Comment website (parkplanning.nps.gov/nama). Three sites in Washington, DC have been identified for consideration as a site for the NDSWM: the Constitution Avenue Terminus Area near 23rd Street NW, the belvedere at the historic terminus to Constitution Avenue at the Potomac River, and Walt Whitman Park. All three sites are administered by the National Mall and Memorial Parks (NAMA) unit. As part of this proposal, the NDSWM Association would design and construct a memorial at the selected site. The NPS would be responsible for its long-term maintenance.

The NPS, in cooperation with the Association would formally like to invite the U.S. Army Corps of Engineers to participate as a cooperating agency for this proposed action, in accordance with 40 CFR 1501.6 of the National Environmental Policy Act of 1969 (NEPA) should the Constitution Avenue Terminus Area near 23rd Street NW site be selected. The NDSWM Commemorative work will be established in compliance with the Commemorative Works Act (40 U.S.C. Chapter 89).

We look forward to working with you on this project. If you have any questions, please do not hesitate to contact Catherine Dewey, Chief of Resource Management for NAMA at 202-245-4711 or via email at catherine_dewey@nps.gov.

Sincerely,

for
Cassius Cash,
Acting Superintendent

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, U.S. ARMY CORPS OF ENGINEERS
10 S. HOWARD STREET
BALTIMORE, MARYLAND 21201

Planning Division

21 Nov 17

Mr. Cassius Cash
Superintendent
National Mall and Memorial Parks, National Park Service
900 Ohio Drive, SW
Washington, DC 20024

Dear Mr. Cash:

The U.S. Army Corps of Engineers, Baltimore District, (USACE) Washington, D.C., Local Flood Risk Management Project (FRM Project) includes several components located at the National Mall and Memorial Parks (NAMA) managed by the National Park Service (NPS). FRM Project features at NAMA include a levee between the Lincoln Memorial and Washington Monument adjacent to the reflecting pool (the Potomac Park levee), a post and panel closure system at 17th Street, and a temporary closure at 23rd Street (sandbags). NPS is responsible for operation and maintenance of the 17th Street closure system, 23rd Street temporary closure, and Potomac Park levee. USACE inspects the Potomac Park levee and 17th Street closure structure annually to ensure that these structures would perform their FRM functions in event of severe flooding.

The NPS, in cooperation with the National Desert Storm War Memorial (NDSWM) Association, is currently preparing an environmental assessment (Desert Storm EA) addressing site selection and design for the proposed NDSWM. The Desert Storm EA is evaluating the potential siting of the NDSWM in three locations, including at the Constitution Avenue Terminus near 23rd Street, Northwest. This is near the location of the 23rd Street temporary closure.

Pursuant to 40 CFR §1501.6 of the Council on Environmental Quality's regulations for the National Environmental Policy Act (NEPA), as amended, I request that USACE be approved by NPS to participate as a cooperating agency in the preparation of the Desert Storm EA. USACE anticipates that its participation would focus on potential impacts of the NDSWM on the FRM Project (and vice versa) during site selection, and how best to incorporate the FRM Project into the final NDSWM design if the 23rd Street and Constitution Avenue site is chosen. Cooperating agency status would ensure that USACE is brought in on a timely manner prior to decisions being made that could affect the FRM project. It is not anticipated that this relationship will include financial contributions from either party to the other.

If you have any questions or require further information, please contact my action officer, Ms. Amy Guise, Chief, Planning Division, at (410) 962-4900.

Sincerely,

Edward P. Chamberlayne, P.E.
Colonel, U.S. Army
Commander and District Engineer

cc:
Catherine Dewey, NPS Chief Resource Management

MEMORANDUM FOR THE RECORD 7 March 2017

SUBJECT: Minutes from 23 February 2017 telephone conference call. Held to discuss preparation of draft FONSI and EA for proposed improvements to Washington DC FRM project on National Mall.

PARTICIPANTS:

PERSON	ORGANIZATION
Anna Compton	USACE
Catherine Dewey	NPS
Joel Gorder	NPS
Rolando Sanidad	USACE
Chris Spaur	USACE
Tammy Stidham	NPS

Also invited but unable to participate were:

Carol Cain	USACE
Jim Ludlam	USACE
Scott Watson	USACE

MINUTES:

1. Participants introduced themselves and role. Chris is preparing draft FONSI and EA. Rolando is project manager. Anna is former study manager, transitioning study to Carol Cain. Catherine is Chief of Resource Management, National Mall and Memorial Parks. Tammy Stidham is Chief of Planning, National Capital Region. Joel is Regional Environmental Coordinator, National Capital Region under Tammy.

2. Joel questioned whether an EA is needed to be prepared for the National Mall project components if work at Ft McNair no longer included. Joel said that existing conditions and impacts presented in the 2009 EA prepared by NPS may adequately characterize area and likely project effects. Chris said that Annex B in preliminary draft EA that had been emailed to NPS February 17th contained a brief summary of NEPA documents for the project and differences between them (USACE 1992, USACE 1996/7, NPS 2009). Additionally, Chris had emailed out a separate chart with more comparison information that morning, but people may not have gotten a chance to look at it. Chris stated that while this topic (not doing an EA) had not been discussed in Baltimore District following recent elimination of the Ft McNair project components, he doubted that Baltimore District would agree to not doing one. While there probably would be no public benefit of EA preparation, Baltimore District would probably still determine an EA was necessary because air pollutant emissions now need to be estimated for compliance with Clean Air Act (this was not done in previous NEPA documents [2009 EA doesn't cover trucking in fill]), and because passage of time has been > 5 years. Chris said that he would check on this determination that preparing an EA was necessary with planning management and Office of Counsel to confirm this though.

3. The Group discussed the 2009 programmatic agreement and status of coordination with NCPC. (Chris had emailed this to the group the previous day having just scanned in a paper copy). Joel was generally familiar with it but no other USACE nor NPS staff had reviewed the agreement closely. Chris said that study initiation notice dated March 24, 2016 was sent to NCPC and Commission of Fine Arts. We subsequently got one email back from Jeff Hinkle of NCPC on May3, 2016. Jeff had several basic questions, but no comments. Chris called his phone number and left him a voice message but did not receive a response.. The USACE team discussed internally the idea of inviting NCPC to become a cooperating agency on a number of occasions in 2016, however that idea was rejected because we were intending to coordinate with these commissions concurrently with iterative discussions regarding how to proceed with the Fort McNair component of the FRM project. That stalled though as we struggled with how to provide FRM at the fort that wouldn't cause substantial historic resource impacts because the exterior wall there is a historic resource. Accordingly, USACE recent coordination with the two commissions has been minimal. NPS and USACE undertook extensive coordination with these commissions in 2008/9 to produce the May 2009 programmatic agreement. USACE cultural resources lead (Scott Watson) who participated in negotiating the agreement had indicated that the agreement should cover the proposed FRM project improvements at the National Mall (Potomac Park Levee and 23rd St/Constitution Ave berm).

NPS staff asked whether the commissions have seen the 2013 plans. No one knew whether they had. NPS requested that coordination be promptly undertaken with NCPC to ensure they've seen the plans and reviewed them, plus get an extension to the programmatic agreement. USACE staff said they would discuss the matter with Scott. NPS general perspective was that FONSI/EA preparation need to take a step backward to ensure this is resolved before proceeding. Rolando and Anna said USACE would undertake coordination with the commissions promptly, but would like to stick to the current schedule as they believed this review could still be accomplished within ongoing EA preparation process.

4. Chris said that the preliminary draft FONSI and EA are substantially shorter in length than the 2009 NPS. Chris requested NPS staff to thoroughly review the drafts for structure and content. Chris said that he had coordinated preparation of some sections of the EA with Missy Mertz (NPS) but had never sent her the whole thing as if formerly included lots of draft placeholder Ft McNair text; that text has since been deleted and the document now focuses on the National Mall. Chris said that he had included some specific language in the EA that NPS would require based on coordination with Missy, but requested NPS review the draft also for NPS-specific language/information needs that USACE might not have.

Minutes prepared by Chris Spaur. Draft version of minutes written on 2/27 were e-mailed to USACE and NPS conference participants for their review. Comments were received by email from Anna Compton and Rolando Sanidad and were incorporated into the minutes presented above. NPS reviewed the draft but stated in an email on 3/3 that they had no comments.

Spaur, Christopher C CIV CENAB CENAD (US)

From: Dewey, Catherine <catherine_dewey@nps.gov>
Sent: Tuesday, February 07, 2017 1:15 PM
To: Spaur, Christopher C CIV CENAB CENAD (US)
Cc: Mertz, Melissa; Compton, Anna M CIV USARMY CENAB (US); Cain, Carol NAB; Gorder, Joel
Subject: [EXTERNAL] Re: USACE/NPS Washington DC Local Flood Protection Project - draft EA status (UNCLASSIFIED)

Hi Chris,

Thanks for letting us know. Missy is unfortunately leaving us in a couple weeks, so I will be the POC. Can you also please copy Joel Gorder on these e-mails moving forward? He is our Regional NEPA person. I hope we will have adequate time to review the EA properly (3 weeks).

Thanks!
Catherine

Catherine Dewey
National Park Service
Chief of Resource Management
National Mall and Memorial Parks
900 Ohio Drive, SW
Washington, DC 20024
Office: 202-245-4711
Cell:202-510-1117

<Blockedhttp://www.nps.gov/subjects/centennial/images/NPS-Centennial-E-Mail-Signature-with-Goal-11-24-14.jpg>

On Tue, Feb 7, 2017 at 10:50 AM, Spaur, Christopher C CIV CENAB CENAD (US) <Christopher.C.Spaur@usace.army.mil <mailto:Christopher.C.Spaur@usace.army.mil> > wrote:

CLASSIFICATION: UNCLASSIFIED

Missy and Catherine

We've determined that no work is necessary at Fort McNair. So, EA now will only include work at National Mall. We anticipate having internal draft EA for you to review by the last week of March. Please set aside some time in your schedules to review this then. If you have any questions, give me a yell.

Chris
CLASSIFICATION: UNCLASSIFIED

Spaur, Christopher C CIV CENAB CENAD (US)

From: Rehn, Brian <rehn.brian@epa.gov>
Sent: Monday, January 23, 2017 8:47 AM
To: Spaur, Christopher C CIV CENAB CENAD (US)
Cc: Fernandez, Cristina; Ours, Stephen (DOEE)
Subject: [EXTERNAL] RE: USACE/NPS Flood Risk Management Project Air Quality - PM2.5 Emissions Estimate Procedure Double-Check (UNCLASSIFIED)

Chris,

Let me add to Stephen's response to your e-mail, from EPA's perspective, with respect to your general conformity questions.

With respect to your first question about whether to address: direct PM, SO2, NOx, VOC, and ammonia as precursors for PM2.5, only direct PM, NOx, VOC, and SO2 must be evaluated for conformity. The applicability annual emissions thresholds are those specified in 40 CFR 93.153. VOC must be evaluated for conformity anyway to address the ozone NAAQS, to a lower 50 tpy applicability threshold. Ammonia has not been determined to a significant PM2.5 precursor in the DC PM2.5 nonattainment area, so it need not be evaluated for conformity purposes.

With regard to your second question, with respect to conformity de minimus thresholds for PM2.5, each precursor myust be individually evaluated and compared to the threshold for that precursor listed in the tables in 40 CFR 93.153(b)(1). If annual emissions in any year of the project schedule exceed the de minimus level for any pollutant (including any precursor), then a conformity demonstration must be completed showing that conformity has been determined, per 40 CFR 93.158. In practice, this means emissions for each year that annual emissions exceed the thresholds are fully mitigated or offset (to zero) for each year of the project for which the threshold has been projected to be exceeded.

The conformity analysis is only part of the EIS review, and the air pollutants reviewed under the EIS review will be broader than that of the conformity requirements. I am only referring here to the conformity questions you asked and not the broader EIA review. Please let me know if you have further questions.

Brian Rehn
Acting Associate Director
Office of Air Program Planning
Air Protection Division
EPA Region III
(215) 814-2176

-----Original Message-----
From: Ours, Stephen (DOEE) [mailto:stephen.ours@dc.gov]
Sent: Thursday, January 19, 2017 2:06 PM
To: Spaur, Christopher C CIV CENAB CENAD (US) <Christopher.C.Spaur@usace.army.mil>
Cc: Fernandez, Cristina <Fernandez.Cristina@epa.gov>; Rehn, Brian <rehn.brian@epa.gov>
Subject: RE: USACE/NPS Flood Risk Management Project Air Quality - PM2.5 Emissions Estimate Procedure Double-Check (UNCLASSIFIED)

Chris,

I will preface this with the fact that I am not a NEPA expert. It is a federally administered program and we really don't have much relevant expertise in-house. This being said, I will try to answer your questions to the best of my knowledge. I have also copied this to Brian Rehn and Cristina Fernandez at EPA Region III who might be able to assist. Brian and

Cristina, do you have anything to add to my response or a better contact to refer these questions to (please see the email chain below)?

To answer your first question about ammonia or VOC precursors for the PM2.5 analysis, I think you are correct, though, as you pointed out earlier, you do need to consider VOCs as an ozone precursor.

Regarding CO, you are correct that we are fully in attainment; the 20-year maintenance period is over. My understanding is the same as yours that a transportation conformity analysis does not require a CO analysis in this case. Also, your note is correct that because you are doing a NEPA analysis, an EISF is not required (where we would still require a CO analysis).

With regard to your question of whether the de minimis level for PM2.5 and each precursor individually is 100 tons per year, I do not know the answer to that in the context you are dealing with. That seems very high though. Our New Source Review (NSR) "significant" threshold for PM2.5 is 10 tons per year. The "significant" threshold for SO2 emissions as a precursor to PM2.5 is 40 tons per year, as is the NOx "significant" threshold as a precursor for PM2.5. I know that these are different beasts from NEPA analyses though - so I can't really help with respect to this question.

Regards,

Steve

Stephen S. Ours, P.E.
Chief, Air Quality Permitting Branch
Department of Energy & Environment
Government of the District of Columbia
1200 First Street NE, 5th Floor
Washington DC 20002
Phone: (202) 535-1747
Web: doee.dc.gov

-----Original Message-----
From: Spaur, Christopher C CIV CENAB CENAD (US) [mailto:Christopher.C.Spaur@usace.army.mil]
Sent: Friday, January 06, 2017 10:30 AM
To: Ours, Stephen (DOEE)
Subject: RE: USACE/NPS Flood Risk Management Project Air Quality - PM2.5 Emissions Estimate Procedure Double-Check (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Steve

USACE needs prepare an estimate of emissions for proposed improvements of Washington DC Local Flood Protection Project to ensure compliance with general conformity rules of the Clean Air Act. This would be included in an Environmental Assessment USACE is preparing to ensure compliance with federal NEPA. A project description is contained in first email (3/2/2016) of attached earlier email between you, Jessica, and I.

I'm just trying to make sure that our analysis includes appropriate pollutants and precursors to ensure compliance with law. Two pollutants that I need to double-check on are PM2.5 and CO.

1) For PM2.5 pollutant, I'm presuming our analysis doesn't need to include consideration of VOC or ammonia precursors, as described in email to Jessica below. Is this correct?

2) Formerly, Washington, D.C., was in nonattainment of the 1994 CO NAAQS. After meeting the standard in 1996, Washington was required to maintain compliance for 20 years. That 20-year period ended in March 2016. Accordingly, the District is in full attainment for CO and is no longer in maintenance status. Presumably, USACE doesn't need to include consideration of CO as a pollutant. Is this correct? (Note that an email from Emily of your staff [attached] indicated that this might be needed anyway for a district EISF. However, because USACE is preparing a federal environmental assessment, my understanding is that we would not need to prepare a district EISF.)

Thanks for your help,

Chris

-----Original Message-----
From: Ours, Stephen (DOEE) [mailto:stephen.ours@dc.gov]
Sent: Thursday, January 05, 2017 9:28 AM
To: Spaur, Christopher C CIV CENAB CENAD (US) <Christopher.C.Spaur@usace.army.mil>
Subject: [EXTERNAL] FW: USACE/NPS Flood Risk Management Project Air Quality - PM2.5 Emissions Estimate Procedure Double-Check (UNCLASSIFIED)

Mr. Spaur,

Yesterday was Jessica's last day with our Department, so she forwarded me this email from you for follow-up. Can you give me a little background on the context for your PM2.5 emission calculations?

Steve

Stephen S. Ours, P.E.
Chief, Air Quality Permitting Branch
Department of Energy & Environment
Government of the District of Columbia
1200 First Street NE, 5th Floor
Washington DC 20002
Phone: (202) 535-1747
Web: doee.dc.gov

-----Original Message-----
From: Daniels, Jessica (DOEE)
Sent: Thursday, January 05, 2017 9:00 AM
To: Ours, Stephen (DOEE)
Subject: FW: USACE/NPS Flood Risk Management Project Air Quality - PM2.5 Emissions Estimate Procedure Double-Check (UNCLASSIFIED)

Hi Steve,
These are for you!
Thanks,
jessica

_____
From: Spaur, Christopher C CIV CENAB CENAD (US) <Christopher.C.Spaur@usace.army.mil>
Sent: Wednesday, January 4, 2017 10:49 AM
To: Daniels, Jessica (DOEE)
Subject: USACE/NPS Flood Risk Management Project Air Quality - PM2.5 Emissions Estimate Procedure Double-Check (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Jessica

1) As I understand it, under current USEPA policy for addressing PM2.5 precursors (which include sulfur oxides, nitrogen oxides, VOCs, and ammonia), only SO2 and NOx must be evaluated in all regions. Evaluation of VOCs or ammonia are required if the State* or USEPA make a technical demonstration that those particular emissions from sources within the given State significantly contribute to PM2.5 concentrations. As far as I know, this technical demonstration has not been done for Washington, D.C., and presumably USACE doesn't need to estimate VOC or ammonia emissions as part of our PM2.5 emission estimates. Is this correct?

(However, we have to prepare VOC estimate as part of ozone estimate anyway, so only work saved is not needing to do ammonia estimate.)

2) Are de minimis levels for PM2.5 and each precursor individually 100 Tons Per Year?

Thanks for your help,

Chris

*In this case, of course "state" equivalent to Washington, D.C.
CLASSIFICATION: UNCLASSIFIED

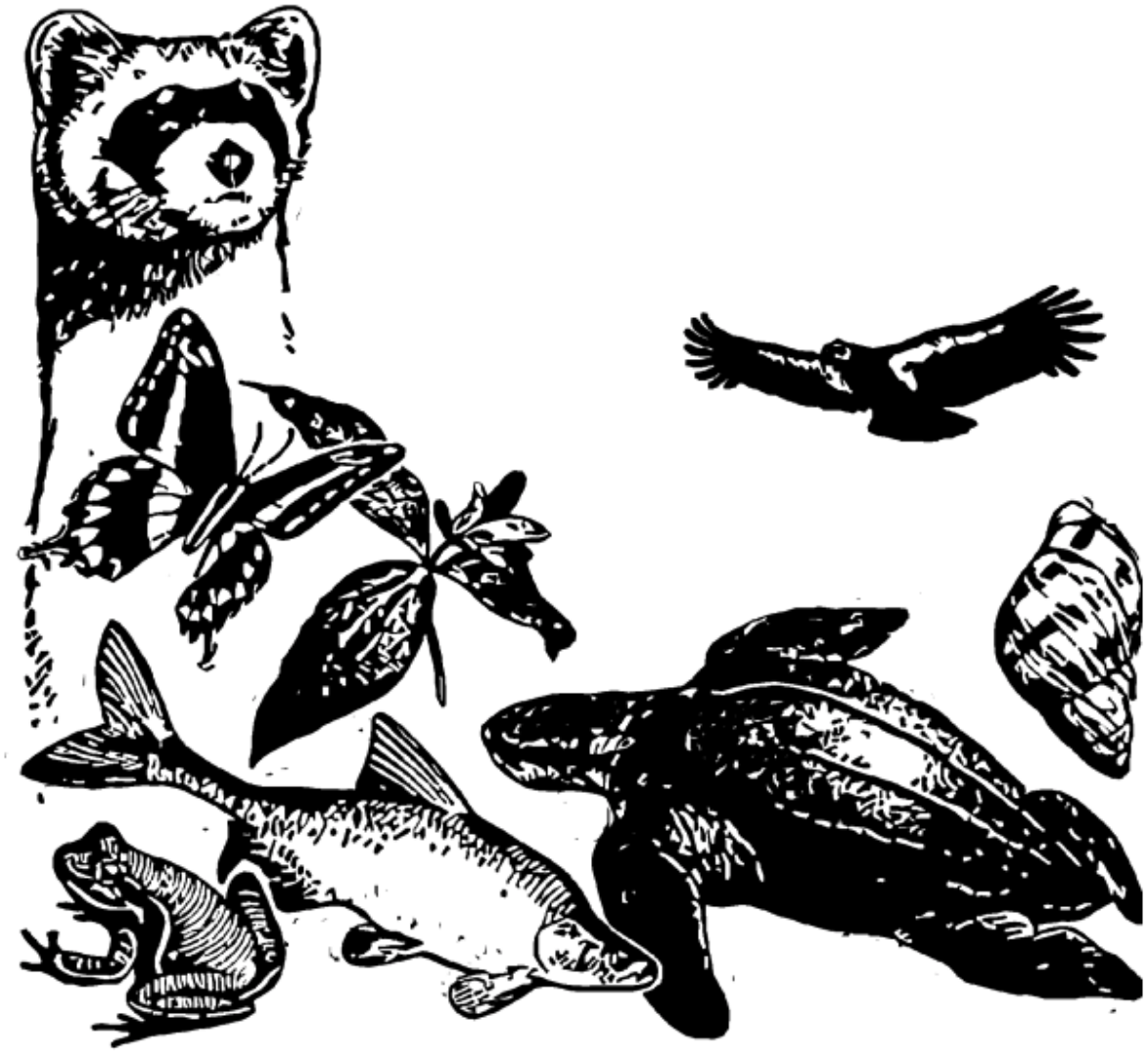
CLASSIFICATION: UNCLASSIFIED

U.S. Fish & Wildlife Service

IPaC Trust Resources Report

Generated May 20, 2016 08:36 AM MDT, IPaC v3.0.7

This report is for informational purposes only and should not be used for planning or analyzing project level impacts. For project reviews that require U.S. Fish & Wildlife Service review or concurrence, please return to the IPaC website and request an official species list from the Regulatory Documents page.



IPaC - Information for Planning and Conservation (https://ecos.fws.gov/ipac/): A project planning tool to help streamline the U.S. Fish & Wildlife Service environmental review process.

Table of Contents

U.S. Fish & Wildlife Service

IPaC Trust Resources Report

LOCATION

District of Columbia County, District of Columbia

IPAC LINK

https://ecos.fws.gov/ipac/project/QGBCT-TPIVJ-AVZJB-7KTIK-4STJFE

U.S. Fish & Wildlife Service Contact Information

Trust resources in this location are managed by:

Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
(410) 573-4599

Endangered Species

Proposed, candidate, threatened, and endangered species are managed by the Endangered Species Program of the U.S. Fish & Wildlife Service.

This USFWS trust resource report is for informational purposes only and should not be used for planning or analyzing project level impacts.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list from the Regulatory Documents section.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list either from the Regulatory Documents section in IPaC or from the local field office directly.

There are no endangered species in this location

Critical Habitats

There are no critical habitats in this location

Migratory Birds

Birds are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

Any activity that results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish & Wildlife Service.[1] There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

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1. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern
  http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Conservation measures for birds
  http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Year-round bird occurrence data
  http://www.birdscanada.org/birdmon/default/datasummaries.jsp

The following species of migratory birds could potentially be affected by activities in this location:

American Oystercatcher Haematopus palliatus — Bird of conservation concern
Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0G8

American Bittern Botaurus lentiginosus — Bird of conservation concern
Season: Wintering
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0F3

Bald Eagle Haliaeetus leucocephalus — Bird of conservation concern
Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B008

Black-billed Cuckoo Coccyzus erythropthalmus — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HI

Blue-winged Warbler Vermivora pinus — Bird of conservation concern
Season: Breeding

Cerulean Warbler Dendroica cerulea — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B09I

Fox Sparrow Passerella iliaca — Bird of conservation concern
Season: Wintering

Gull-billed Tern Gelochelidon nilotica — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0JV

Kentucky Warbler Oporornis formosus — Bird of conservation concern
Season: Breeding

Least Bittern Ixobrychus exilis
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B092

Peregrine Falcon Falco peregrinus — Bird of conservation concern
Season: Wintering
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FU

Pied-billed Grebe Podilymbus podiceps — Bird of conservation concern
Season: Breeding

Prairie Warbler Dendroica discolor — Bird of conservation concern
Season: Breeding

Prothonotary Warbler Protonotaria citrea — Bird of conservation concern
Season: Breeding

Purple Sandpiper Calidris maritima — Bird of conservation concern
Season: Wintering

Red-headed Woodpecker Melanerpes erythrocephalus — Bird of conservation concern
Year-round

Rusty Blackbird Euphagus carolinus — Bird of conservation concern
Season: Wintering

Saltmarsh Sparrow Ammodramus caudacutus — Bird of conservation concern
Year-round

Short-eared Owl Asio flammeus — Bird of conservation concern
Season: Wintering
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HD

Snowy Egret Egretta thula — Bird of conservation concern
Season: Breeding

Willow Flycatcher Empidonax traillii — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0F6

Wood Thrush Hylocichla mustelina — Bird of conservation concern

Season: Breeding

Worm Eating Warbler Helmitheros vermivorum — Bird of conservation concern

Season: Breeding

Wildlife refuges and fish hatcheries

There are no refuges or fish hatcheries in this location

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Wetland data is unavailable at this time.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
55 Great Republic Drive
Gloucester, MA 01930-2276

Daniel Bierly
Chief, Civil Project Development Branch
Department of the Army
Baltimore District, Corps of Engineers
10 South Howard Street
Baltimore, MD 21203

MAY - 4 2016

Re: Washington, D.C. and Vicinity Flood Risk Management Project

Dear Mr. Bierly:

We received your letter on April 4, 2016, regarding the Washington, D.C. and Vicinity Flood Risk Management Project. In your letter, you requested information on the presence of threatened and endangered species and critical habitat listed under the jurisdiction of NOAA's National Marine Fisheries Service (NMFS).

Atlantic and shortnose sturgeon are present in the Potomac River. The New York Bight, Chesapeake Bay, South Atlantic and Carolina DPS of Atlantic sturgeon are endangered; the Gulf of Maine DPS is threatened. Individuals originating from any of these DPS could occur in the vicinity of the project area. Shortnose sturgeon are endangered throughout their range.

However, after reviewing the study area involved with this proposed project, we have concluded that no federally listed or proposed threatened or endangered species under our jurisdiction will be exposed to any direct or indirect effects of the action. Based on this, we do not believe a consultation in accordance with section 7 of the Endangered Species Act is necessary. Should project plans change or new information become available that changes the basis for this determination, further coordination should be pursued. If you have any questions regarding these comments, please contact Ms. Ainsley Smith (978-281-9291; Ainsley.Smith@noaa.gov). Please be aware that we have recently provided guidance and tools on our website (http://www.greateratlantic.fisheries.noaa.gov/protected/section7/) to assist action agencies with their description of the action and analysis of effects to support their determination.

NMFS' Habitat Conservation Division (HCD) is responsible for overseeing issues related to Essential Fish Habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act and other NOAA trust resources under the Fish and Wildlife Coordination Act. If you have any questions regarding EFH, please contact Kristy Beard (410-573-4542; Kristy.Beard@noaa.gov).

Sincerely,

Mark Murray-Brown
Section 7 Coordinator
for Protected Resources

EC: Smith, PRD, Beard, HCD
File Code: Section 7 Team\Section 7\Non-Fisheries\ACOE\Technical Assistance\2016

From: Hinkle, Jeff
To: Spaur, Christopher NAB
Subject: [EXTERNAL] LLR for DC Risk Management Project
Date: Tuesday, May 03, 2016 4:47:46 PM

Christopher,

It appears that the deadline for requested comments has passed in regards to a study initiation notice received by NCPC in regards USACE updating an LLR report.

I'm very unfamiliar with the project and how the LLR works together with the supplemental EA, but was tasked in responding to the notice.

Recognizing that you are working on a timeframe, is it possible for NCPC to still provide comments regarding the scoping of the supplemental EA?

In addition, can you explain to me a little more about the supplemental EA? This will reevaluate the potential impacts from the completed 17th ST <x-apple-data-detectors://0> system as as well as the uncompleted levee raising and raising of grade at 23and St, but also include the uncompleted flood wall near Ft. McNair. Is that correct? Are there conceptual designs for the project near Ft. McNair, updated plans for the other unfinished projects? And finally, the LLR to be updated is from 2012, is that correct?

My apologies for just catching up with this project now, but any insight you can provide to me will be helpful. We had a great staff person working on the flooding issue who unfortunately left, and this project is very unfamiliar to me.

Thank you,
Jeff Hinkle
Urban Planner
202-482-7265

From:	Guy, Chris
To:	Spaur, Christopher NAB
Cc:	Gomez, Michele NAB; Julie Thompson; Trevor Clark; Keller, Chrerry; Michelle Magliocca - NOAA Federal; Armetta, Robin E NAB; Kristy Beard - NOAA Federal
Subject:	[EXTERNAL] Washington D.C. Flood Risk Management Project.
Date:	Tuesday, April 12, 2016 8:33:20 AM

I have looked over the March 24th 2016 letter regarding the Washington D.C. Flood Risk Management Project. The IPAC documentation attached was dated December 2015, and detected Northern Long Eared Bat (NLEB) in your study area.

Due to changes in the rule regarding this species the range that the Service is concerned about has become much more limited for this species in Maryland. We are asking all applicants, who completed their IPAC analysis prior to February a16, 2016 and identified NLEB as a species, rerun their IPAC analysis before submitting their request to the Service.

I would request that you rerun your IPAC analysis. If you still get a hit for NLEB, please let me know and we will proceed with appropriate consultations. Otherwise, the Service has reviewed your letter and finds that the impacts to Service Trust resources will be minimal, and no further coordination on this project will be necessary.

If you have any questions or need a more formal FWCA letter. Please let me know.

Thank You.

Christopher P. Guy
US Fish and Wildlife Service
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis MD 21401
410-573-4529 Office
chris_guy@fws.gov <mailto:chris_guy@fws.gov>

Chesapeake Bay Field Office e-newsletter at Blockedhttp://chesapeakebay.fws.gov

USACE - NPS Conference Call: 4/14/2016 Meeting Minutes

Subject: Washington, D.C., Local Flood Protection Project. Completion of National Mall and Memorial Parks Components

Purpose: Discuss 65% Designs and Determine NEPA Implications for Completing an Environmental Assessment (EA)

Draft minutes prepared by Chris Spaur 4/15, and circulated those for review by participants 4/15 -

0 Introduction.

Chris Spaur emailed out an agenda on 4/14 prior to the call[1].

All participants introduced themselves. USACE Participants: Chris, Mark Chalecki, Rolando Sanidad, Jim Ludlam. NPS Participants: Catherine Dewey, Missy Mertz. Catherine said that they would involve Gay Vietzke (park superintendent) and their regional director as appropriate.

Rolando gave an overview of current USACE efforts. USACE is preparing an updated Limited Reevaluation Report (LRR) to request reauthorization of the Washington DC Flood Risk Management Project. FRM project includes components at the national mall and Fort McNair. The LRR would be used as a basis to obtain funds to complete the project. An EA is being prepared as part of the LRR effort. USACE is seeking to complete an internal draft EA by the end of October 2016.

Chris reviewed previous NEPA documents prepared for FRM project components at the mall. USACE prepared an EA in 1992 that covered all project components but that is now information too old for most NEPA purposes. NPS prepared an EA in 2009 EA prepared by NPS. Impacts of completing 17th Street Closure structure were thoroughly evaluated in 2009 EA. Completion of Potomac Park Levee and 23rd Street Closure were given minimal consideration in 2009 EA, and component lengths and fill heights weren't presented correctly. Additionally, 2009 EA didn't cover trucking in specification fill to complete levee and closure structure. This would have air quality and traffic effects that require consideration for compliance with NEPA.

1 USACE/NPS Cooperating Agency Relationship

Chris reviewed cooperating agency relationships in NEPA context. USACE was cooperating agency with NPS for preparation of 2009 EA. Chris said that USACE had sent NPS National Mall and Memorial

[1] These minutes are organized as per the agenda. Presentation and discussion of topics was not conducted entirely chronologically according to the agenda. For these minutes, information is reorganized and presented for simplicity in accordance with the agenda.

Parks a letter requesting NPS to be cooperating agency for preparation of the current FRM Project Completion EA. Catherine said that NPS had received the letter and that they would participate in preparing EA as cooperating agency. Chris said that it's possible NPS could construct some of the project. EA would need to be written to allow for either agency to do construction.

Chris noted that NCPC was cooperating agency with NPS in preparation of 2009 EA. Rolando said that NCPC had signed programmatic agreement covering completion of the project in April 2009.

2 FRM Project Overview and Current 65% Designs

Jim provided a history of the project from the 1930s. The project was authorized to provide protection from a 700,000 cfs discharge event, which is about a 500 year recurrence interval event. The project components currently meet FEMA 100 year event requirements. However, project components would not provide protection for the authorized event.

There are low spots in the Potomac Park Levee in the vicinity of the comfort station that by design would be the first areas overtopped under current conditions and under the 65% designs. The 23rd Street Closure would keep the Potomac River from creeping up Potomac Avenue.

Jim noted that the levee had originally included an exposed floodwall that was subsequently buried in the 1970s when the Constitution Gardens were constructed. This wall was accidentally encountered by NPS during construction of the Circle of Remembrance, and USACE was contacted. NPS has recently removed trees around the circle. Levee crest needs to be free of woody vegetation to facilitate raising it higher under emergency conditions in event that's needed.

USACE intended to present the 65% designs via webinar, but had technological problems. Instead, Jim described the the levee and closure structure as per the current 65% designs. Jim described FRM project lengths, crest elevations, and how much vertical fill required.

Jim noted that the berm at both the 23rd Street Closure and Potomac Park Levee could be constructed with more gentle side slopes and or create broad flat areas that crest height rather than be obvious berms. This would blend in more with existing landscape.

Jim said that Mark Baker of NPS in Denver has been seeking NPS funds to construct the 23rd Street Closure.

3 Overview of Future NPS Work in Vicinity

Additional Constitution Gardens area work to be done in two phases. NPS prepared an EA for this work that is complete and the project is approved. Project is currently in Phase I. This will include moving lockkeeper house, although not sure when this will occur. For Phase II they only have schematic designs. The Constitution Gardens EA provides a good overview of the project.

4 FRM Project Completion Effects and EA Implications

Catherine said that NPS errs on side of caution in NEPA matters. Impacts to NHPA viewsheds are probably of biggest concern. Cutting of large trees would be of concern. Washington, D.C., had a tree planting initiative underway. So we should plan to plant trees to replace any that would be removed.

Catherine said that completion of the 23rd Street Closure could limit future memorial construction there. Jim noted that this could also limit future use of the area for construction staging purposes as the area is currently used.

NPS issued a NEPA handbook in 2015 that presents NPS EA requirements. Current EA would need to be developed in accordance, as well as meet USACE requirements.

5 Next Steps

USACE and NPS need to work out details of each agency's role for preparation of FRM project completion EA. Chris said that USACE would prepare parts of EA focused on Fort McNair FRM project components. NPS welcome to review, but probably of minimal interest to NPS. Chris suggested that NPS prepare components of EA focused on National Mall and Memorial Parks. Chris, Catherine, and Missy will coordinate on details of EA preparation.

Chris said that USACE has other agency requirements (considering sea-level rise, climate change, etc.) that need to be considered in the EA. USACE will coordinate with NPS as this information is compiled/prepared.

NPS suggested that NCPC should be coordinated with soon. Possibility of them becoming a cooperating agency should be discussed.

Rolando said that Fort McNair is setting up a meeting with NCPC, HPO, and other DC government agencies to discuss FRM project components there. USACE has been waiting until artistic renderings showing proposed work are prepared. It would be appropriate to also cover national mall FRM project components and have NPS attend. Rolando will contact the fort and provide them with NPS contacts for scheduling.

Group discussed that at upcoming meeting being organized by Fort McNair we could check with NCPC on whether they'd want to be cooperating agency as they were with 2009 EA.

Schedule group site visit in near future to review project and consider effects.

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, U.S. ARMY CORPS OF ENGINEERS
10 S. HOWARD STREET
BALTIMORE, MARYLAND 21201

MAR 2 4

Planning Division

Ms. Gay E. Vietzke
Superintendent, National Park Service
National Mall and Memorial Parks
900 Ohio Drive, SW
Washington, DC 20024

Dear Ms. Vietzke:

The U.S. Army Corps of Engineers, Baltimore District, (USACE) is preparing a Limited Reevaluation Report (LRR) for the Washington, D.C., Local Flood Risk Management Project. The LRR will contain an environmental assessment (EA) focused on completion of the Fort McNair component of the project. Additionally, the EA will provide updated information on the incomplete 23rd Street Closure and Potomac Park Levee project components located within the National Mall and Memorial Parks. National Park Service (NPS) and USACE staff have assisted each other with efforts to finalize project components located on NPS lands. These projects were previously evaluated in an EA prepared by the NPS in 2009 titled *Finding of No Significant Impact and EA, Potomac Park Levee Project*.

Pursuant to Section 1501.6 of the National Environmental Policy Act (NEPA), as amended, the Baltimore District requests the participation of the NPS as a cooperating agency in providing assistance in preparing portions of the EA covering the incomplete 23rd Street Closure and Potomac Park Levee project components. The purpose of this request is to formalize, via designation as a cooperating agency, the ongoing and active participation of NPS in this study.

With this letter, we are requesting that your staff work with my staff to assign roles and responsibilities, specify the scope and detail of contributions, and establish other appropriate ground rules such as availability of pre-decisional information. It is not anticipated that this relationship will include financial contributions from either party to the other.

If you have any questions or require further information, please contact my action officer Ms. Amy Guise, Chief, Planning Division, at (410) 962-4900.

Sincerely,

Edward P. Chamberlayne, P.E.
Colonel, U.S. Army
Commander and District Engineer

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
10 SOUTH HOWARD STREET
BALTIMORE MD 21203-1715

REPLY TO
ATTENTION OF

Planning Division

Mr. Timothy Dennee
Historic Preservation Office
Office of Planning
1100 4th Street, SW, Suite E650
Washington, D.C. 20024

Dear Mr. Dennee:

The purpose of this letter is to consult with your office as required by Section 106 of the National Historic Preservation Act regarding the proposed construction of flood protection measures on Fort McNair property along P and 2nd Streets, S.W, in Washington, D.C. The project is authorized by the Flood Control Acts of 1936 and 1942, whereby the U.S. Army Corps of Engineers (USACE) was directed by Congress to design and construct flood control measures to reduce the risk of flooding in downtown Washington. USACE and Ft. McNair have agreed that, for the purposes of Section 106 review, USACE will be lead Federal agency in accordance with 36 CFR 800.2(a)(2).

USACE proposed to construct a low-height floodwall along P and 2nd Streets. Construction of the floodwall is the final component of a larger flood damage reduction project known as the Potomac Park Flood Protection Project. The complete project also includes construction of a closure structure along 17th Street SW, a new levee at Constitution Avenue and 23rd Street SW, and raising the existing levee along the north side of the Reflecting Pool. The Section 106 review of these project components has already been completed.

The current flood protection design calls for a two foot high "L" wall along P Street on Fort McNair property between the existing sidewalk and Fort McNair's historic boundary wall. The wall will extend around the corner onto 2nd Street, where it will transition to a 1.8 feet high "T" wall. The wall on 2nd street will be located between the sidewalk and the Fort McNair boundary wall and then cross the main entrance to Fort McNair where it ties into high ground. Temporary closure structures would be constructed at vehicular and pedestrian entrance and exit locations at Fort McNair. The total length of the floodwall will be approximately 1,400 feet. Enclosure 1 shows the location of the flood walls. Enclosure 2 shows the 35% design of the proposed flood protection measures, including profiles of the "L" and "T" walls.

Numerous historic architectural properties, including the Fort McNair National Register Historic District and the National War College, a National Historic Landmark, are in the vicinity of the project area, and may be in the viewshed of the proposed flood protection measures. Fort McNair's original boundary wall along P Street is a contributing resource to the Fort McNair National Register Historic District.

USACE looks forward to consulting with your office regarding the nature and scope of additional investigations to identify historic properties in the project's area of potential effect, and to assess potential effects to those properties. USACE has extended an invitation to National Capital Planning Commission, D.C. Neighborhood Advisory Commission 6D, DC Preservation League, and the Southwest Neighborhood Assembly to participate in the Section 106 review of the project. Please advise us of any other interested parties you think we should contact.

Thank you for your consideration of the Potomac Park Flood Protection Project. Mr. Scott Watson is the cultural resources team member for this study, however, as he is on a detail out of the country until May 2016, please contact Mr. Mark Chalecki at 410-962-4998 or via e-mail at Mark.S.Chalecki@usace.army.mil.

Sincerely,

Dan Bierly, Chief
Civil Projects Development Branch

Enclosure

CF:
CPD READING FILE

FURNEY/CENAB-PL-P
SPAUR/CENAB-PL-E
CHALECKI/CENAB-PL-P
GOMEZ/CENAB-PL-P
BIERLY/CENAB-PL-P

S:\CPD\Washington DC LFPP\Sec 106 Letter for SHPO.doc

From:	Ours, Stephen (DOEE)
To:	Daniels, Jessica (DOEE); Spaur, Christopher NAB
Subject:	[EXTERNAL] RE: Proposed USACE Flood Risk Management Project Upgrades - Air Quality Concerns? (UNCLASSIFIED)
Date:	Wednesday, March 02, 2016 12:11:03 PM

Mr. Spaur,

If an EISF is required, then Jessica is correct that going through that process will result in an evaluation of whether or not you need to perform an air quality analysis. The Department of Consumer and Regulatory Affairs (DCRA) coordinates the EISF process.

Outside of the EISF process, we have a few regulations that are typically applicable to construction projects:

1) 20 DCMR 605 - Control of Fugitive Dust - Blockedhttp://www.dcregs.dc.gov/Gateway/FinalAdoptionHome.aspx?RuleVersionID=744298
2) 20 DCMR 900 - Onroad Engine Idling and Nonroad Diesel Engine Idling - Blockedhttp://www.dcregs.dc.gov/Gateway/FinalAdoptionHome.aspx?RuleVersionID=4478701
3) 20 DCMR 903 - Odorous or Other Nuisance Air Pollutants - Blockedhttp://www.dcregs.dc.gov/Gateway/FinalAdoptionHome.aspx?RuleVersionID=751088

Also note that if this project will last more than 12 months and you will have a construction generator (or other stationary engine) onsite for that time, you may need to obtain a permit from us for the generator.

Please let me know if you have further questions.

Regards,

Stephen S. Ours, P.E.
Chief, Air Quality Permitting Branch
Department of Energy & Environment
Government of the District of Columbia
1200 First Street NE, 5th Floor
Washington DC 20002
Phone: (202) 535-1747
Web: doee.dc.gov

-----Original Message-----
From: Daniels, Jessica (DOEE)
Sent: Wednesday, March 02, 2016 11:28 AM
To: Spaur, Christopher NAB
Cc: Ours, Stephen (DOEE)
Subject: RE: Proposed USACE Flood Risk Management Project Upgrades - Air Quality Concerns? (UNCLASSIFIED)

Hi Chris,

Thank you for the email. You may be able to find answers to your question by completing the District's Environmental Impact Screening Form (EISF): Blockedhttp://dcra.dc.gov/service/permits-environmental-review. There are a few air quality-related questions on there. If you are going through the NEPA process, however, it is my understanding that your project may be exempt from DC Government requirements.

Stephen Ours is our current EISF contact.

Steve - can you please respond to Mr. Spaur?

Thank you,
jessica

Jessica Daniels
Environmental Protection Specialist
Air Quality Division
Department of Energy & Environment
Government of the District of Columbia
1200 First Street NE, Fifth Floor
Washington, DC 20002
Desk: 202-741-0862
Web: doee.dc.gov

-----Original Message-----
From: Spaur, Christopher NAB [mailto:Christopher.C.Spaur@usace.army.mil]
Sent: Wednesday, March 02, 2016 9:29 AM
To: Daniels, Jessica (DOEE)
Subject: Proposed USACE Flood Risk Management Project Upgrades - Air Quality Concerns? (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Jessica

I got your name and email address from DDOE website (Blockedhttp://doee.dc.gov/service/air-quality-division-contacts).

As you probably know, the US Army Corps of Engineers constructed a flood-risk management (FRM) project downtown in the late 1930s that consists of a levee from the Lincoln Memorial to the Washington Monument (the Potomac Park Levee), a raised portion of P Street SW, and floodgates on associated sewer outlets. The project required that during flood warnings, temporary earthen/sandbag closures be constructed at 23rd Street and Constitution Avenue, at 17th Street NW, and at P and Canal Streets SW. Recently, USACE and the National Park Service erected a post and wall closure structure at 17th Street such that the temporary earthen/sandbag closure would no longer be required there. Temporary structures would still be required at 23rd Street/Constitution Avenue and at P and Canal Streets SW, however.

Upgrading the 17th Street Closure (since completed), raising the levee height to meet current FRM standards, and constructing an earthen berm at 23rd Street/Constitution Avenue to eliminate the need for constructing the temporary closure structure there were evaluated in an environmental assessment prepared by NPS in 2009. The NPS in their 2009 environmental assessment evaluated air quality effects of these actions, and stated "Overall, there would be a slight and temporary degradation of local air quality due to dust generated from road reconstruction activities and emissions from construction equipment and visitor vehicles. These effects would be localized and negligible to minor, lasting only as long as road reconstruction activities occurred. The park's current level of air quality would not be affected by the proposed project; therefore, this impact topic was dismissed from further analysis."

USACE is preparing an environmental assessment that will evaluate effects of constructing a low flood-wall exterior to the Fort McNair perimeter wall along P and 2nd Streets SW. Proposed work at Fort McNair has not been evaluated in a recent NEPA document. Additionally, the USACE environmental assessment would provide information on minor design modifications for the proposed raising of the Potomac Park Levee and construction of an earthen berm at 23rd Street and Constitution Avenue.

I'm seeking to figure out whether USACE needs to conduct an analysis of some sort for proposed FRM work at Fort McNair to ensure compliance with air quality laws. Additionally, I need to determine whether proposed Potomac Park Levee design modifications could produce emissions in excess of that which were evaluated by NPS such that an analysis could be required. Easiest case for USACE would be if a qualitative determination, such as that provided in the NPS 2009 environmental assessment, would be adequate to ensure air quality compliance for these further FRM project upgrades. I would like any guidance you can provide on analysis requirements.

Thanks for your help,

Chris

I previously attempted to contact Olivia Achuko and Ram Tangirala on recommendation of MWCOG, but didn't hear back from them.
CLASSIFICATION: UNCLASSIFIED

From: Spaur, Christopher NAB
To: "Ned_Wallace@nps.gov"
Cc: Sanidad, Rolando NAB; Chalecki, Mark S NAB; Gomez, Michele NAB
Subject: USACE Environmental Assessment - National Mall and Memorial Parks Flood Risk Management (UNCLASSIFIED)
Date: Tuesday, February 23, 2016 9:54:00 AM

CLASSIFICATION: UNCLASSIFIED

Ned

Rolando Sanidad provided me your name as a contact. As you know, USACE is preparing an environmental assessment (to be included in a larger USACE report*) for completion of the Washington, D.C., Local Flood Protection Project which includes features on the National Mall and Memorial Parks. I need to coordinate preparation of portions of this EA that cover features on these parklands with NPS.

Raising the Potomac Park levee height to meet current flood risk management standards and constructing an earthen berm at 23rd Street/Constitution Avenue to eliminate the need for erecting the temporary closure structure there were evaluated in the "Potomac Park Levee System" EA prepared by NPS in 2009. The new USACE EA will provide updated information for these project components that differs from what was presented in NPS's 2009 EA. I'm still getting up to speed on details, but some of these differences arise just from us being at a more advanced stage of design work**. However, other differences have an origin that I'm uncertain about. I'm interested in discussing how to present these updates with you or someone else at NPS that is knowledgeable of the 2009 EA. Additionally, I'm interested in double-checking whether any of these updates would produce different impacts (cultural/historic and aesthetic likely being of greatest concern) from what was presented in the 2009 NPS EA such that we need to evaluate effects in new USACE EA.

We anticipate that the EA will primarily focus on evaluating effects of constructing a proposed low flood-wall exterior to Fort McNair's perimeter wall along P and 2nd Streets SW. Proposed work at Fort McNair has not been evaluated in a recent NEPA document. This would not be of interest to NPS.

Chris

*Limited Reevaluation Report (LRR) for the Washington, D.C., Local Flood Risk Management Project.
**65% designs April 2013
CLASSIFICATION: UNCLASSIFIED

From: Spaur, Christopher NAB
To: "Olivia.achuko@dc.gov"; "Rama.tandirala@dc.gov"
Subject: Proposed USACE Flood Risk Management Project Upgrades - Air Quality Concerns? (UNCLASSIFIED)
Date: Tuesday, February 16, 2016 11:03:00 AM

CLASSIFICATION: UNCLASSIFIED

Olivia and Ram

Jennifer Desimone of MWCOG suggested I contact you regarding matter below.

As you probably know, the US Army Corps of Engineers constructed a flood-risk management project downtown in the late 1930s that consists of a levee from the Lincoln Memorial to the Washington Monument (the Potomac Park Levee), a raised portion of P Street SW, and floodgates on associated sewer outlets. The project required that during flood warnings, temporary earthen/sandbag closures be constructed at 23rd Street and Constitution Avenue, at 17th Street NW, and at P and Canal Streets SW. Recently, USACE and the National Park Service erected a post and wall closure structure at 17th Street such that the temporary earthen/sandbag closure would no longer be required there. Temporary structures would still be required at 23rd Street/Constitution Avenue and at P and Canal Streets SW, however.

Upgrading the 17th Street Closure (since completed), raising the levee height to meet current FRM standards, and constructing an earthen berm at 23rd Street/Constitution Avenue to eliminate the need for constructing the temporary closure structure there were evaluated in an environmental assessment prepared by NPS in 2009. USACE is preparing an Environmental Assessment that will evaluate effects of constructing a low flood-wall exterior to the Fort McNair perimeter wall along P and 2nd Streets SW. Proposed work at Fort McNair has not been evaluated in a recent NEPA document. Additionally, the USACE environmental assessment would provide information on minor design modifications for the proposed raising of the Potomac Park Levee and construction of an earthen berm at 23rd Street and Constitution Avenue.

The NPS in their 2009 environmental assessment evaluated air quality effects of proposed FRM upgrades other than at Fort McNair. NPS stated "Overall, there would be a slight and temporary degradation of local air quality due to dust generated from road reconstruction activities and emissions from construction equipment and visitor vehicles. These effects would be localized and negligible to minor, lasting only as long as road reconstruction activities occurred. The park's current level of air quality would not be affected by the proposed project; therefore, this impact topic was dismissed from further analysis."

I'm seeking to figure out whether USACE needs to conduct an analysis of some sort for proposed FRM work at Fort McNair to ensure compliance with air quality laws. Additionally, I need to determine whether proposed Potomac Park Levee design modifications could produce emissions in excess of that which were evaluated by NPS such that an analysis could be required. Easiest case for USACE would be if a qualitative determination, such as that provided in the NPS 2009 environmental assessment, would be adequate to ensure air quality compliance for these further FRM project upgrades. I would like any guidance you can provide on analysis requirements.

Thanks for your help,

Chris

CLASSIFICATION: UNCLASSIFIED

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
10 SOUTH HOWARD STREET
BALTIMORE MD 21203-1715

REPLY TO
ATTENTION OF

Planning Division

MAR 24 2016

Mr. Bryan King
Fisheries and Wildlife Division
D.C. Department of the Environment
1200 First Street, N.E., 5th Floor
Washington, D.C. 20002

Dear Mr. King:

The U.S. Army Corps of Engineers, Baltimore District (USACE) is developing an updated Limited Reevaluation Report (LRR) and associated environmental assessment (EA) for the Washington, D.C. and Vicinity Flood Risk Management Project (hereafter referred to as the DC Project). This letter is to inform you that the USACE is preparing a supplemental EA for the DC Project. This supplemental EA will be incorporated into the final LRR for the DC Project.

The DC Project was originally authorized by Congress under the Flood Control Act of 1936 for the purpose of protecting downtown Washington D.C. during flood emergencies. The DC Project is located in the downtown area of Washington, D.C. and consists of features at two different sites: Potomac Park and Fort McNair (Enclosure 1). The Potomac Park site is located on National Park Service (NPS) grounds along the National Mall and includes a levee between the Lincoln Memorial and the Washington Monument ("Potomac Park levee" or "Reflecting Pool levee"), a temporary sandbag closure located at 23rd Street and Constitution Avenue, NW ("23rd Street closure"), and a removable post and panel closure located at 17th Street and Constitution, NW ("17th Street closure"). The Fort McNair site is located at Fort McNair near P and 2nd Streets, SW and includes a temporary sandbag closure ("Fort McNair closures") (Enclosure 2).

The original DC Project was constructed in 1939 and included the Potomac Park levee, a raised section of P Street SW (adjacent to Fort McNair), and temporary closures at 23rd Street, 17th Street, and Fort McNair. The 17th Street removable post and panel closure system was completed in October 2014 using American Reinvestment and Recovery Act funds (ARRA). In 2009, the National Park Service (NPS) completed the *Potomac Park Levee Project Environmental Assessment* and a signed Finding of No Significant Impact (FONSI) for the DC Project. USACE documented its concurrence with the findings of this NPS EA in an adoption memorandum dated March 25, 2010 and USACE signed a FONSI on May 24, 2010.

USACE is preparing a supplemental EA for the future work needed for the DC Project. This EA will document changes to the project designs and address any changes in environmental laws or regulations since the 2009. In addition, the supplemental EA will evaluate any impacts from the proposed Fort McNair closures. This supplemental EA will incorporate the 2009 NPS EA and include a re-evaluation of the impacts resulting from the components of the DC Project

that have not been fully constructed. The remaining components for re-evaluation in this supplemental EA include:

1) The Potomac Park Levee: two to as much as four feet of earth would be added along approximately 2,500 feet of the levee crest to raise it to between 18.7 and 19.1 feet in elevation (North American Vertical Datum of 1988 (NAVD88)). This would provide the authorized level of protection for the 700,000 cubic feet per second (cfs) flood event with one foot of freeboard. USACE would construct.
2) 23rd Street Closure: an earthen berm approximately 490 feet long would be constructed on the southwest side of the intersection of Constitution Avenue and 23rd Street and an earthen berm approximately 75 feet long would be constructed between the east and west bound lanes of Constitution Avenue on the west side of the intersection. Berm crest elevation would be at 20 feet NAVD88, and up to a little more than four feet in elevation above the existing ground. Ball fields southwest of the intersection would be shifted to accommodate the earthen berm. USACE or NPS would construct.
3) Fort McNair: a low floodwall approximately 1,400 feet long would be constructed exterior to the existing fort perimeter brick wall along P and 2nd Streets. The wall crest elevation would be 16.6 feet NAVD88, or about two feet higher than existing ground. The floodwall would include no more than three openings for closure structures. USACE would construct.

USACE-Baltimore is requesting any information your office may have on the District's listed rare, threatened, and endangered species, as well as any other environmental resources, within the study area. This request is for the study area shown on the enclosed map. The U.S. Fish and Wildlife web site (http://ecos.fws.gov/ipac/) was consulted to prepare a preliminary Information, Planning, and Conservation (IPaC) Trust Resource Report (Enclosure 3) which identified one federally-listed endangered species, the Northern Long-eared Bat (*Myotis septentrionalis)* in the immediate project area. The report also identified 24 migratory birds of potential concern in the project vicinity. A coordination letter has also been sent to the U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration Fisheries regarding Section 7 of the Endangered Species Act.

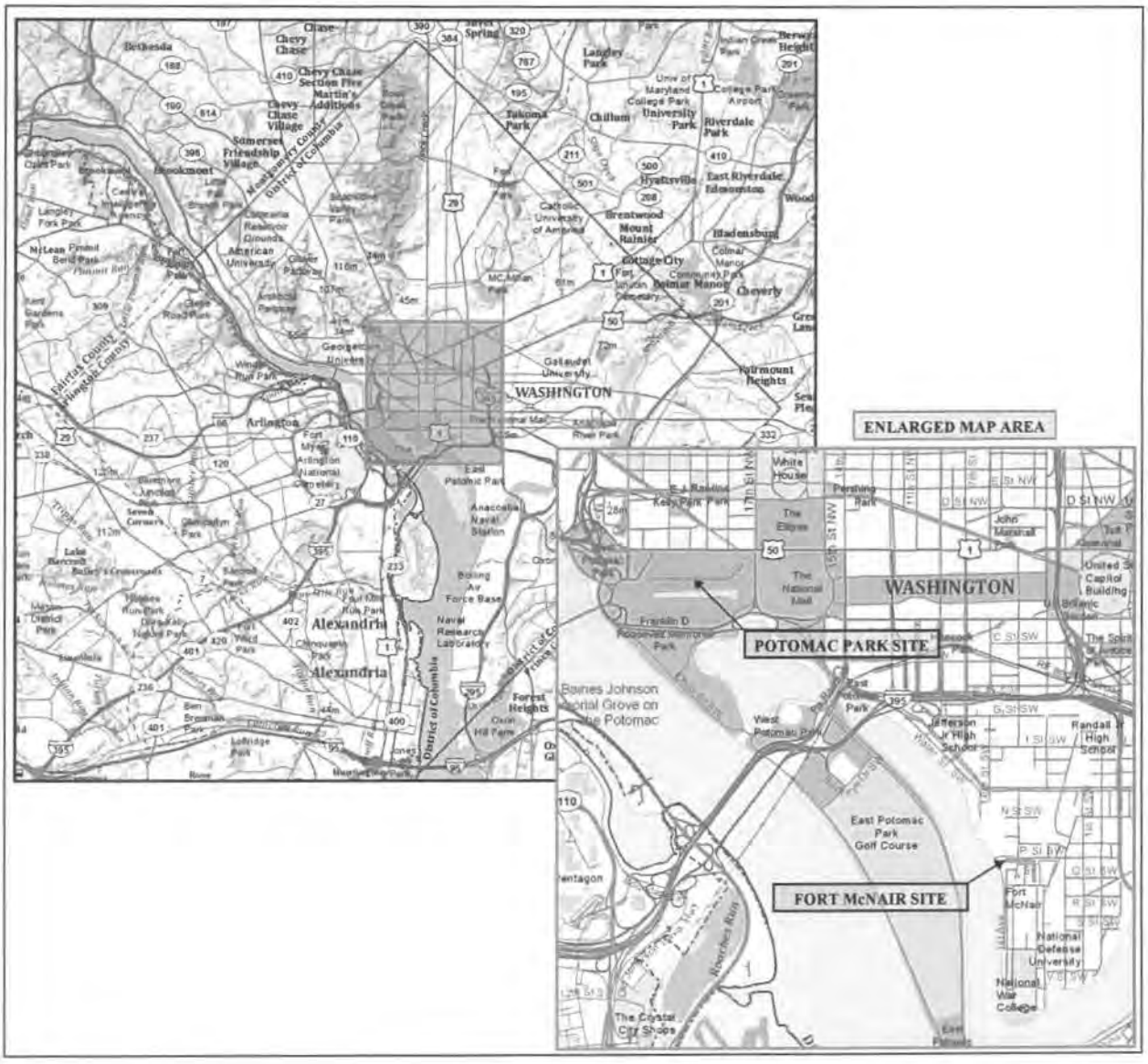
USACE is committed to incorporating D.C. Department of the Environment input and interests throughout the study process, and your assistance is greatly appreciated. If you have any questions, please contact Christopher Spaur at 410-962-6134 or by e-mail at Christopher.c.spaur@usace.army.mil.

Sincerely,

Daniel M. Bierly, Chief
Civil Project Development Branch

Enclosures

Enclosure 1 – Location Map



DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
10 SOUTH HOWARD STREET
BALTIMORE MD 21203-1715

REPLY TO
ATTENTION OF

Planning Division

MAR 24 2016

Mr. Collin Burell
Associate Director
Natural Resources Administration
Water Quality Division
D.C. Department of the Environment
1200 First Street, N.E., 5th Floor
Washington, D.C. 20002

Dear Mr. Burell:

The U.S. Army Corps of Engineers, Baltimore District (USACE) is developing an updated Limited Reevaluation Report (LRR) and associated environmental assessment (EA) for the Washington, D.C. and Vicinity Flood Risk Management Project (hereafter referred to as the DC Project). This letter is to inform you that the USACE is preparing a supplemental EA for the DC Project. This supplemental EA will be incorporated into the final LRR for the DC Project.

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The original DC Project was constructed in 1939 and included the Potomac Park levee, a raised section of P Street SW (adjacent to Fort McNair), and temporary closures at 23rd Street, 17th Street, and Fort McNair. The 17th Street removable post and panel closure system was completed in October 2014 using American Reinvestment and Recovery Act funds (ARRA). In 2009, the National Park Service (NPS) completed the *Potomac Park Levee Project Environmental Assessment* and a signed Finding of No Significant Impact (FONSI) for the DC Project. USACE documented its concurrence with the findings of this NPS EA in an adoption memorandum dated March 25, 2010 and USACE signed a FONSI on May 24, 2010.

USACE is preparing a supplemental EA for the future work needed for the DC Project. This EA will document changes to the project designs and address any changes in environmental laws or regulations since the 2009. In addition, the supplemental EA will evaluate any impacts from the proposed Fort McNair closures. This supplemental EA will incorporate the 2009 NPS

EA and include a re-evaluation of the impacts resulting from the components of the DC Project that have not been fully constructed. The remaining components for re-evaluation in this supplemental EA include:

1) The Potomac Park Levee: two to as much as four feet of earth would be added along approximately 2,500 feet of the levee crest to raise it to between 18.7 and 19.1 feet in elevation (North American Vertical Datum of 1988 (NAVD88)). This would provide the authorized level of protection for the 700,000 cubic feet per second (cfs) flood event with one foot of freeboard. USACE would construct.
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3) Fort McNair: a low floodwall approximately 1,400 feet long would be constructed exterior to the existing fort perimeter brick wall along P and 2nd Streets. The wall crest elevation would be 16.6 feet NAVD88, or about two feet higher than existing ground. The floodwall would include no more than three openings for closure structures. USACE would construct.

USACE-Baltimore is requesting any information or concerns your office may have that may assist us in the preparation of these documents. USACE is committed to incorporating D.C. Department of the Environment input and interests throughout the study process, and your assistance is greatly appreciated.

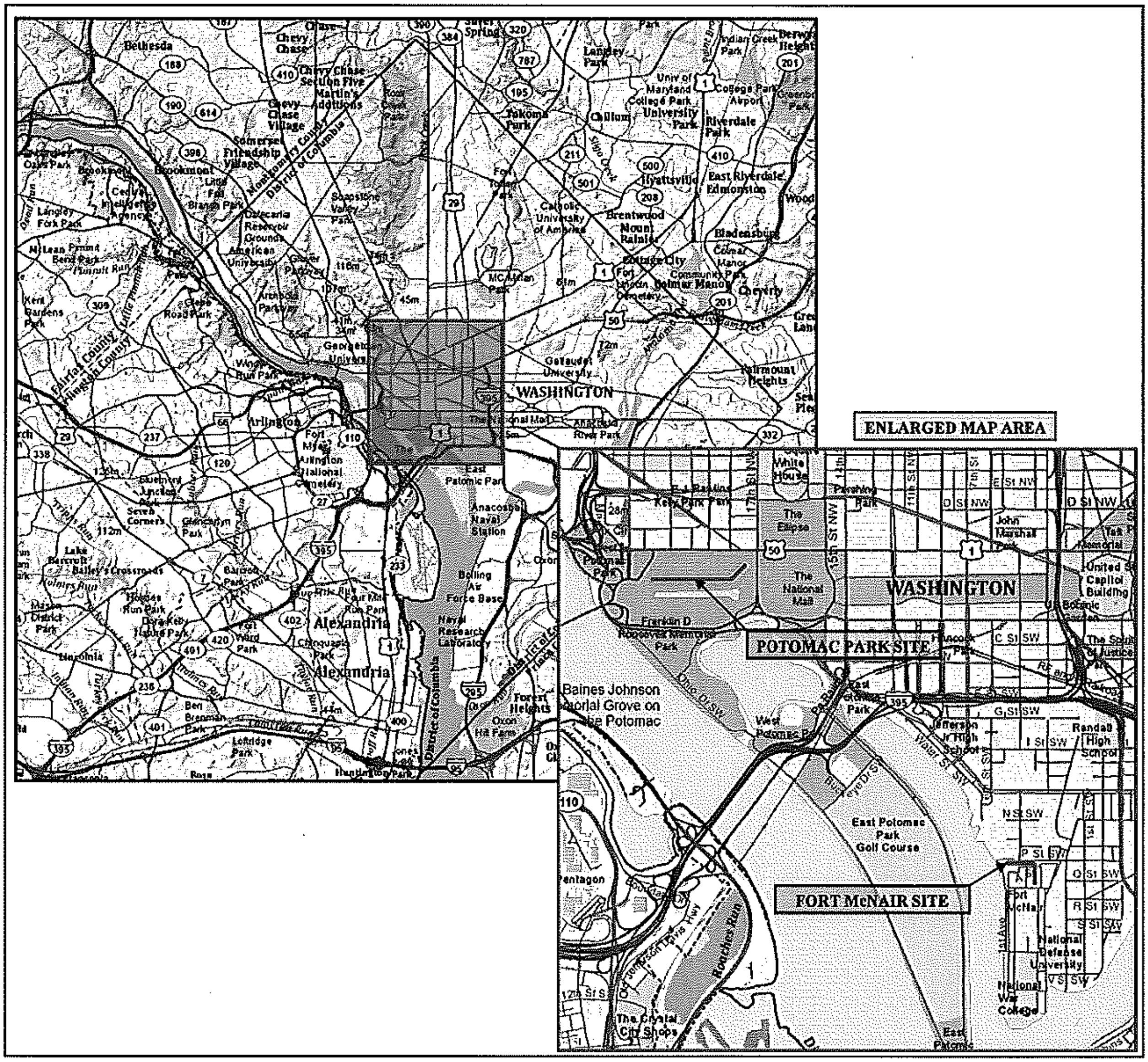
If you have any questions regarding this study, please contact Christopher Spaur by email at Christopher.c.spaur@usace.army.mil or by telephone at 410-962-6134.

Sincerely,

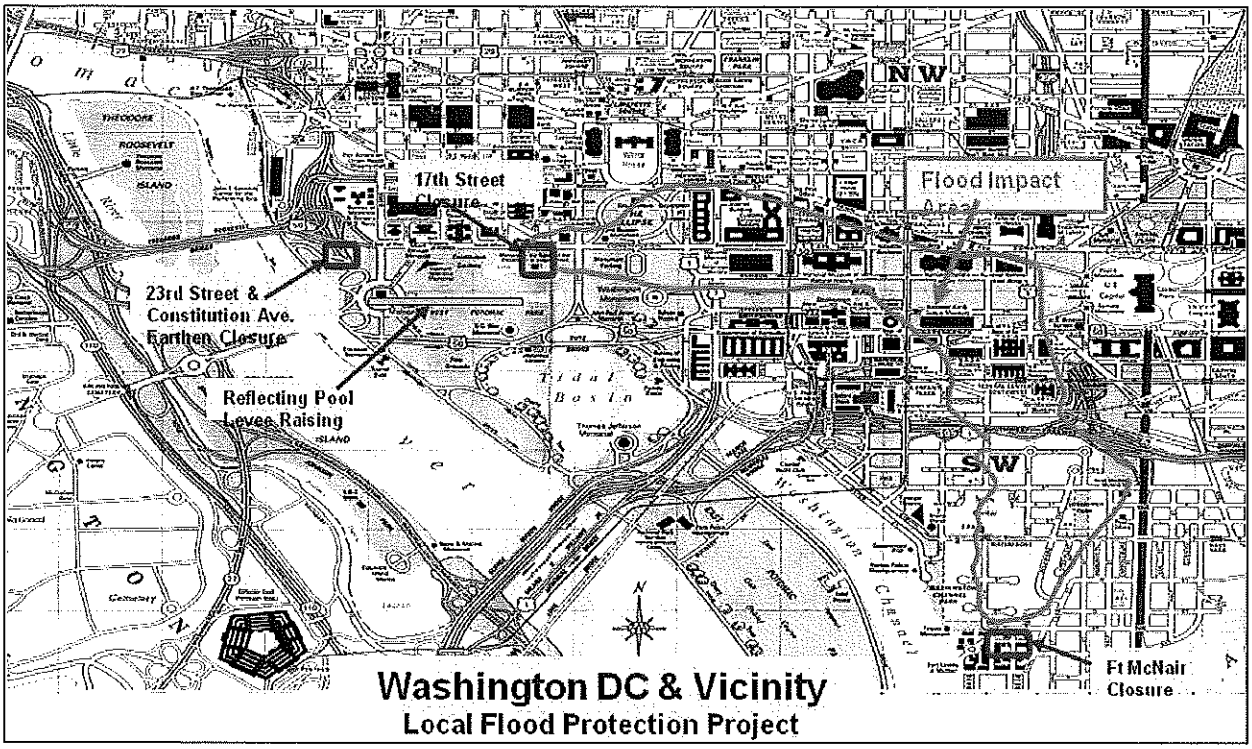
Dan Bierly, Chief
Civil Project Development Branch

Enclosures

Enclosure 1 – Location Map



Enclosure 2 – Project Sites



US Army Corps
of Engineers
Baltimore District

MAR 24 2016

Study Initiation Notice

Washington D.C. Flood Risk Management Project – Limited Reevaluation Report

All Interested Parties: The U.S. Army Corps of Engineers, Baltimore District (USACE) is developing an updated Limited Reevaluation Report (LRR) to request project reauthorization for the Washington, D.C. and Vicinity Flood Risk Management Project (hereafter referred to as the DC Project). This letter is to inform you that the USACE is preparing a supplemental environmental assessment (EA) for the DC Project. This supplemental EA will be incorporated into the final LRR for the DC Project.

The DC Project was originally authorized by Congress under the Flood Control Act of 1936 for the purpose of protecting downtown Washington D.C. during flood emergencies. The DC Project is located in the downtown area of Washington, D.C. and consists of features at two different sites: Potomac Park and Fort McNair (Enclosure). The Potomac Park site is located on National Park Service (NPS) grounds along the National Mall and includes the Potomac Park levee between the Lincoln Memorial and the Washington Monument; a closure located at 23rd Street and Constitution Avenue, NW; and a closure located at 17th Street and Constitution, NW. The Fort McNair site is located on the grounds of Fort McNair near P and 2nd Streets, SW and includes a closure and drainage control structures.

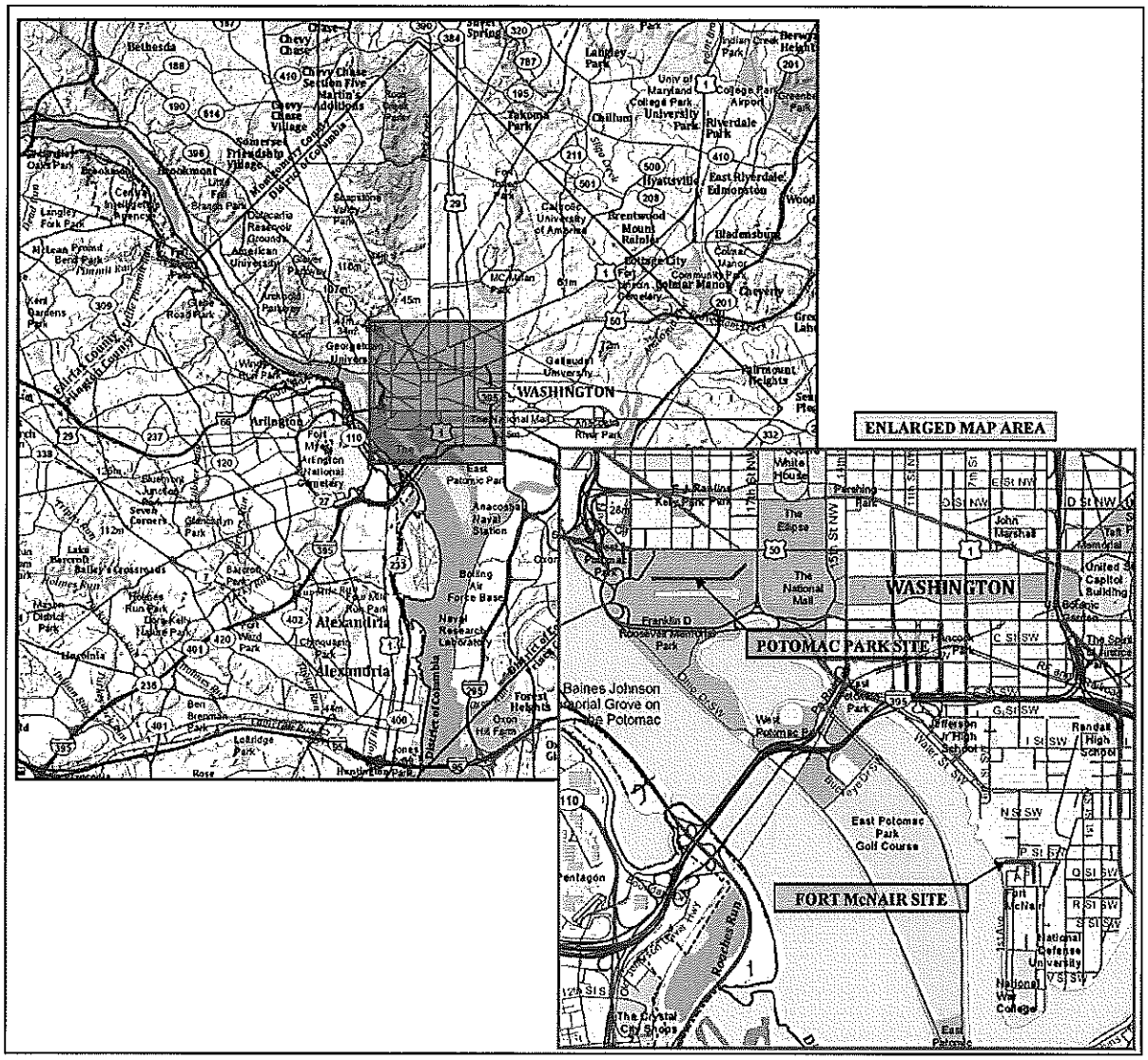
For this LRR effort, USACE will prepare a supplemental EA for the future work needed to complete the DC Project. This EA will document changes to the project designs, as well as address any changes to impacts since completion of the *2009 NPS Potomac Park Levee Project Environmental Assessment.* In addition, the supplemental EA will evaluate any impacts from the proposed Fort McNair closures. This supplemental EA will incorporate the 2009 NPS EA and include a re-evaluation of the impacts resulting from the components of the DC Project that have not been fully constructed.

To assist in the scoping of this study, federal and state resource agencies receiving a copy of this letter are requested to provide information concerning interests within their organization's area of responsibility or expertise within 30 days from the date of this notice. Please send correspondence to the address below. If you have any questions regarding this project, please contact Christopher Spaur of our Civil Project Development Branch by e-mail at Christopher.c.spaur@usace.army.mil or by telephone at (410) 962-6134.

U.S. Army Corps of Engineers, Baltimore District
ATTN: CENAB-PL-P (Spaur)
P.O. Box 1715
Baltimore, Maryland 21203-1715

Daniel M. Bierly
Chief,
Civil Project Development Branch

Figure 1 Study Area



Honorable Charles Allen
1350 Pennsylvania Avenue, NW
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Washington, DC 20004

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District of Columbia
District Department of the Environment
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Washington, D.C. 20002

Ms. Lucy Kempf
National Capital Planning Commission
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Washington, DC 20004

Brian Kenner
Office of the Deputy Mayor for Planning and Economic Development
John A. Wilson Building
1350 Pennsylvania Avenue, NW, Suite 317
Washington, DC 20004

Katharine Kerr
Advisory Council on Historic Preservation
401 F Street NW, Suite 308
Washington, DC 20001-2637

Bryan King
D.C. Dept of the Environment
Fisheries and Wildlife Division
D.C. Department of the Environment
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Washington, D.C. 20002

Kristie Lalire
JBM-HH
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Genevieve LaRouche
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Annapolis, MD 21401

Bruce Levine
Southwest Neighborhood Assembly
SW Washington, DC 20024

Frederick Lindstrom
U. S. Commission of Fine Arts
National Building Museum
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Washington, DC 20001-2728

David Maloney
District of Columbia
Historic Preservation Office
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Washington, DC 20024

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Urban Planner/Federal Preservation Officer
National Capital Planning Commission
401 9th St NW
Washington, DC 20004-2128

Rebecca Miller
DC Preservation League
1221 Connecticut Avenue, NW, Suite 5A
Washington, D.C. 20036

Roger Moffat
DC Neighborhood Advisory Commission 6D
1101 4th Street SW
Washington, DC 20024

The Honorable Eleanor Holmes Norton
US House of Representatives
Rayburn House Office Building
National Press Building, Suite 900
529 14th Street, NW
Washington, D.C. 20045

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U.S. Environmental Protection Agency
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Jennifer Steingasser
D.C. Office of Planning
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Office of Environmental Policy and Compliance
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Phong Trieu
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Mr. Lou Chiarella
Assistant Regional Administrator for Habitat Conservation
National Marine Fisheries Service
U.S. Department of Commerce
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Gloucester, Massachusetts 01930

Ms. Kimberly Damon-Randall
Assistant Regional Administrator for Protected Resources
Greater Atlantic Regional Fisheries Service
National Marine Fisheries Service
U.S. Department of Commerce
55 Great Republic Drive
Gloucester, Massachusetts 01930

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Annex B

SUPPLEMENTARY INFORMATION

Table of Contents

Differences Between this Document and Previous NEPA Documents

Estimate of Emissions of Clean Air Act Pollutants of Concern

Trees to be Removed

Programmatic Agreement

Interior Drainage Analysis

DIFFERENCES BETWEEN THIS NEPA DOCUMENT AND PREVIOUS NEPA DOCUMENTS

USACE 1992 GDM with EA

The USACE 1992 GDM with its included EA covers 23rd Street, Reflecting Pool levee, and 17th Street Closure Structure. The selected plan for the Reflecting Pool levee would have been to conduct remedial grading of about 0.9 acres of the crest to raise it, snaking through large trees. Affected trees would be replaced and grass reseeded. The selected plan for 23rd Street and Constitution Avenue would raise the grade by placing fill 3.5 feet above existing ground at the playing fields, and 3.4 feet above ground between the Roosevelt Bridge ramps to raise the berm along the project alignment to an elevation of 20.6 feet NGVD. The 17th Street selected plan would include the placement of stockpiled select fill on-site for future use for emergency borrow for use in constructing an emergency closure at 17th Street. Additionally, fill would be added on either side of 17th Street to create a partial embankment which would permanently reduce the size of the opening in the levee that needed to be closed under emergency conditions. The FONSI notes cultural and aesthetic concerns were identified but addressed through project design. No remaining unaddressed concerns are identified.

USACE 1997 EA

The EA in Appendix F of USACE 1997 Limited Reevaluation Report (LRR) focuses on the 17th Street closure. It describes the project, and describes the NEPA reviews conducted for it. The EA identifies temporary and minor adverse effects associated with road closure and emplacement and burial of a concrete sill.

NPS 2009 EA

The NPS 2009 FONSI and EA for the "Potomac Park Levee Project" cover construction of the 17th Street closure structure, plus increasing height of the levee along the Reflecting Pool, and raising the ground in the 23rd Street area. The EA examined "leveling out" the levee to fill low spots. And the 23rd Street work was minimally addressed in the EA as only raising the ground levels 1-2 feet. Trucking in specification grade fill to raise the levee, and impacts of this upon air quality and traffic, were not covered.

Table: NAMA FRM Feature Differences Between 1992 GDM EA, NPS 2009 EA, and 2013 65 Percent Designs

Site and FRM Feature	1992 GDM EA	2009 NPS EA	2013 65 Percent Designs (This EA for Potomac Park Levee [Reflecting Pool Levee])
23rd St and Constitution Ave	Permanent grade raising along project alignment west of the sidewalk to an elevation of 20.6 feet NGVD. Fill would be placed in two areas, with main portion at the playing fields. Fill would be 3.5 feet above existing grade. Fill would be placed between the Roosevelt Bridge ramps to 3.4 feet above existing grade. (Alternative 3)	Phase 2 component included re-grading the northeast portion of the 23rd Street site to raise the ground elevation by approximately 1 to 2 feet At 23rd Street, re-grading will avoid the ball fields so as to not disrupt the permitted recreational use in this area. The 23rd Street portion of the project area was not analyzed for infrastructure impacts since they do not require the relocation or disruption to any subsurface utility lines and would therefore have no impact on infrastructure or utilities.	Create permanent closure. An earthen berm approximately 490 feet long would be constructed on the southwest side of the intersection of Constitution Avenue and 23rd Street, and an earthen berm approximately 75 feet long would be constructed between the east and west bound lanes of Constitution Avenue on the west side of the intersection. Berm crest elevation would be 20 feet elevation, up to several feet elevation above the existing ground. 2,715 cubic yards of specification-grade impervious fill material would be imported from off-site to construct the berm. At 12 cubic yards per truckload, this would require 226 truckloads The levee would include one closure structure in grass between Constitution Ave and a ramp onto westbound Rout 50 to allow closure of Easby Point sewer. Ballfields southwest of the intersection would be replaced or rehabilitated.
Potomac Park Levee	Remedial grading of the existing levee along low areas of the levee. Grading would blend unobtrusively and snake through trees to minimize tree impacts. (Alternative 2)	Phase 2 component included filling in several hundred feet in numerous low spots to raise the crest elevation. Measures to enhance the visual character of the levee and the surrounding landscape. The Reflecting Pool portion of the project area was not analyzed for infrastructure conflicts since they do not require the relocation or	Raise levee crest. Two to three feet of elevation would be added along approximately 2,450 feet of the levee crest to raise it to 18.7 feet elevation. 8,254 cubic yards of specification-grade impervious fill material would be imported from off-site to construct the levee raising. At 12 cubic yards per truckload, this would require 688 truckloads.

Site and FRM Feature	1992 GDM EA	2009 NPS EA	2013 65 Percent Designs (This EA for Potomac Park Levee [Reflecting Pool Levee])
		disruption to any subsurface utility lines and would therefore have no impact on infrastructure or utilities.	Two closure structures would be constructed near Circle of Remembrance. One closure would be for a 36 inch CMP storm pipe that would be removed and replaced. Second closure would be for 50 by 31 inch arch culvert that crosses the line of protection.

Estimate of Emissions of Clean Air Act Pollutants of Concern
Construction of Project as Proposed in 2013

Pollutant	On-Road MOVES	Non-Road MOVES	Total
Total Gaseous Hydrocarbons	1.02	13.279	**14.299**
CO	5.658	241.383	**247.041**
NOx	7.582	43.611	**51.193**
Methane	0.329	1.609	**1.938**
SO2	0.02	0.054	**0.074**
Non-Methane Hydrocarbons	0.69	11.67	**12.36**
VOCs	0.783	12.521	**13.304**
Atmospheric CO2	2380.405	4269683.3	**4272063.7**
Total Energy Consumption (Joules)	2.55E+11	-	**2.55E+11**
Primary Exhaust PM2.5 - Total	0.047	1.59	**1.6374753**
Elemental Carbon	0.007	-	**0.0066101**
Sulfate Particulate	0.028	-	**0.0276572**
Composite - NonECPM	0.041	-	**0.0408652**
H2O (aerosol)	0	-	**0**

Note: Pollutant emission totals are presented in units of tons per year, except for the total energy consumption which is presented in units of joules.

Trees to be Removed from Existing Levee Based on Plans Presented in 2013 Design Document Report

Tally	Tree Number (2013 Tetra Tech 65 Percent Plans). In order along feature alignment proceeding from W to E.	Tree Species (Common Name)	Diameter at breast height (dbh) inches
1	T387	Bur oak	9.5
2	T386	Chestnut oak	23
3	T380	White pine	3.5
4	T381	White pine	3.5
5	T354	White pine	11
6	T381	White pine	3.5
7	T350	Crabapple	3
8	T348	Norway maple	10
9	T345	Willow oak	20
10	T344	Willow oak	20
11	T343	Willow oak	22.5
12	T342	Willow oak	16.5
13	T334	Red maple	12
14	T328	Red maple	8
15	T323	Red maple	11.5
16	T319	Silver maple	13.5
17	T315	Red maple	14
18	T314	Little leaf Linden	5.5
19	T304	Red maple	15.5
20	H574	Red maple	11
21	T269	Red maple	4
22	T260	Green ash	12
23	T256	Green ash	12
24	T249	Silver maple	12.5
25	T228	Green ash	11.5
26	T227	Norway maple	11
27	T182	Crabapple	2
28	T177	Norway maple	9
29	T171	Sugar maple	5
30	T170	Little leaf Linden	11
31	T169	Silver maple	14.5
32	T161	American beech	6.5
33	T116	Green ash	12

Tally	Tree Number (2013 Tetra Tech 65 Percent Plans). In order along feature alignment proceeding from W to E.	Tree Species (Common Name)	Diameter at breast height (dbh) inches
34	T115	Sugar maple	8
35	T114	Red oak	7
36	T112	Norway maple	3.5
37	T111	Norway maple	4
38	T107	Red maple	6
39	T36	Red maple	5.5
40	T35	Red maple	4
41	T34	Red maple	4
42	T33	Willow oak	5.5
43	T32	Hackberry	2
44	R183	Red oak	10.5
45	T30	Green ash	11
46	T28	Red oak	15.5
47	T26	Red maple	4
48	R241	Green ash	11.5
49	T56	Sweetgum	12
50	T55	Kousa dogwood	4
51	T53	Crabapple	2
52	T43	Little leaf Linden	7
53	T44	Little leaf Linden	4
54	T45	Sugar maple	4

PROGRAMMATIC AGREEMENT
AMONG
THE U.S. ARMY CORPS OF ENGINEERS
THE NATIONAL PARK SERVICE
THE NATIONAL CAPITAL PLANNING COMMISSION
AND
THE DC STATE HISTORIC PRESERVATION OFFICER
REGARDING
COMPLETION OF THE LEVEE IMPROVEMENTS PROJECT
WASHINGTON, D.C.

WHEREAS, the Potomac Park Levee (Levee) is an earthen berm extending from the Potomac River to the Washington Monument that provides flood protection to central Washington D.C.; and

WHEREAS, the National Park Service (NPS) is the Federal agency that controls, operates, and maintains the Levee as well as the agency responsible for issuing permits for work to be constructed in the subject location; and

WHEREAS, the U.S. Army Corps of Engineers, Baltimore District (USACE) is the Federal agency responsible for providing flood risk management (FRM) in the subject location; and

WHEREAS, the National Capital Planning Commission (NCPC) is the Federal agency with approval authority over Federal projects in the subject location pursuant to the National Capital Planning Act of 1952, 40 U.S.C 8722 (b)(1) and (d); and

WHEREAS, in 1992, USACE recommended that the Levee improvements be designed to a greater height that would provide a 700,000 cubic feet per second level of protection as originally authorized by Congress in the Flood Control Act of 1936 (Congressionally authorized level of protection); and

WHEREAS, USACE inspected the Levee in 2007 and rated it "unacceptable" due to post-Hurricane Katrina standards; and

WHEREAS, as a result of the unacceptable rating the Federal Emergency Management Administration (FEMA) considered issuing new 100-year floodplain maps that would have placed large new areas of central Washington within the flood risk area and required additional flood insurance, building upgrades, and other costly flood control measures; and

WHEREAS, the Government of the District of Columbia requested that FEMA delay issuing the new floodplain maps and FEMA agreed, provided that Levee improvements to contain a 100-year flood would be implemented by November 2009; and

WHEREAS, the USACE, NPS, NCPC, the Government of the District of Columbia, the District of Columbia State Historic Preservation Officer (DC SHPO), and the Advisory Council on Historic Preservation (ACHP) entered into a Programmatic Agreement in 2009 (2009 PA)

regarding a number of Levee improvements that were meant to achieve the Congressionally authorized level of protection and address related issues; and

WHEREAS, the Committee of 100 on the Federal City, the District of Columbia Office of Planning (DCOP), the District of Columbia Department of Transportation (DDOT), the General Services Administration, the National Trust for Historic Preservation, the National Coalition to Save Our Mall, and the Washington Metropolitan Area Transit Authority (WMATA) were listed as consulting parties in the 2009 PA; and

WHEREAS, the 2009 PA divided the Levee improvements into two phases. Phase I consisted of flood walls and a post and panel closure system across 17th Street, with permanent earthwork, permanent planting, and an on-site post and panel storage facility on the west side of 17th Street, as well as limited earthwork and planting on the east side. Phase II consisted of minor increases in grade along 23rd Street and Constitution Avenue, NW and the existing levee, final surface treatments of exposed portions of the flood walls, as well as final grading and planting on the east side of 17th Street to ensure that the Levee improvements were compatible with their surrounding natural and cultural environment; and

WHEREAS, all of the Phase I components were completed but only some of the Phase II components were completed prior to the May 1st, 2017 expiration of the 2009 PA; and

WHEREAS, if Congress increases the authorized project cost in a future Water Resources Reform and Development Act (WRRDA), USACE will request funding to complete the Project in the budget cycle following the respective WRRDA cost increase. The physical completion of the Project would be contingent on the receipt of funding to complete plans and specifications and execution of a construction contract; and

WHEREAS, USACE intends to use Congressional funding to complete the remaining Phase II Levee improvements, specifically minor increases in grade along the Reflecting Pool, a new proposal to redesign the existing accessible ramp at a mid-point along the Reflecting Pool, and increases in grade along 23rd Street and Constitution Avenue, NW (Project), as shown in Appendix A; and

WHEREAS, USACE also intends to utilize NPS funding to award a Fiscal Year 2019 contract for construction of the southern half of the semi-circular sidewalk on the west side of 17th Street which was originally planned as part of Phase II but this sidewalk will not require further consultation since it will be constructed in accordance with the previously approved plans shown in Appendix B; and

WHEREAS, two adjacent developments are also proposed along 23rd Street and Constitution Avenue, NW, including the National Desert Storm War Memorial and DC Water Potomac River Tunnel Project, and it may be possible to coordinate these projects so that they are designed to provide the minor increases in grade necessary to achieve the Congressionally authorized level of protection; and

WHEREAS, USACE, NPS, and NCPC have determined that implementation of the Project and the issuance of the necessary permits and approvals constitute "Undertakings" subject to Section 106 of the National Historic Preservation Act (NHPA), 54 U.S.C. 306108, and its implementing regulations, 36 CFR Part 800; and

WHEREAS, USACE, NPS and NCPC have consulted with the DC SHPO and, noting the potential for adverse effects, have requested ACHP to participate in the consultation; and

WHEREAS, ACHP determined that it would not participate in the consultation by e-mail dated July 2, 2018; and

WHEREAS, USACE, NPS and NCPC have elected to develop this Programmatic Agreement (PA) pursuant to 36 CFR 800.14(b)(1)(ii) because the Project is a complex undertaking whose effects on historic properties cannot be fully determined until funding to design and implement future work is secured and the DC SHPO, NCPC, and the U.S. Commission of Fine Arts (CFA) complete their respective reviews and approvals of the Project and the adjacent developments, as appropriate; and

WHEREAS, this PA acknowledges that the Project's Area of Potential Effect, consulting parties, opportunities for comment and all other applicable requirements of 36 CFR Part 800 will be addressed in future consultation; and

WHEREAS, this PA acknowledges that some aspects of the Project, such as minor increases in Levee grade along the Reflecting Pool, may have "no adverse effect" on historic properties; and

WHEREAS, this PA also acknowledges that future consultation will encourage coordination of the Project with the adjacent developments in the 23rd Street and Constitution Avenue, NW area, and that cumulative effects of these coordinated reviews will be taken into account; and

WHEREAS, USACE, NPS, NCPC, and DC SHPO are the Signatories to this PA pursuant to 36 CFR 800.6(c)(1)(i); and

NOW, THEREFORE, USACE, NPS, NCPC and DC SHPO agree that the Project will be implemented in accordance with the following stipulations in order to take into account the effects of the Project on historic properties.

STIPULATIONS

USACE, NPS and NCPC shall ensure that the following measures are carried out:

1. Review of Minor Increases in Levee Grade along the Reflecting Pool

    a. The Signatories shall consult pursuant to 36 CFR Part 800, regarding the minor increases in the Levee's grade along the Reflecting Pool and related improvements in this area.

b. To address potential effects on the WWII Circle of Remembrance (Circle), USACE shall provide digital photographs of the portion of the Levee footprint that approaches the Circle. The photographs will document how close in proximity the Levee is to the Circle and will serve as an aid for effect determinations. USACE shall also provide scaled cross-section drawings with associated photographs revealing any possible visual effects that the Levee raising may have on the Circle.

c. To address potential effects of the proposed redesign of the existing accessible ramp and walkway located at a mid-point along the Reflecting Pool, USACE shall provide proposed plans and digital photographs of the area showing existing conditions and incorporate any comments regarding design, materials, or other aspects of the ramp and walkway that will avoid adverse effects on historic properties.

d. To identify any archaeological resources that may be affected, the USACE shall consult early with the NPS and DC SHPO.

e. USACE shall also develop any other materials and take any additional steps necessary to comply with 36 CFR Part 800.

f. After the Signatories consult pursuant to Stipulations 1.a through 1.e above, the NPS shall review the USACE's proposed final design for minor increases in Levee grade along the reflecting pool and make the determination of effect in consultation with the DC SHPO. No further action will be necessary if the plans are determined to have no adverse effect. If adverse effects are identified, the Signatories will consult further to develop alternatives to avoid, minimize or mitigate the adverse effects and will amend this PA accordingly. Any such amendment will be addressed in accordance with Stipulation 8.

2. Review of Levee Improvements at 23rd Street and Constitution Avenue, NW and Related Developments

a. The Signatories shall consult pursuant to 36 CFR Part 800 regarding the Levee improvements proposed at 23rd and Constitution, NW.

b. USACE shall proactively consult with the other Signatories and the proponents of the adjacent National Desert Storm War Memorial and DC Water Potomac River Tunnel Projects to encourage incorporation of the Levee improvements into those developments and avoid and minimize any adverse effects by limiting the overall visual and physical changes to the historic context.

c. If USACE does not receive funding for the Project, and any adjacent developments are proposing to implement Levee improvements, the NPS must apply for a Section 408 permit as codified at 33 U.S.C 408. As part of the Section 408 permit review process, USACE shall make a good faith effort to review, comment, and provide relevant feedback on plans for the adjacent developments. The NPS and USACE may elect to use this PA to meet their respective Section 106 responsibilities for the Section 408 permit and shall notify the other Signatories of their decisions in this regard.

d. Upon receipt of funding, USACE shall specifically review and comment on plans for the adjacent projects and develop and revise Levee improvements plans and related information in a timely manner; seek to coordinate the reviews of the adjacent projects with the reviews required by this PA; consider and respond to any cumulative effects; and make all other reasonable efforts to ensure successful and appropriate coordination to the maximum extent feasible.

e. To assist USACE to comply with Stipulation 2.b. above, NPS, as landowner, shall work with the proponents of the adjacent National Desert Storm War Memorial and DC Water Potomac River Tunnel Projects to notify USACE of relevant meetings, review timeframes, and provide USACE with project plans and related information.

f. To address any archaeological resources that may be affected, the USACE shall consult early with the NPS and DC SHPO.

g. USACE shall also develop any other materials and take any additional steps necessary to comply with 36 CFR Part 800.

h. After the Signatories consult pursuant to Stipulations 2.a through 2.g above, the NPS shall review the USACE's proposed final design for Levee improvements at 23rd and Constitution Avenue and related developments and make the determination of effect in consultation with the DC SHPO. No further action will be necessary if the plans are determined to have no adverse effect. If adverse effects are identified, the Signatories will consult further to develop alternatives to avoid, minimize or mitigate the adverse effects and will amend this PA accordingly, noting that some or all of the adverse effects may be adequately mitigated through implementation of other Section 106 agreement documents executed specifically for the related developments. Any such amendment to this PA will be addressed in accordance with Stipulation 8

3. Status of USACE Project Funding

   a. If USACE receives funding to implement the Project:

      i. USACE shall immediately notify the other consulting parties to this PA in email and in writing.

      ii. USACE shall meet with the other consulting parties of this PA within sixty (60) days of the notification above to coordinate and clarify how it will comply with this PA.

   b. In the event USACE does not receive funding to implement the Project, its signature on this PA will not commit USACE to any provisions set forth in this PA.

4. Documentation of the Completed Levee Improvements Project

Within thirty [30] days of the completion of the Project, the USACE shall evaluate and provide adequate documentation showing that the Levee meets the Congressionally authorized level of protection. Documentation shall be provided to the Director of the

District of Columbia Department of Energy and Environment and any Signatory that requests a copy.

5. Dispute Resolution

   a. Should any Signatory to this PA object in writing to the other Signatories regarding any action carried out in accordance with this PA, the Signatories shall consult to resolve the objection. If, after making a good faith effort the Signatories are unable to resolve the disagreement, USACE shall forward its proposed resolution of the dispute and any other documentation relevant to the dispute to ACHP. Within forty five (45) days after receipt of all pertinent documentation, ACHP will either:

      i. Provide USACE with recommendations, which USACE will take into account in reaching a final decision regarding the dispute; or

      ii. Notify USACE that it will comment pursuant to 36 CFR 800.7(c), and proceed to comment. Any ACHP comment provided in response to such a request shall be taken into account by USACE in accordance with 36 CFR 800.7(c)(4). Any ACHP recommendation or comment will be understood to pertain only to the subject of the dispute; USACE's responsibility to carry out all actions under this PA that are not subjects of the dispute will remain unchanged.

   b. In reaching a final decision, USACE shall prepare a response that takes into account any timely comments regarding the dispute and notify the Signatories in writing of its decision.

6. Reporting and Notifications

   USACE shall update the other Signatories, consulting parties, and the public on the status of the Project via electronic notification on at least an annual basis, no later than the anniversary date of the last signature on this PA. Updates will be posted on USACE's public website at https://nab.usace.army.mil.

7. Duration

   This PA shall be in effect for a period of fifteen (15) years from the date of the last signature on this PA.

8. Amendments

   This PA may be amended when an amendment is agreed to in writing by all Signatories. The amendment shall be effective on the date a copy signed by all of the Signatories is filed with ACHP.

9. Termination

   If any Signatory to this PA determines that the terms of the PA cannot or are not being carried out, that objecting party shall so notify the other Signatories in writing and consult with them to seek amendment of the PA. If within sixty (60) days, an

amendment cannot be reached, any Signatory may terminate the PA upon written notification to the other Signatories. Once the PA is terminated, and prior to work continuing on the Project, USACE must (a) either execute a new PA pursuant to 36 CFR 800.14(b) or (b) comply with 36 CFR Part 800 for any uncompleted aspects of the Project. USACE will notify the Signatories as to the course of the action it will pursue.

10. Unanticipated Discoveries

Should any activity that takes place as a result of this PA result in unanticipated or post-review archaeological discoveries, work in the area shall immediately stop, the area will be secured, and the NPS and DC SHPO shall be notified. NPS will determine if significant resources are present and will be adversely affected by resuming work. If avoidance of the resources is not possible, appropriate minimization and/or mitigation measures will be determined in consultation with the DC SHPO and shall be carried out before activity in the location resumes. If the identified resources include human remains, MPD (Metropolitan Police Dept.), and OCME (Office of the Chief Medical Examiner) shall also be contacted under DC Statute DC ST § 5-1406 so they can determine whether the resources are of medico-legal (crime scene-related) interest. If the human remains are non-Native American Indian in origin then NPS will consult with the DC SHPO, and if Native American Indian in origin NPS shall proceed following NAGPRA protocols.

11. Availability of Federal Funds / Anti-Deficiency Act

The obligations of USACE under this PA are subject to the availability of appropriated funds, and the stipulations of this PA are subject to the provisions of the Anti-Deficiency Act and other applicable provisions of federal fiscal law. USACE shall make a reasonable and good faith effort to secure the necessary funds to implement its obligations under this PA. If compliance with the Anti-Deficiency Act or other applicable provisions of federal fiscal law alters or impairs USACE's ability to implement its obligations under this PA, USACE shall consult in accordance with Stipulation 8 (Amendments) and, if necessary, Stipulation 9 (Termination).

12. Electronic Copies

Within one week of the last signature on this PA, USACE shall provide each Signatory with one high quality, legible, color, electronic copy of this fully-executed PA and all of its attachments fully integrated into one, single document. Internet links shall not be used as a means to provide copies of attachments since web-based information often changes. If the electronic copy is too large to send by e-mail, USACE shall provide each Signatory with a copy of this PA on a compact disc or other appropriate means.

Execution of this PA and implementation of its terms evidences that USACE, NPS and NCPC have taken into account the effects of their Undertakings on historic properties and afforded ACHP a reasonable opportunity to comment.

Signatures Follow on Separate Page

SIGNATURE PAGE
PROGRAMMATIC AGREEMENT
REGARDING
COMPLETION OF THE LEVEE IMPROVEMENTS PROJECT
WASHINGTON, D.C.

U.S. ARMY CORPS OF ENGINEERS

11 DEC 18
Date

COL John P. Litz
Commander
U.S. Army Corps of Engineers, Baltimore District

NATIONAL PARK SERVICE

Patricia S. Trap
12.17.18
Date

Patricia S. Trap, Acting Superintendent
National Park Service

NATIONAL CAPITAL PLANNING COMMISSION

12/12/18
Date

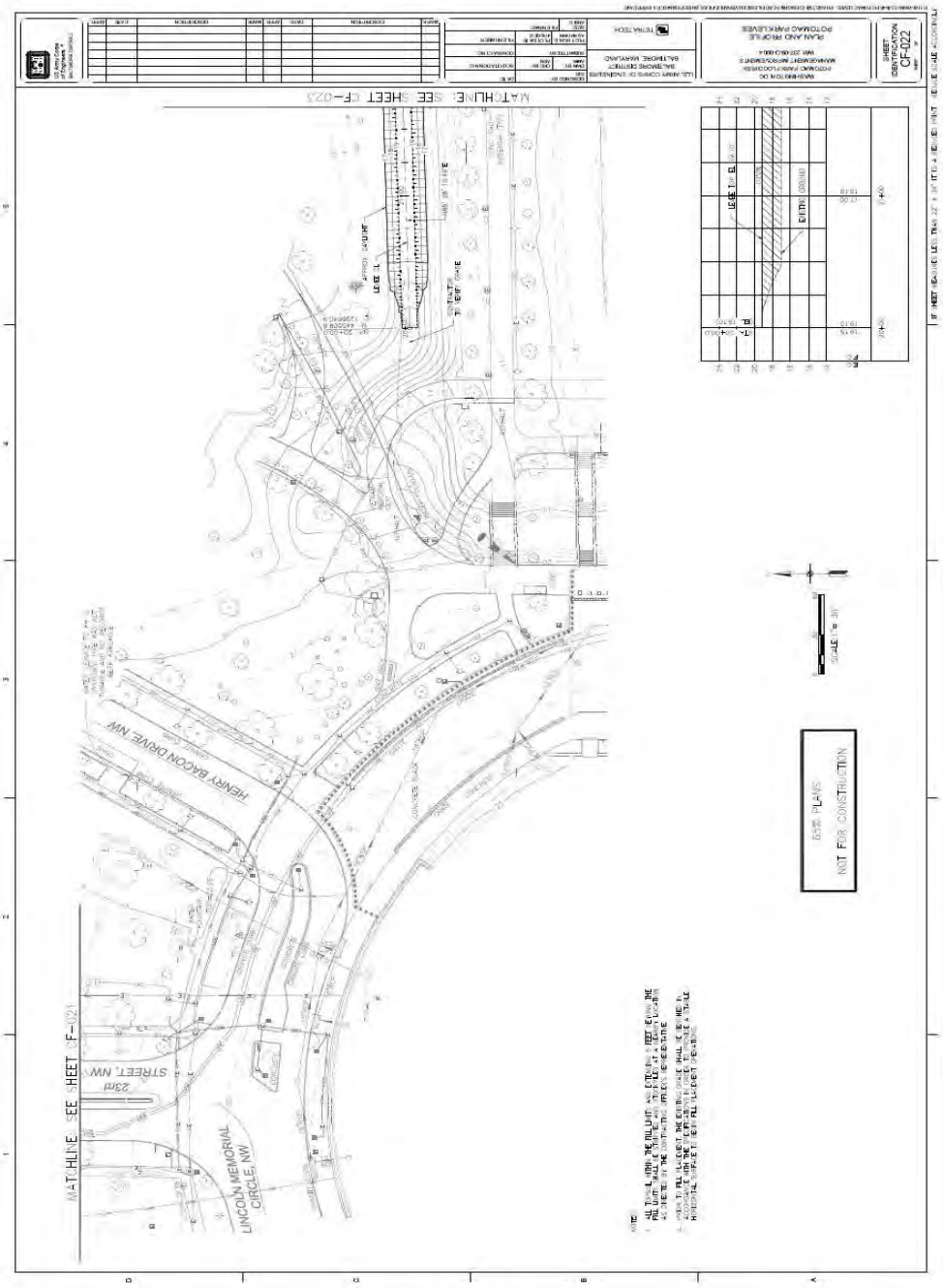
Marcel Acosta, Executive Director
National Capital Planning Commission

DC STATE HISTORIC PRESERVATION OFFICER

12/13/2018
Date

David Maloney
District of Columbia State Historic Preservation Officer

APPENDIX A
PROJECT MAP AND 65% PLANS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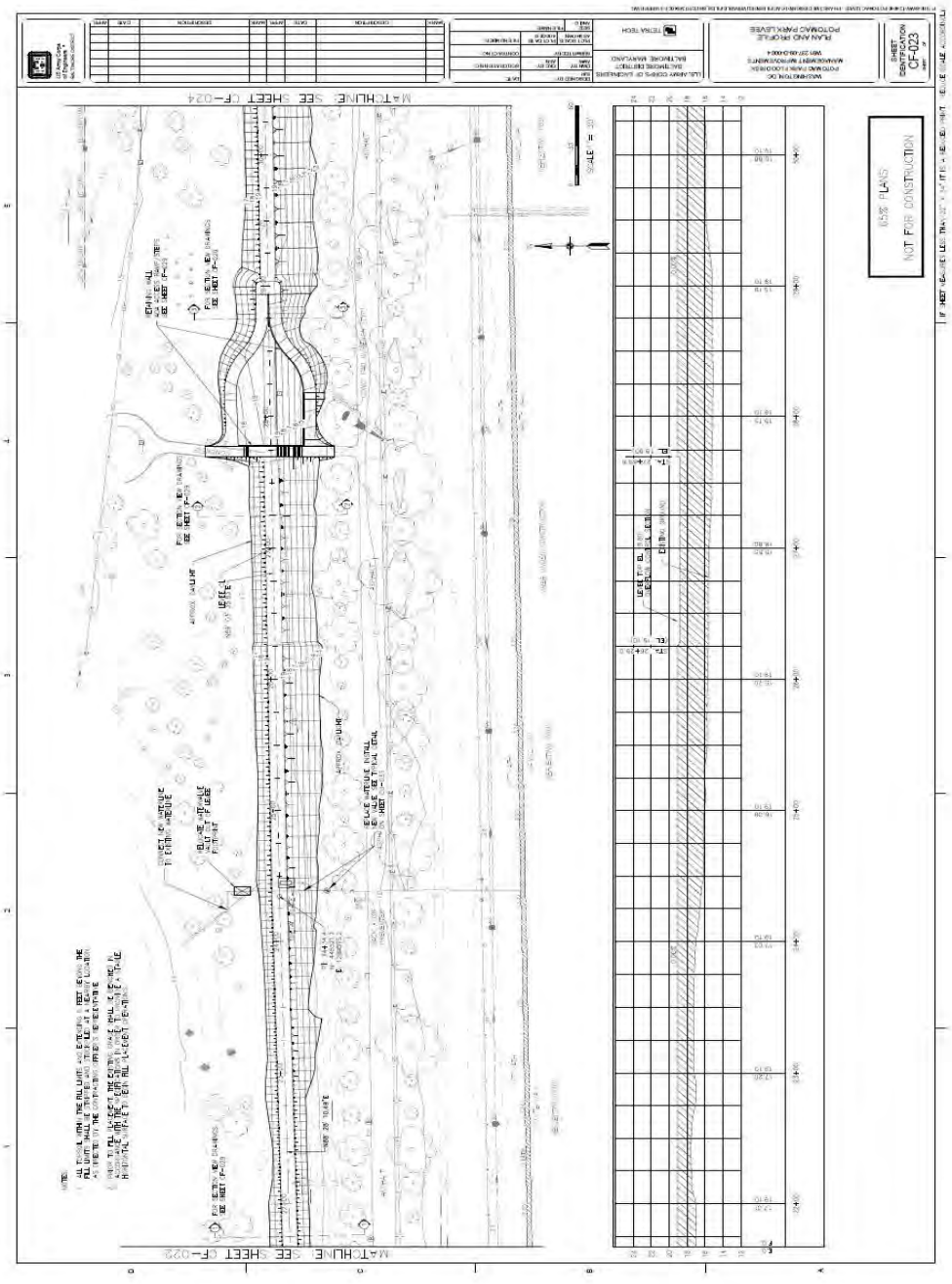
MATCHLINE: SEE SHEET CF-021
HENRY BACON DRIVE NW
23rd STREET, NW
LINCOLN MEMORIAL CIRCLE, NW
BASE PLANS
NOT FOR CONSTRUCTION

11

Annex B-18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POTOMAC PARK LEVEE
CF-023
NOT FOR CONSTRUCTION
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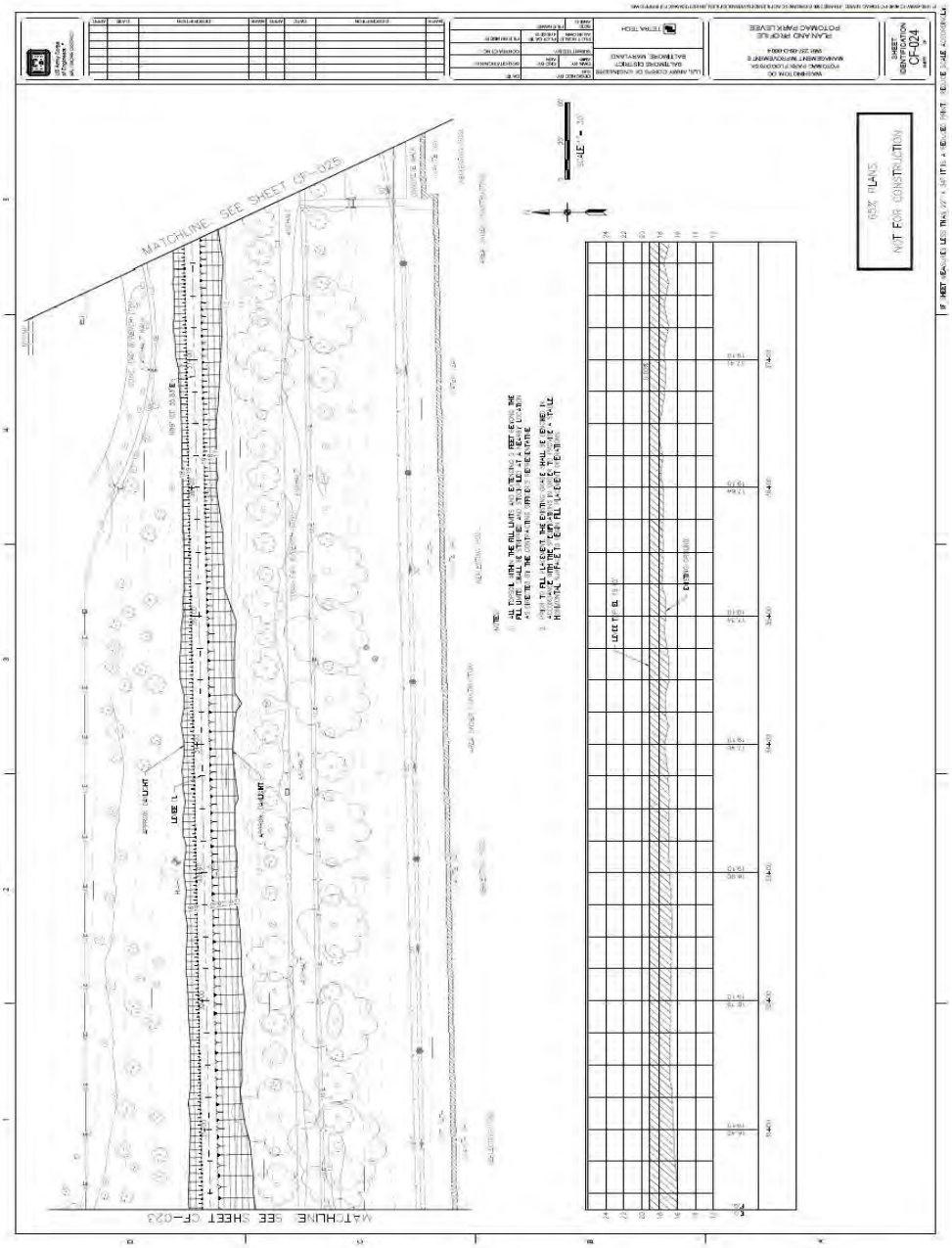
MATCHLINE SEE SHEET CF-022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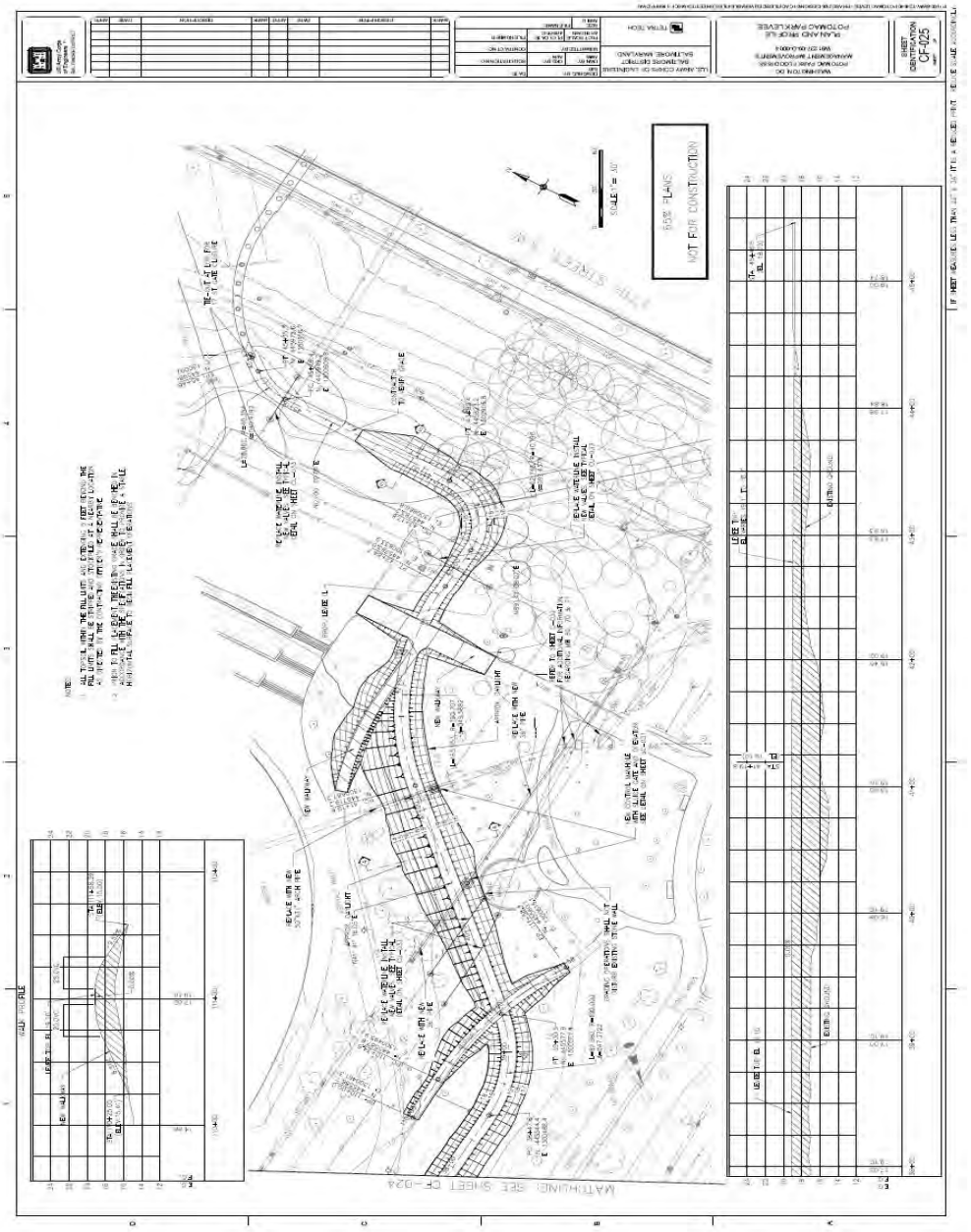
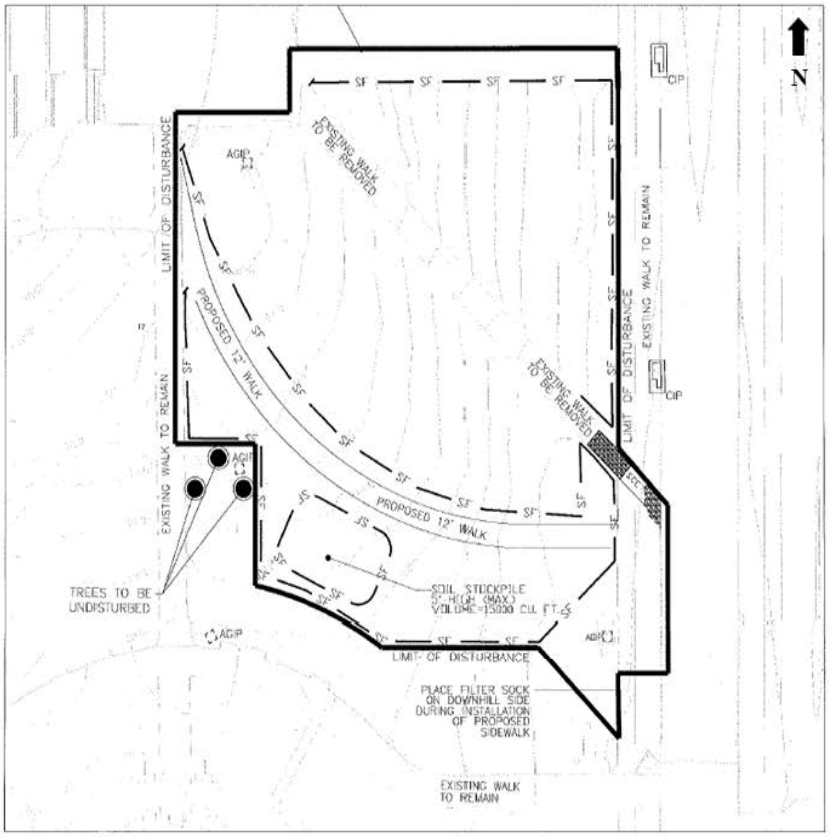
MATCHLINE SEE SHEET CF-023
NOT FOR CONSTRUCTION



APPENDIX B
SEMI-CIRCULAR SIDEWALK PLANS


N
CIP
CIP
AGIP
AGIP
AGIP
AGIP
EXISTING WALK TO BE REMOVED
EXISTING WALK TO BE REMOVED
LIMIT OF DISTURBANCE
EXISTING WALK TO REMAIN
LIMIT OF DISTURBANCE
EXISTING WALK TO REMAIN
PROPOSED 12' WALK
PROPOSED 12' WALK
SF
JS
SOIL STOCKPILE
5' HIGH (MAX.)
VOLUME=15000 CU. FT.
TREES TO BE UNDISTURBED
LIMIT OF DISTURBANCE
PLACE FILTER SOCK ON DOWNHILL SIDE DURING INSTALLATION OF PROPOSED SIDEWALK
EXISTING WALK TO REMAIN

C. INTERIOR DRAINAGE ANALYSIS

An interior drainage analysis was performed to assess the residual flooding in the area protected by the Potomac Park Levee system. This analysis looks at both the impacts of rainfall within the District of Columbia (the interior area) and flood stages on the Potomac River and the interaction between the interior and exterior conditions.

The approach for the interior drainage analysis relies on an assessment of a range of scenarios to quantify the anticipated extent of flooding associated with the interior ponding area. In several of these scenarios the impact of the pumping stations were not directly considered. This was deemed necessary because of the fact that the system serves an area much larger than the Federal Triangle area. As such, the ability of the pumping stations to evacuate floodwaters from the Federal Triangle area depends on the geographical distribution of rain and the timing of runoff produced by areas distant from the Federal Triangle and the pumping stations. Therefore, the operating procedures for the pumping stations do not completely address flooding in the Federal Triangle area in a way that would satisfy FEMA requirements. In other words, these pump stations will be triggered by more frequent storm events prior to the 1% annual exceedance probability flood required by FEMA.

D. WATERSHED DATA

To support the analysis, WASA provided a map delineating the Federal Triangle Basin Catchments. This map is provided in Attachment B (Part 1 – Sewershed Catchment Areas) and identifies the individual sewersheds associated with each combined sewer outflow (CSO). Following the sewershed map is a schematic that shows the layout of the sewer system in the study area. These two maps in conjunction with Figure 12 illustrate that the boundary of the watershed on the ground surface changes once flow is conveyed into the pipe system.

Throughout the watershed stormwater is picked up by catch basins distributed within the system. WASA provided information for each sewershed regarding the number of catch basins and the capacity of those catch basins to convey flow into the pipe network system.

E. PONDING AREAS

Runoff that is not conveyed into the pipe system via the catch basins will flow down the streets to the low point of the watershed which is the Federal Triangle area. Once water reaches this area, it will collect and pond. Elevation-volume curves for the Federal Triangle area were generated using the 2008 LiDAR data that was provided through the Office of the Chief Technology Officer (OCTO). Contours and subsequent 3D TIN surfaces were created from the LiDAR points which were spaced at approximately 100-ft intervals, allowing 2-ft contours to be generated. Some areas of the topo are distorted due to 'blurring' of the data in areas of high national security priority such as around the White House, Washington Memorial, and the Capital. The data was assembled and analyzed in ArcGIS 9.2 with Spatial Analyst and 3D Analyst. The storage-elevation curve is included in Part 2 of Attachment B.

The storage available in the three tunnels located in the project area – 12th Street, 9th Street, and 3rd Street / Highway 395 – were incorporated into the HEC-HMS model. The 12th Street and 9th Street tunnels provide minimal storage. Both tunnels begin to store water once the pond reaches an elevation of 6 feet and water flows south beyond Constitution Avenue. The 3rd Street / Highway 395 includes a significant depression area to the south of the tunnel. Unlike the 12th Street and 9th Street tunnels, the 3rd Street / Highway 395 tunnel does provide significant flow storage as does the depression south of the tunnel. The storage in this tunnel and depression area is available once the pond elevation reaches 10 feet. The Elevation-Storage Curve incorporated into the HEC-HMS model accounts for these storage features. Details of the development of this curve are included in Part 2 of Attachment B.

Separate ponding areas were developed for the area north of Highway 395, and for the combined area north and south of Highway 395. Topography of the area indicates that when the ponding elevation is below 12', walls located on both side of the highway eastbound connector road will limit the flow that can be conveyed to the south. During high flow conditions the flood water could leak through or overtop the walls, only two gaps in the wall on the southern side of the parking area will allow flow to escape to the south. A survey topographic map superimposed on an aerial photograph in the vicinity of Highway 395 is included in Part 2 of Attachment B.

A significant number of buildings are located throughout the ponding area. In the area north of Highway 395 many of these large buildings have open courtyards that could store floodwaters. In addition, reports following the June 2006 storm event indicate that a significant number of buildings flood during large events. The DEM used in this study largely removes the buildings from the data set. This allows the footprint of the building to become inundated with floodwaters, which approximates the 2006 storm event condition where the buildings flooded.

In addition, the Constitution Gardens Pond that collects surface runoff from the adjacent area to the west (see Figure 11) was included as a separate ponding area.

F. INTERIOR DRAINAGE OUTLETS

The interior drainage of the Federal Triangle can be drained in two ways: (1) the Constitution Avenue gravity storm drain and (2) the B Street / New Jersey combined sewer system.

The Constitution Avenue gravity storm drain ranges in diameter from 57" to 72". It runs for approximately one mile along Constitution Avenue from 6th Street NW to 15th Street NW. The storm drain then turns south, crosses the National Mall, and discharges to the Potomac River at the Tidal Basin. Part 2 of Attachment B includes an analysis of the outlet capacity of this pipe under different tailwater conditions.

The B Street / New Jersey combined sewer flows to the O Street and Main Pumping Stations. The combined sewer also contains two gravity overflow points that discharge into the Anacostia River. The two pump stations

are both separated into a sanitary and stormwater side. The sanitary side of both pump stations pumps flows to the Blue Plains Treatment Plant. The stormwater side of both pump stations discharges into the Anacostia River. The stormwater side of the O Street Pump Station contains 6-100 MGD pumps [design capacity is 500 MGD (750 cfs) with one pump held in reserve.] The stormwater side of the Main Pumping Station contains 6-80 MGD pumps [400 MGD (620 cfs) capacity with one pump held in reserve.] While O Street and Main Pumping Stations are both connected to the B Street / New Jersey combined sewer line, the sewer is primarily drained by the O Street Pump Station. The sanitary pumps have a capacity of 60 MGD (93 cfs) and 300 MGD (464 cfs) at the O Street and Main Pump Station, respectively.

According to the "Standard Operating Procedure for Main and "O" Street Sewage Pumping Stations" (O'Brien and Gere Engineers, 1993), the stormwater pumps at the Main Station will be activated when the elevation of flow is at +3.0 feet at Structure #14 (the inflatable dam in the sewer system). It should be noted that this structure is located downstream of the Federal Triangle area and receives flow from the entire sewer system. It is reasonable to assume that this elevation will be reached at the dam well before the interior pond at the Federal Triangle reaches this elevation.

The Potomac Park Levee drainage area can be drained by the Easby Point Trunk Sewer with flow diversion to B Street / New Jersey combined sewer system and/or Potomac Pumping Station and by the Lake Drain at Constitution Gardens Pond. It should be noted that the outfall of Easby Trunk Sewer is located upstream of Arlington Memorial Bridge and the expected 2-year water surface elevation is between 4.4 and 4.7 feet (between stations 35260.17 and 40293.68 of Table 7). This will back up the Easby Point Trunk Sewer if the inflatable dam upstream of structure 34 (Figure 13), located near the intersection of 23rd Street and Constitution Avenue, is not activated. For this reason, the Easby Point Trunk Sewer outfall was considered inactive and the flow is assumed to be diverted to the B Street / New Jersey combined sewer system in this analysis.

G. INTERIOR DRAINAGE MODEL

Using the U.S. Army Corps of Engineers (USACE) HEC-HMS software, a model of the Federal Triangle watershed was developed. The following describes the drainage basin parameters that were used in the model. Summary HEC-HMS data is provided in Part 2 of Attachment B. All input and output files are included on the CD attached to this memorandum. Output data is included in Part 3 of Attachment B.

The HEC-HMS model was used to generate runoff throughout the watershed area, route the flows down to the low points (the Federal Triangle and Constitution Gardens Pond) and through the detention basins using various outlet scenarios. The model was also used to determine the elevations of the interior ponding.

i. Drainage Area

A sewershed shapefile, provided by WASA, was used as the basis for the subwatersheds in the HEC-HMS model. The sewersheds were clipped to match the extent of the Federal Triangle overland flow drainage area, also provided by WASA as a shapefile. The subsequent clipped sewersheds were used to calculate drainage areas and assist in delineating flow routes for the HEC-HMS model. Sewershed processing was done in ArcGIS 9.2.

The topographic data base used is the 2008 LiDAR dataset (provided by OCTO) because it is the most recent available data. Spot checks were done between this dataset and the previous OCTO data that was generated in 2004. These spots were chosen in areas free of tree canopy as the 2004 data was not corrected for vegetation. This verification resulted in elevation discrepancies on the order of 2.5 feet. The 2008 data was corrected to remove the effects of vegetation, while this was not done in the 2004 data. The 2004 data has a smaller grid (1 meter) as compared to the 100-foot grid in the 2008 data. Data from the U.S. Coastal and Geodetic (USCG)

Survey (2009) were obtained for several benchmarks in the study area and compared with elevations from both 2004 and 2008 data at the same locations. Several of these points are shown in Table 9.

Table 9. Elevation Comparison

Point	USCG elevation	2004 elevation	2008 elevation	Location
1	11.02'	10.12'	11.2'	Capitol Grounds
2	6.23'	6.58'	4.21'	Constitution & 9th
3	6.49'	6.74'	4.00'	Pennsylvania & 9th
4	12.30'	12.83'	12.69'	Constitution & 15th
5	14.56'	14.56'	14.05'	Pennsylvania & 13th
Note: elevation in NAVD 88				

An analysis of the data indicates that 3 out of 5 data sets are in agreement except 2 data sets along Constitution Avenue. In this area the USCG and 2004 data are approximately 2' to 2.5' higher than the 2008 data. However preliminary analyses were performed to assess the likely range of impact if elevations along Constitution Avenue were increased by 2.5'. The results of this analysis show that the ponding elevations and footprint are unaffected due to the relatively small volume of storage in question. Therefore, the higher elevations along Constitution Avenue were used in estimating the elevation storage curve.

ii. Rainfall

Various rainfall frequency events were defined in the HEC-HMS model. The rainfall amounts were obtained from the NOAA Atlas 14, Volume 2, Version 3 for the Washington DC area and are shown in Table 10. The SCS 24-hour Type II rainfall distribution was used in the HEC-HMS model.

Table 10. Precipitation Depth

Frequency	Precipitation (inches)
500-year	11.8
200-year	9.67
100-year	8.30
50-year	7.09
25-year	6.01
10-year	4.81
5-year	4.02
2-year	3.13

iii. Losses

Using the SCS method, a curve number was defined for each of the sewersheds. Table 11 shows the values that were used for the land types found in the watershed. These values are based on soil type D which is the

prevalent soil type in the area and yields the most conservative curve numbers. Based on visual inspection of the aerial photography, a composite for the sewershed was developed using the Table 11 values. The final curve numbers ranged from 86 to 95. Part 2 of Attachment B includes a table identifying the percent of land type assumed in each sewershed.

Table 11. SCS Curve Numbers

Land Type Description	SCS CN
Urban: Commercial	95
Residential: 1/8 acre or less	92
Open Space: Good	80

iv. Routing

The lag time for each individual sewershed was calculated using the formula (USDA 2010):

$$T_{LAG} = L^{0.8} * (S+1)^{0.7} / 1900 * Y^{0.5}$$

where T_{LAG} is the lag time in hours, L is the hydraulic length of the sewershed in feet, Y is the sewershed slope in percent, and S is the maximum retention in the sewershed in inches as defined by:

$$S = (1000 / CN) - 10$$

where CN is the SCS curve number used for land cover type. The minimum sewershed lag time used was 3.5 minutes.

Lag times for individual routing reaches were determined by dividing the reach length to the velocity of flow along that reach. The flow velocity was calculated based on the Manning's equation:

$$V = (1.49/n) \times R^{0.67} \times S^{0.5}$$

A Manning's *n*-value of 0.013 was used to represent asphalt, a typical street cross section was used to determine the hydraulic radius (R), and the slopes (S) were identified from the topographic data. The length of each reach was determined from the topographic maps as well as the CSO network information.

Lag times for each sewershed and the routing reaches are shown in Part 2 of Attachment B.

v. Reservoir

The reservoir component of the HEC-HMS model was used to determine the depth of ponding that would result from the watershed runoff.

vi. Pond Outlet

As described previously, flow can be discharged from the pond via a gravity drain or through the pump stations. Various HEC-HMS simulations were set up to analyze the impacts of the possible outlets.

H. INTERIOR DRAINAGE SCENARIOS

Scenario 1 – no gravity outflow or pump discharge

In this simulation the total runoff from a 100-year storm was routed down to the Federal Triangle area and Constitution Gardens Pond. The river stage was assumed to be at the 100-year level in which case the gravity drain outlet has negligible impact on the interior ponding elevations. The pumps were not used to drain the interior in order to reflect the uncertain operational procedures. Thus, this scenario is a conservative estimate of the interior ponding area and was generated to establish a maximum extent of the expected inundated area. The elevations of the ponded areas were calculated based on the elevation-storage curve to be 13.1 and 11.8 feet NAVD88 for the Federal Triangle Area and Constitution Gardens Pond, respectively.

The footprint of the Federal Triangle ponding area (shown on Exhibit 1) extends south of Highway 395 and the footprint of the Constitution Gardens Pond ponding area is limited by the high grounds adjacent to the Pond.

In the 2009 Tetra Tech analysis, an additional iteration of the model was made that did not include the area south of Highway 395. In this model run, the pond reached an elevation of 14.2 feet which would sufficiently breach the high point under the highway to allow water to drain south beyond the highway. Flooding associated with the 12th and 9th Street tunnels are also shown on Exhibit 1 and are located south of the main pond area.

Scenario 2 – catch basin diversions and pump discharge

In this simulation the runoff from a 100-year storm was generated for the Federal Triangle and Constitution Gardens Pond watersheds. The capacity of the catch basins was modeled to divert flow out of the watershed. It is assumed that the water will be conveyed through the combined sewer pipe system and the pump stations will discharge the flow to the Blue Plains Treatment Plant or the Anacostia River. The flow not collected by the catch basins was routed to the Federal Triangle area and allowed to pond in the low areas. The river stage was assumed to be at the 100-year level in which case the gravity drain outlet has negligible impact on the pond elevation. The elevation of the ponded area was calculated based on the elevation-storage curve. The interior pond elevation in this scenario is 10.0 feet NAVD88 for the Federal Triangle Area. The footprint of the ponding area is shown on Exhibit 2. The flooding is contained north of Highway 395 because the pond elevation does not significantly exceed the 10-foot high ground under the highway for a sustained duration. Flooding areas shown associated with the tunnels are located south of the main pond area. The ponding area of Constitution Gardens Pond remains the same as in Scenario 1 due to absence of catch basins in the tributary drainage area and the assumed high river stage which prevents gravity drain outflow from affecting the pond elevation.

The Scenario 2 flooded area of Federal Triangle is smaller compared to Scenario 1 due to significant diversion of flow that was assumed to occur through the catch basins. The analysis of the catch basins (included in Attachment B, Part 1 – Catch Basin Capacity Analysis) assumes that 25% of the catch basins are clogged and accept minimal flow while the remaining catch basins are fully operable under orifice flow. Flow that bypasses the catch basins in the originating watershed was not allowed to enter the system at a downstream catch basin, but was routed to the Federal Triangle. An underlying assumption of this analysis is that the pipes have sufficient capacity to convey the flow collected by the catch basins. The ability of the pipes to convey that capacity is in part dependent on the operation of the combined system contributing to the pump stations and the operation of the pump stations themselves. This scenario provides possible inundation extents that could result under a certain pumping operation.

Scenario 3 – pump discharge only

In this simulation the total runoff from a 100-year storm was routed down to the Federal Triangle area and Constitution Gardens Pond. No diversion of flow through the combined sewer system in the watershed was considered. The pumping capacity of the Main and O Street pump stations was used to drain the ponded areas. Based on the design capacity of the pump stations, a constant pumping rate of 900 MGD was used. The river stage was assumed to be at the 100-year level in which case the gravity drain outlet has negligible impact on the

pond elevation. The maximum elevations of the ponded interior in this scenario are 11.2 and 11.8 feet NAVD88 for the Federal Triangle area and Constitution Gardens Pond, respectively.

The footprints of the ponding areas associated with this scenario are shown on Exhibit 3. No flooding is shown south of Highway 395. The pond elevation is sufficient to allow some shallow flooding (less than 1 foot in depth) to be conveyed to the south. This area will be shown as a Zone X shaded area as a result of the 500-year flooding and/or to denote an area protected by a levee. No additional delineation of the shallow flooding associated with flow being conveyed south of Highway 395 was made.

Flooded areas associated with the 12th and 9th Street tunnel are shown on Exhibit 3. These flooded areas are south of the main pond area.

A simplifying assumption made in this analysis is that the full pumping capacity of the Main and O Street pump stations is available to drain the Federal Triangle area. These pump stations are part of a larger system as shown in the schematic of the system (included in Attachment B, Part 1 – Sewer System Schematic) and could be used to pump stormwater from different parts of the system. If the pumps collect water from other parts of the system, they are still removing water from the Federal Triangle watershed at some point. Therefore, the effect of timing was not important as the runoff volume remains the same.

The Standard Operating Procedures manual for the pump stations is included in Part 1 – Standard Operating Procedures of Attachment B. This document identifies the stormwater operation of the pump stations during high flow conditions. The stormwater pumps are activated once the inflatable dams are deflated. The deflation point (3.0') is sufficiently low to ensure that, at the ponding elevation determined in this scenario, the stormwater pumps will be fully utilized. In particular, Section 2.3 of the operations manual discusses stormwater operations.

Scenario 4 – gravity outflow only, no pump discharge

This scenario analyzes the flooding resulting from a 100-year rainfall in the interior and a relatively low (2-year) river stage. At this river stage the gravity drain outlet is more effective than at higher river stages. The resulting ponding elevations are 13.0 and 11.1 feet NAVD88 for the Federal Triangle area and Constitution Gardens Pond, respectively. The small difference between the pond elevation in this scenario and in Scenario 1 (13.1' and 11.8') indicates that even at low river stages, the gravity drain is not effective at evacuating floodwaters. This same conclusion was reached in the 1992 USACE study.

No direct benefit of the pumping stations is considered in this scenario. However an indirect benefit considered is that the pumping capacity will provide enough relief to the combined sewers such that no surcharging of the B St / NJ Avenue line will occur through the Federal Triangle area.

Due to this relatively high ponding elevation, flow is expected to be conveyed south of Highway 395 for this scenario. Earlier model iterations not considering the volume south of Highway 395 resulted in ponding elevations in the range of 14.0 to 14.2 feet, more than sufficient to breach high ground under the highway. Additional ponding is shown associated with the 12th and 9th Street tunnels south of the main pond area (see Exhibit 4).

Coincident Frequency (Joint Probability) Analysis

The HEC Statistical Software Package (HEC-SSP) was used to perform a coincident frequency analysis to determine the stage-frequency relationship for interior ponding in the Federal Triangle Area and Constitution Gardens Pond. Unlike scenarios 1 through 4, where a single river stage was assumed as the external boundary condition for analyzing the interior drainage system performance, a coincident frequency analysis uses joint probability to account for the percentage of time the Potomac River is at various stages. An initial step is to generate "response tables" depicting the ponding elevations reached for combinations of various recurrence interval flood events on the interior and exterior of the levee. Note that coincident frequency analysis is only

necessary under conditions where the effects of gravity drains are to be considered because pumping stations can generally operate regardless of the external river stage.

For joint probability analysis, HEC-HMS flood routings were performed that accounted for the interior ponding storage-elevation relationship and gravity drain outflow vs. external river stage for a set of recurrence interval flood events (2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year). The computed ponding elevations corresponding to the N-year flood events are shown in Tables 12 and 13 for the Federal Triangle area and Constitution Gardens Pond. These response tables quantify the capability of the gravity drain system to convey runoff to the river under various river stages. This scenario is similar to Scenario 4 in that the combined sewer system is not assumed to be conveying surface runoff from the areas tributary to the Federal Triangle and Constitution Pond to the pumping stations for discharge to the river.

The Potomac River at Little Falls Pump Station discharge frequency curve (Figure 5 and Table 4) and duration-frequency relationship (Figure 6 and Table 4) are used in combination with the Table 12 and Table 13 response tables to compute the joint probability for the ponding stage-frequency curves. Given the disparity in drainage area size and watershed response time between the Potomac River at Washington, DC (11,560 square miles) and the drainage areas tributary to the Federal Triangle area (total of about 5.21 square miles) and Constitution Gardens Pond (0.55 square miles), the runoffs from these two areas are assumed to be statistically independent of the Potomac River flow.

The results of the coincident frequency analysis for the Federal Triangle area and Constitution Gardens Pond are presented in Figures 14 and 15, respectively. The computed 100-year water surface elevations for the Federal Triangle area and Constitution Gardens Pond are 13.0 and 11.4 feet, respectively.

Table 12. Federal Triangle Area Response Table

	Variable A	**Variable B (feet)** Water surface elevation (feet) at Potomac River at HEC-RAS Station 26195.54							
	Peak inflow of interior drainage area	2-year	5-year	10-year	25-year	50-year	100-year	200-year	500-year
		B1 = 4.08	B2 = 5.54	B3 = 7.38	B4 = 9.31	B5 = 10.44	B6 = 11.43	B7 = 12.46	B8 = 13.75
		Variable C (feet) Maximum ponding elevation of interior drainage area at coincident event							
Frequency (yr)	**(cfs)**	C= f(A,B1)	C = f(A,B2)	C = f(A,B3)	C = f(A,B4)	C = f(A,B5)	C = f(A,B6)	C = f(A,B7)	C = f(A,B8)
500	22288.0	14.9	14.9	15.0	15.0	15.0	15.0	15.1	15.1
200	18070.7	13.8	13.8	13.8	13.9	13.9	13.9	14.0	14.0
100	15346.1	13.0	13.0	13.0	13.1	13.1	13.1	13.2	13.2
50	12929.8	12.2	12.2	12.3	12.3	12.4	12.4	12.5	12.5
25	10763.9	11.4	11.5	11.5	11.6	11.6	11.7	11.7	11.7
10	8346.9	10.5	10.5	10.6	10.7	10.7	10.7	10.7	10.7
5	6750.9	9.9	9.9	9.9	10.0	10.0	10.0	10.0	10.0
2	4953.7	9.6	9.6	9.6	9.7	9.7	9.7	9.7	9.7
Note: elevation in NAVD 88									

Table 13. Constitution Gardens Pond Response Table

Frequency (yr)	Variable A Peak inflow of interior drainage area (cfs)	Variable B (feet) Water surface elevation (feet) at Potomac River at HEC-RAS Station 35260.17							
		2-year	5-year	10-year	25-year	50-year	100-year	200-year	500-year
		B1 = 4.41	B2 = 6.14	B3 = 8.10	B4 = 10.91	B5 = 11.54	B6 = 12.80	B7 = 14.10	B8 = 15.92
		Variable C (feet) Maximum ponding elevation of interior drainage area at coincident event							
		C = f(A,B1)	C = f(A,B2)	C = f(A,B3)	C = f(A,B4)	C = f(A,B5)	C = f(A,B6)	C = f(A,B7)	C = f(A,B8)
500	416.4	11.8	11.8	11.9	12.5	12.5	12.5	12.5	12.5
200	328.4	11.4	11.4	11.4	12.1	12.1	12.1	12.1	12.1
100	271.6	11.1	11.1	11.2	11.8	11.8	11.8	11.8	11.8
50	221.5	10.9	10.9	10.9	11.4	11.4	11.4	11.4	11.4
25	176.9	10.7	10.7	10.7	11.1	11.1	11.1	11.1	11.1
10	128.0	10.5	10.5	10.5	10.8	10.8	10.8	10.8	10.8
5	96.9	10.3	10.4	10.4	10.6	10.6	10.6	10.6	10.6
2	62.7	10.2	10.2	10.2	10.4	10.4	10.4	10.4	10.4
Note: elevation in NAVD 88									