APPENDIX B: FLOODPLAINS STATEMENT OF FINDINGS

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APPENDIX B: STATEMENT OF FINDINGS FOR EXECUTIVE ORDER 11988 "FLOODPLAIN MANAGEMENT"

(NPS Internal Review Draft)

JOHN F. KENNEDY CENTER FOR THE PERFORMING ARTS

EXPANSION PROJECT

National Mall and Memorial Parks

Washington, DC

December 23, 2013

RECOMMENDED: _____

James Perry — Date
Superintendent, National Mall and Memorial Parks

CONCURRED: _____

Name — Date
Chief, Water Resources Division

APPROVED: _____

Name — Date
Regional Director, National Capital Region

Introduction

Executive Order 11988 "Floodplain Management" requires the National Park Service and other Federal agencies to evaluate the potential impacts of their actions to floodplains. The evaluation is intended to reduce the risk of flood damage to the park resources, preserve floodplain values, and minimize the impact of floods on human safety, health and welfare. This Statement of Findings (SOF) has been prepared according to National Park Service Procedural Manual 77-2 to comply with Executive Order 11988 "Floodplain Management."

The John F. Kennedy Center for the Performing Arts (Kennedy Center), is proposing to expand its current building located at 2700 F Street by approximately 60,000 square feet of additional space. The National Capital Planning Commission (NCPC) and the National Park Service (NPS) are acting as co-lead agencies in cooperation with the Kennedy Center for the preparation of an Environmental Assessment (EA).

In 2012, the John F. Kennedy Center for the Performing Arts (Kennedy Center) partnered with Cooper, Robertson & Partners, and prepared a feasibility study entitled *The John F. Kennedy for the Performing Arts South Campus Feasibility Study Report* (Cooper Robertson 2012). The purpose of the study was to explore the viability of undertaking an expansion project at the Kennedy Center. The feasibility study concluded that the location of the existing parking garage that is south of and contiguous with the original Edward Durell Stone building was the best option for the building expansion (Cooper Robertson 2012).

Since the completion of the architect selection process, concept level designs for the proposed expansion have been developed. These concepts form the basis for the alternatives studies in this EA. In July and September 2013, these designs were presented to the U.S. Commission of Fine Arts (CFA) and the NCPC, respectively.

Project Description

The Kennedy Center is proposing to expand to the south to provide approximately 60,000 square feet of space to the existing Edward Durell Stone building. The proposed expansion will include new classrooms, rehearsal rooms, event spaces and offices in a dedicated area.

The project is needed because the Kennedy Center, with the largest performing arts education initiative in the country, contains no dedicated classrooms, a limited number of rehearsal rooms, and no dedicated event space. Furthermore, in keeping with the Kennedy Center's mission of bringing the arts to people who might not otherwise have access to it, the Kennedy Center's vision for the expansion project also includes designing a place that would provide greater access to the performing arts for the general public, as well as to build people's creative capacities and engagement in the performing arts.

Site Description

The Kennedy Center is located along the east bank of the Potomac River, separated by the Rock Creek and Potomac Parkway (RCPP), Rock Creek Multi-Use Trail, and the seawall. The project area comprises the south plaza area of the Kennedy Center Grounds. The south plaza area consists of an existing parking garage, surface parking lot, and maintained landscaped lawn with trees lining the parking lot and roadways. Adjacent to the project area is 25th Street NW and Interstate 66 to the east and south; and the Rock Creek and Potomac Parkway to the west. The Rock Creek Multi-Use Trail exists along the Potomac River seawall, west of the Rock Creek and Potomac Parkway (Figure 1).

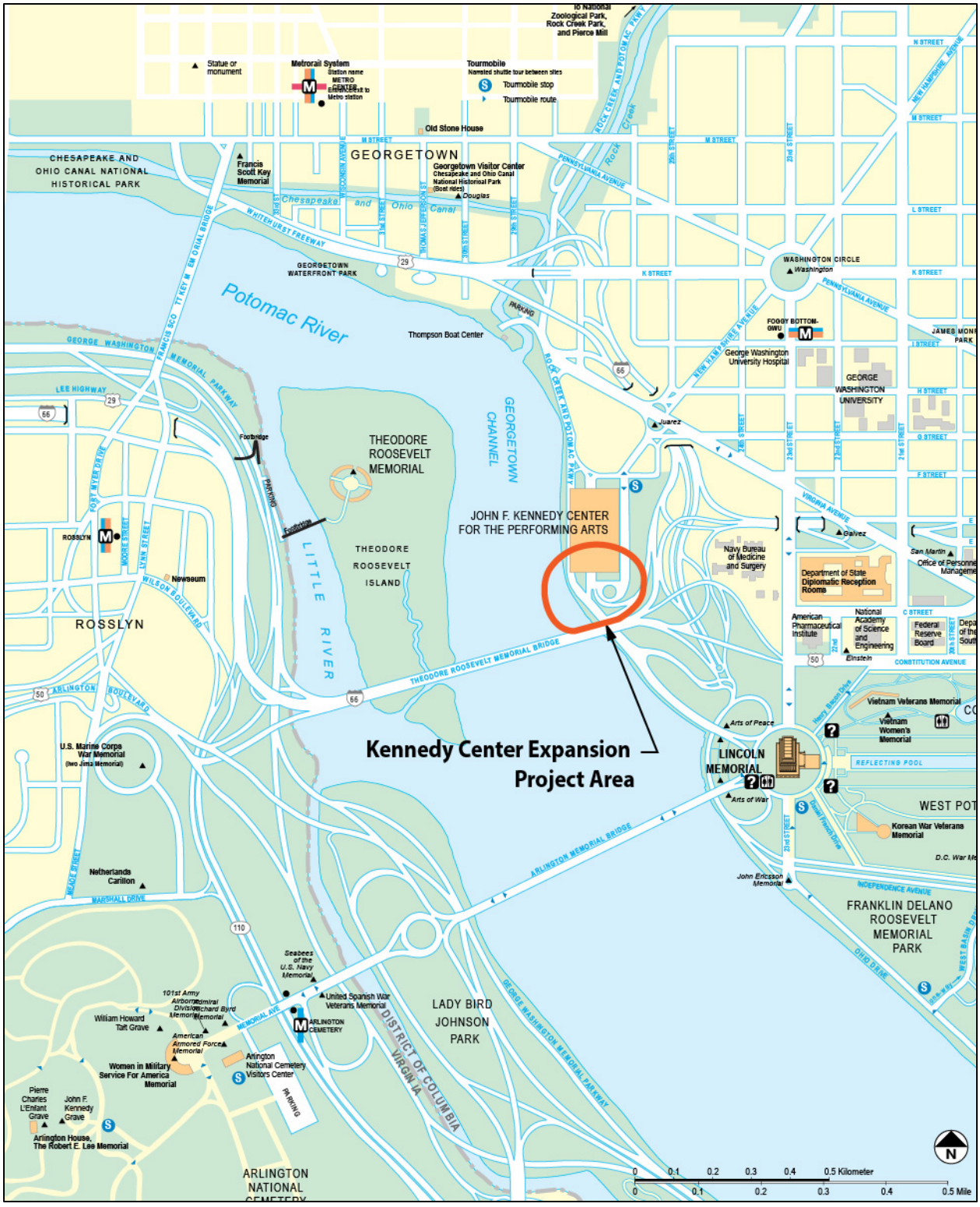

Figure 1: Site Location Map

The project area is defined as the South Plaza area between the existing Kennedy Center and Interstate 66, and the area of the Rock Creek and Potomac Parkway and the Rock Creek Multi-Use Trail which would be affected by the proposed access points to the River pavilion (Figure 2).

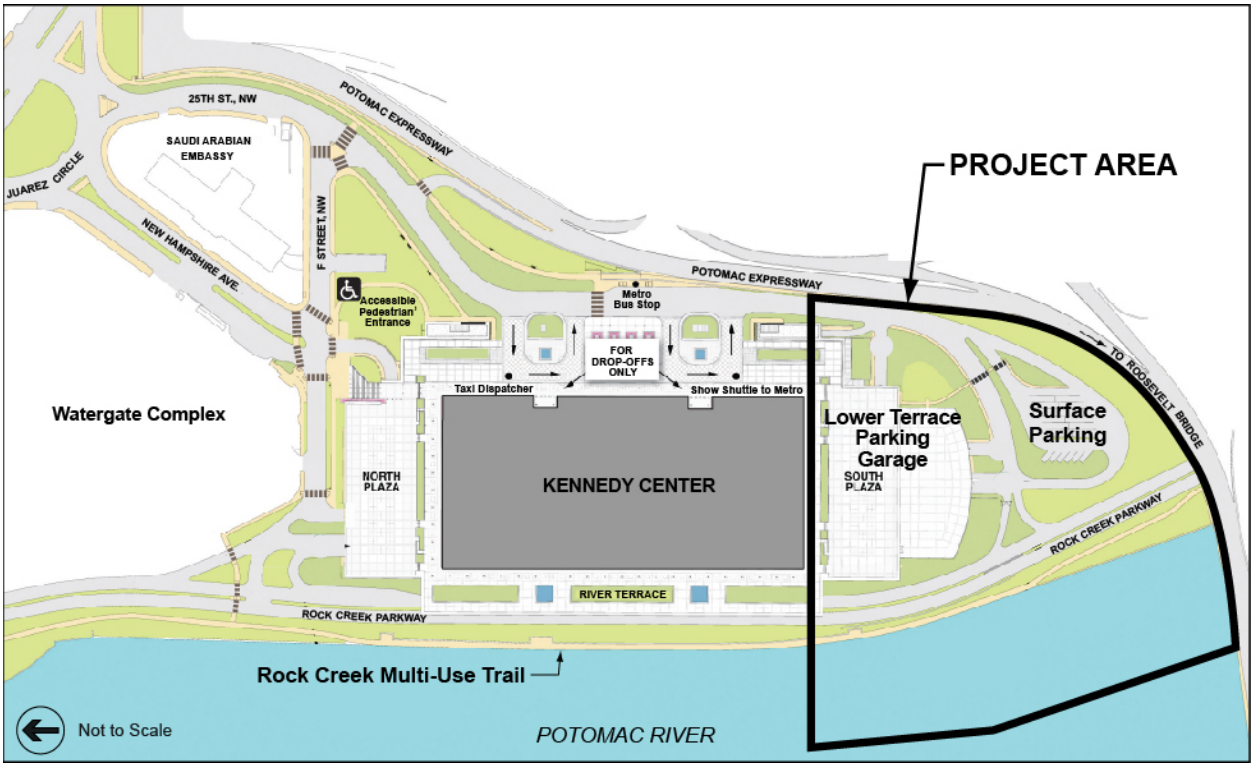

Figure 2: Project Area Map

The project area is comprised of the River Terrace, the Rock Creek and Potomac Parkway, and the Rock Creek Multi-Use Trail. The Rock Creek Multi-Use Trail is an 11-foot wide pathway, constructed of asphalt. A gently sloping strip of land separates the trail from the Parkway, which consists of turfgrass and scattered individual trees. Tree species include Japanese flowering crabapple (*Malus floribunda),* red maple (*Acer rubrum)* and scarlet oak (*Quercus coccinea).*

General Floodplain Characteristics

Floodplain Description

The Kennedy Center south plaza area, the Rock Creek and Potomac Parkway, and the Rock Creek Multi-Use Trail are located within the 100-year floodplain of the Potomac River as shown on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), Panel Number 1100010018C, dated September 27, 2010 (Figure 3). According to the FIRM Panel, the 100-year flood elevation of the Potomac River adjacent to the Kennedy Center is 15 feet above mean sea level (msl). As a reference, the top of the seawall is at approximate elevation 8.4 feet msl, and the Rock Creek and Potomac Parkway is at approximate elevation 12 feet msl. The KCPA building itself is located above the 100-year flood elevation, but the project area located south of the KCPA, including the south parking lot, is located within the 100-year floodplain.

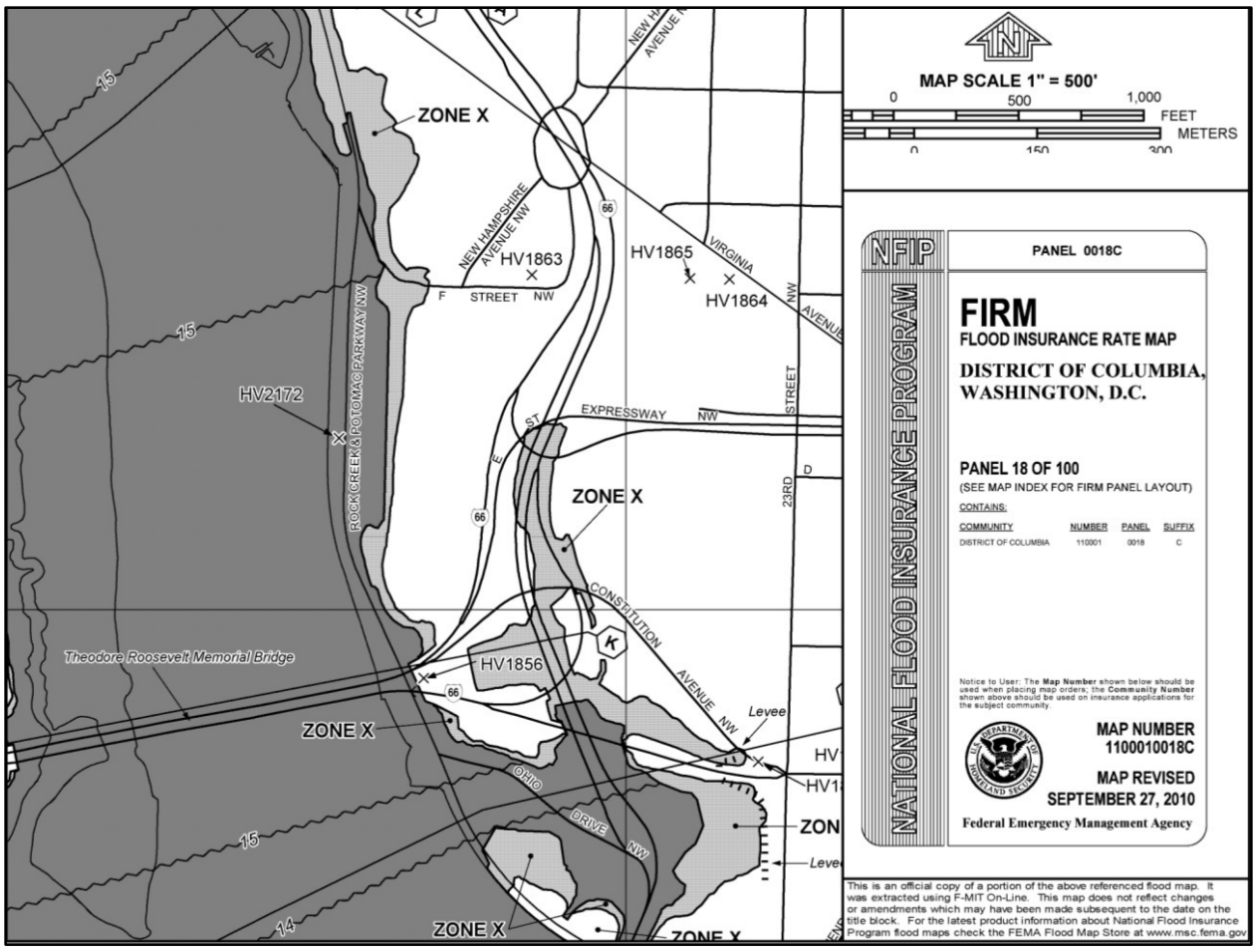

Figure 3: Floodplain Map. Source: FEMA, Flood Insurance Rate Map, District of Columbia, Washington, DC, 2010.

The functional value of the project area floodplain is low to marginal in that the area has already been developed with the Potomac River seawall, the Rock Creek and Potomac Parkway, the Rock Creek Multi-Use Trail, and the Kennedy Center. Due to these features, many natural functions of the floodplain are not available. These functions include providing flood conveyance, providing habitat, reducing excessive erosion, trapping sediments, and removing pollutants from waters. Currently, the main floodplain function in the project area is to provide flood storage capacity in the south plaza area, and scenic beauty and recreational opportunity to Rock Creek Multi-Use Trail users and Kennedy Center visitors.

The project area is separated from the Potomac River by the existing seawall. The seawall is at approximate elevation 8.4 feet msl. During a 100-year flood event, floodwaters breach the seawall, and when floodwaters continue to rise, eventually flow over the Parkway and into the south plaza area. The parking garage and south parking lot experience high flows from the River flooding and storm surges during the 100-year flood event.

Justification of Use of Floodplain

The Kennedy Center South Plaza area, the Rock Creek and Potomac Parkway, and the Rock Creek Multi-Use Trail are located entirely within the floodplain of the Potomac River at the project site. The expansion of the Kennedy Center outside of the 100-year floodplain would be impractical, very disruptive to site circulation, have impacts to cultural resources, and would require land acquisition/transfer. Furthermore, this portion within the floodplain is already developed, minimizing any further impacts to the floodplain. No feasible alternatives have been identified at a different location outside the floodplain because there is not sufficient space within the Kennedy Center property to accommodate the desired expansion.

Alternatives

Alternative A – No Action

No action does not imply or direct discontinuing the current action or removing existing uses, development, or facilities. The No Action Alternative provides a basis for comparing the management direction and environmental consequences of the other alternatives.

Under the No Action Alternative, expansion of the Kennedy Center, construction of the river pavilion, and the creation of pedestrian access between the Kennedy Center and the Potomac river pavilion would not be constructed. The No Action Alternative represents a continuation of the existing conditions, operations, and maintenance of the Kennedy Center and there would be no additional impacts to the 100-year floodplain under the No Action Alternative.

Alternative B – Three Land Based Pavilions

Under Alternative B, the Kennedy Center would be expanded to the south. The expansion would include the construction of three land based pavilions; two of which would be connected below grade that would be the site for rehearsal spaces, offices, classrooms, lecture halls, and multipurpose space. The South Terrace would be redesigned involving the removal of a section of the concrete perimeter wall and the installation of a reflecting pool. An additional reflecting pool would be added towards the entrance to the new buildings. Alternative B would require removing a small section (approximately 2 feet square) of the existing Edward Durell Stone designed building to provide an opening for a projector window in the south façade. Alternative B would also involve the addition of access stairs at the south end of the West Terrace and the removal of a section of the curtain wall in this area for the installation of an elevator opening. The third pavilion would provide an enclosed interactive learning space to function as an engaging environment where people, especially young people, can explore and directly participate in the performing arts (Figure 4).

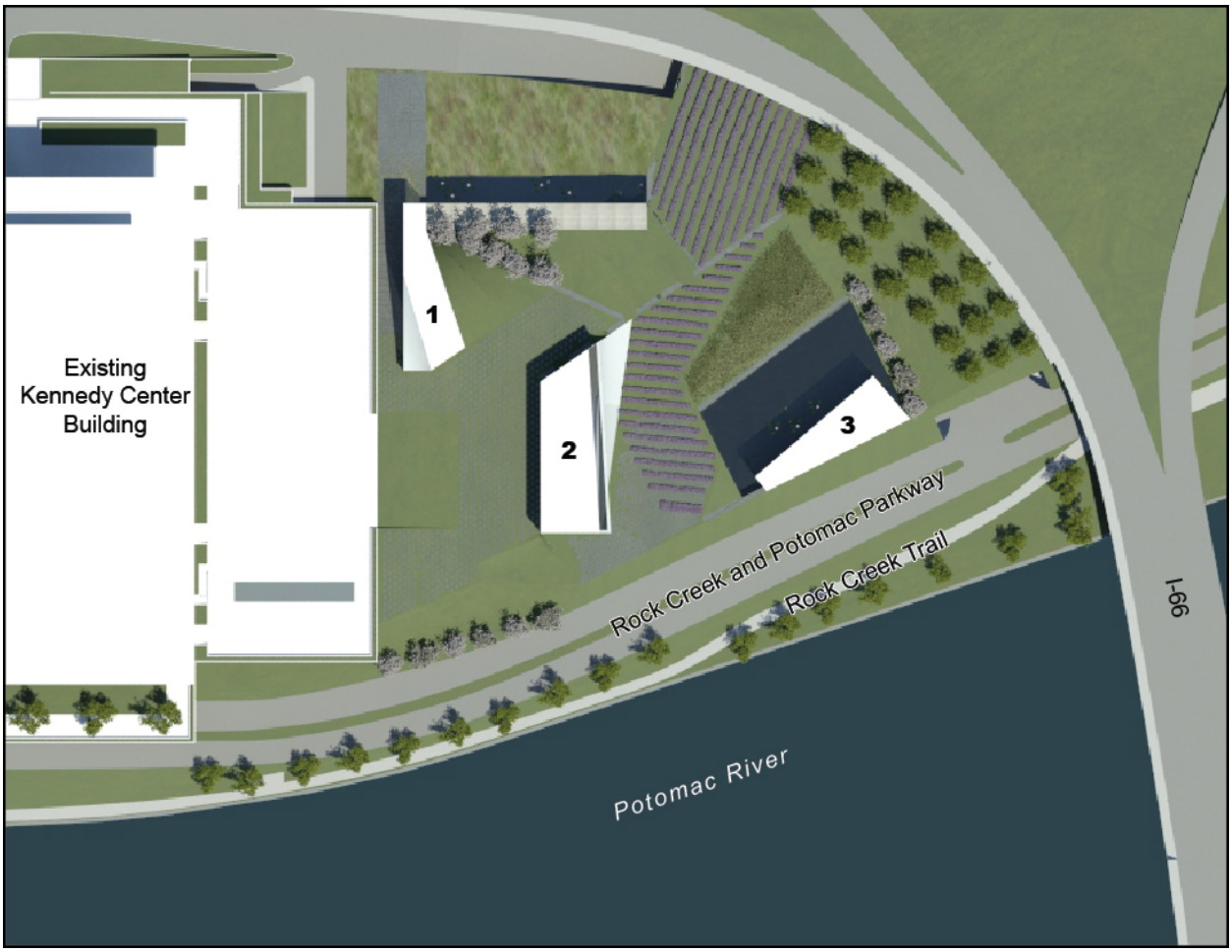

Figure 1: Three land-based pavilion concept

A new vehicular entrance to the Kennedy Center on the south end would be constructed. A new landscape design of the area would be created. With the implementation of Alternative B, construction activities would take place on Kennedy Center property.

Alternative C – Two Land Based Pavilions & One River Pavilion

Under Alternative C, the expansion would include the construction of two land based pavilions connected below grade that would be the site for rehearsal spaces, offices, classrooms, lecture halls, and multipurpose space and a river pavilion (Figure 5).

Under this alternative, the South Terrace would be redesigned involving the removal of a section of the concrete perimeter wall and the installation of a reflecting pool. Two additional reflecting pools would be added; one towards the entrance to the new land based pavilions and one adjacent to the RCPP and near the current vehicular entrance. Alternative C would require removing a small section (approximately 2 square feet) of the existing Edward Durell Stone designed building to provide an opening for a projector window in the south façade. Alternative C would also involve the addition of access stairs at the south end of the West Terrace and the removal of a section of the curtain wall in this area for the installation of an elevator opening. A new vehicular entrance to the Kennedy Center on the south end would be constructed to access the proposed underground parking lot. A new landscape design of the entire south end of the site would include plantings that would enhance the appearance of the plaza and be relative to

the President Kennedy. With the implementation of Alternative C, the majority of construction activities and the location of permanent structures would be within the 32-foot clear space between the Rock Creek and Potomac Parkway and the Rock Creek Multi-Use Trail. While this alternative would not include a landing or bulkhead to accommodate water taxi access to the site, this alternative would not preclude this possibility in the future.

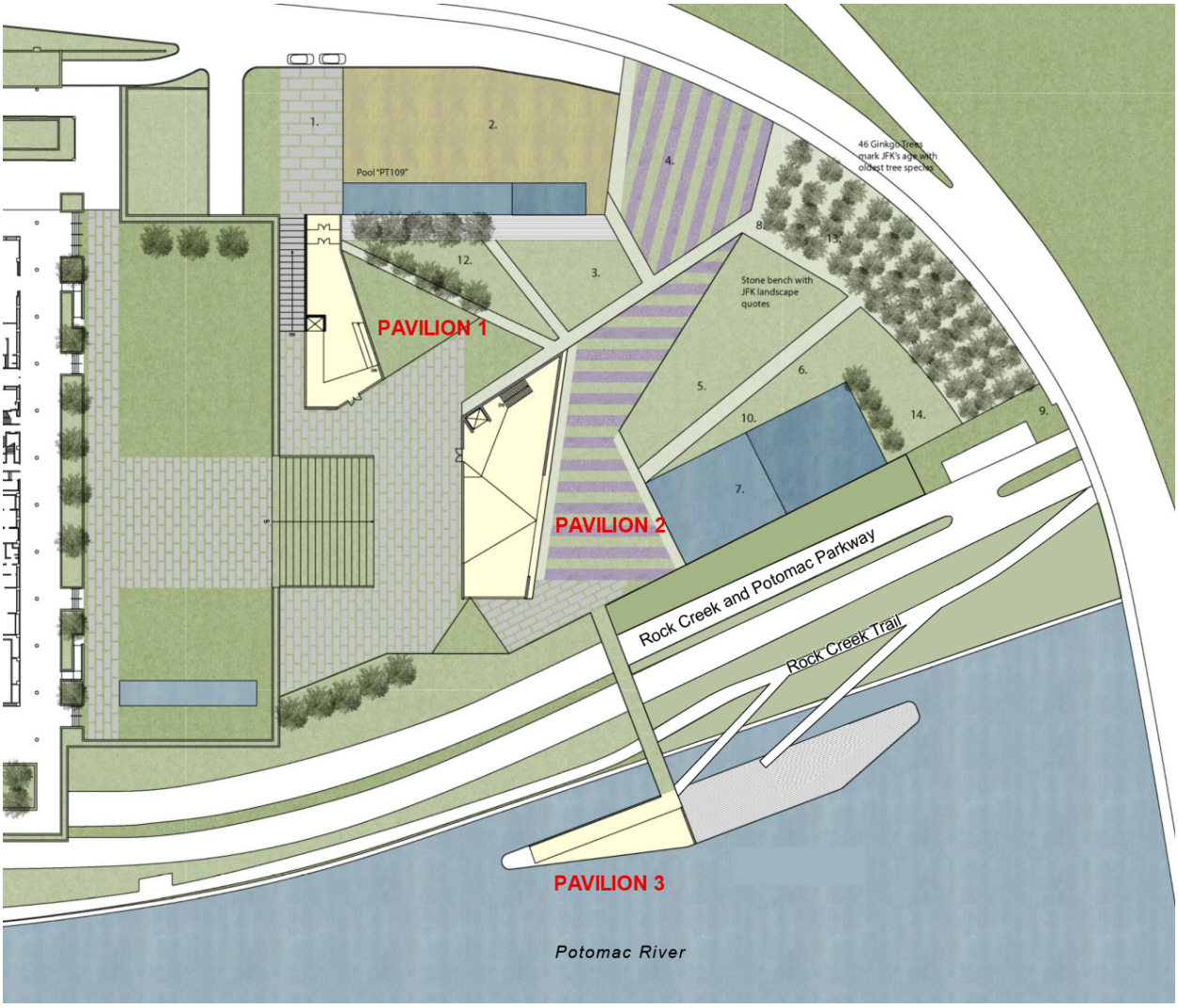

Figure 2: Two land-based pavilions and river pavilion concept

A third pavilion would consist of the construction of a floating pier, approximately 11,000 square feet on the Potomac River. The pier itself would float on the river surface. This pavilion would provide a two-story structure of 3,000 interior square feet of interactive learning space to function as an engaging environment where people, especially young people, can explore and directly participate in the performing arts. Above this space a 3,000 square foot café would be constructed. The pavilion would also include approximately 2,000 square feet of open outdoor space. The proposed methods that are being considered for anchoring the pier are discussed in further detail below.

Telescoping Piles

Concept plans indicate that approximately eight (8) piles would be necessary to support the floating pier. The piers would be telescopic to allow the pier to float with the tides and would be designed to provide vertical movements necessary to accommodate river flood stages. The piles would be installed into drilled shafts secured with concrete, or would be driven into the river bottom (see Figure 6). Disturbance to less than 50 square feet (approximately) of river bottom is anticipated from the piles. No dredging or placement of fill material would be necessary for the construction.

Figure 3: Example of Telescoping Piles

Anchors

Concept plans have been developed using the Seaflex® Howser system for anchoring the pier. This system utilizes anchors secured to the river bottom. Flexible howsers are attached to the anchors and to the lines that attach to the bottom of the pier (see Figure 7). The flexible howsers allow the pier to float with the tides and during high river flow. The anchors used in this system would be driven into the river bottom, or would be attached to concrete footings installed in the river bottom. Based on conceptual design, the proposed pier would require approximately 24 anchors and lines. It is estimated that no more than 50 square feet of disturbance to river bottom is anticipated.

Figure 4: Example of Seaflex® Anchors

Stiff Arms

The stiff arms system would provide a steel arm that would attach the floating pier to the existing bulkhead shoreline (Figure 8). This system would result in no disturbance to the river bottom.

Figure 5: Example of Stiff Arms

Two options for access to the river pavilion are being considered.

River Access Option 1 – At-Grade Street Crossing

Option 1 would provide an at-grade street crossing of Rock Creek and Potomac Parkway from the Kennedy Center to the Rock Creek Multi-Use Trail. Access to the river pavilion would be provided by two pedestrian connections from the Rock Creek Multi-Use Trail to the upper and lower levels of the river pavilion (Figure 9).

River Access Option 2 – Pedestrian Bridge Crossing over RCPP

Option 2 would provide a single pedestrian bridge crossing over the Rock Creek and Potomac Parkway that would connect the expansion on land to the river pavilion. Additional access to the river pavilion would be provided by two pedestrian crossings from the Rock Creek Multi-Use Trail to the upper and lower levels of the river pavilion (Figure 10).

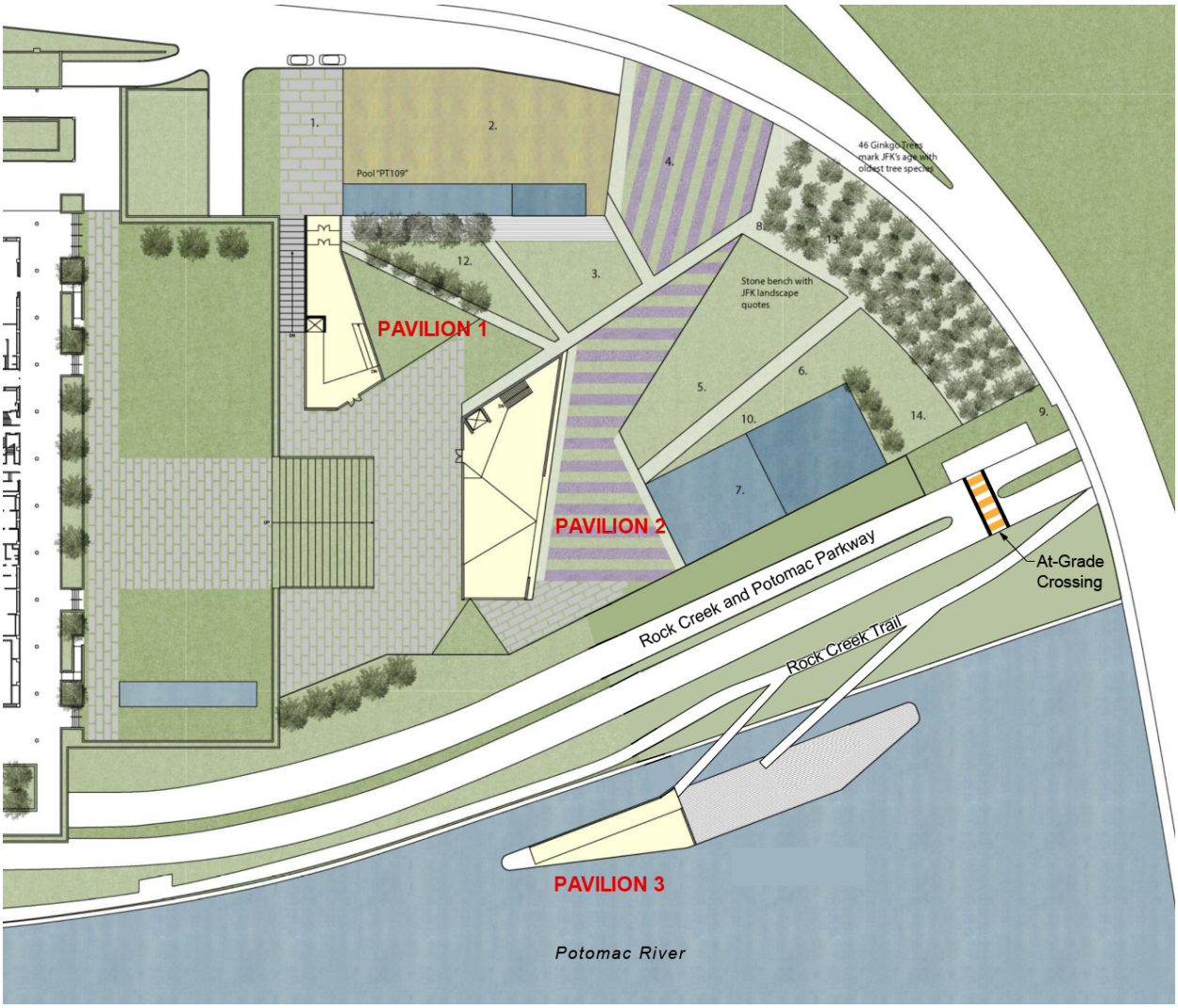

Figure 6: River Access Option 1

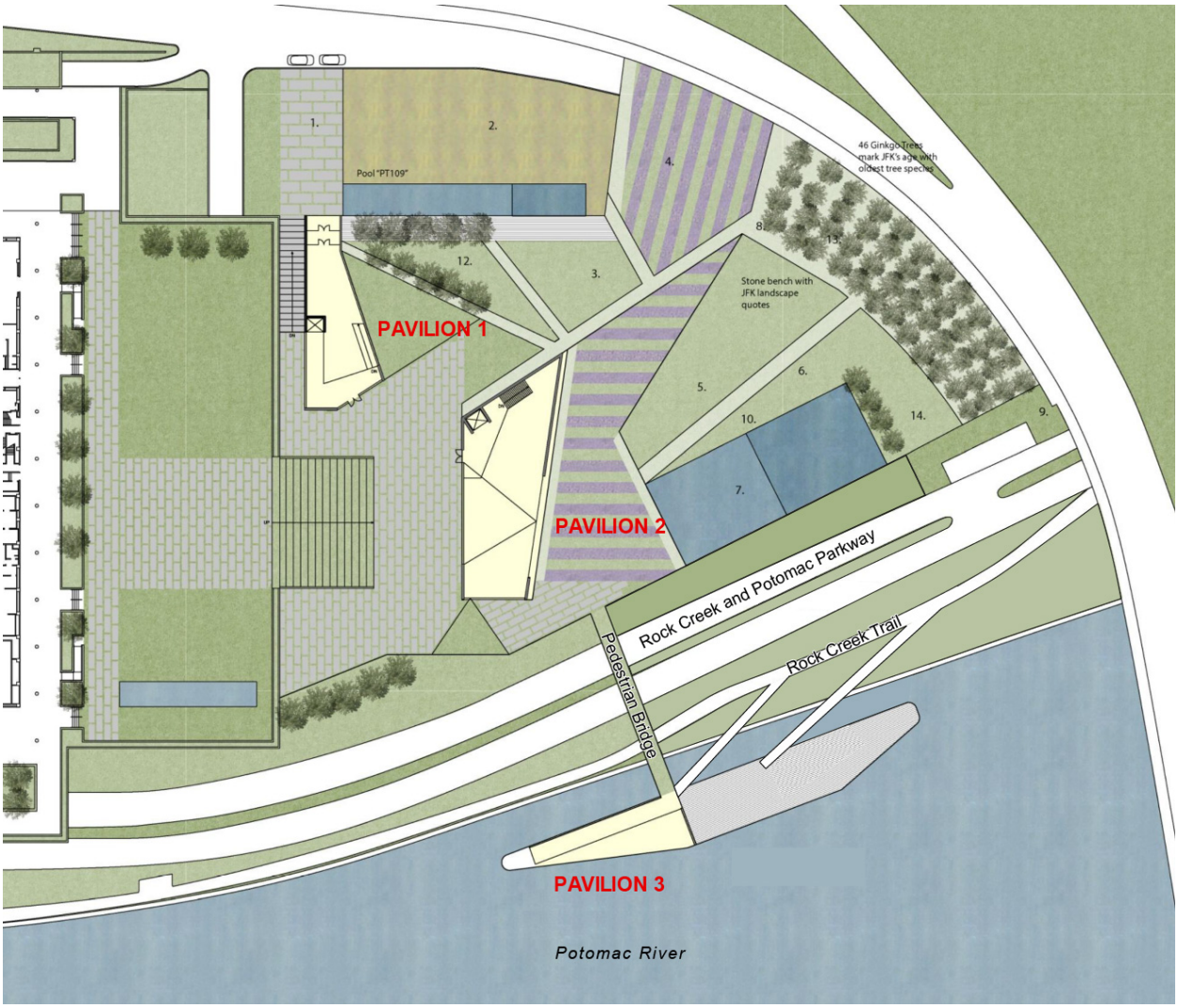

Figure 7: River Access Option 2

Site Specific Flood Risk

The Preferred Alternative (Alternative C) includes development that will be located in the floodplain. The Kennedy Center Expansion would lie within the 100-year floodplain (the floodplain that has a one 1 percent chance of being equaled or exceeded in any given year). The expansion area would include a multi-level building addition that would provide bus parking underneath. With the exception of the parking area, the expansion would be constructed above the flood elevation.

A proposed pedestrian bridge over RCPP is proposed to provide pedestrian access from the Kennedy Center to the River Pavilion. This pedestrian bridge would be located above the 100-year flood elevation at an elevation of 29 feet msl; however, one bridge support would touch down just west of RCPP, which would be located within the 100-year floodplain. The bridge support would not result in the clearing of trees, but would convert a small area of existing grass. The support would be subject to flood flow during flood events, but would be designed to withstand the 100-year flood event.

The proposed at-grade pedestrian access to the River Pavilion from the Rock Creek Multi-use Trail would be located within the floodplain. These access paths would be located within the floodplain and would result in approximately 700 square feet of increased impervious surface. The access paths would not result in the clearing of trees or other natural vegetation, but would convert existing grass area to pedestrian walkways. The walkways would be subject to flood flows during flood events and could be damaged during high flows.

The proposed River Pavilion would be a floating structure designed to rise and fall with the changing water levels and has a footprint of approximately 10,000 square feet.. The pavilion would be designed to withstand the 100-year flood event, but could be damaged during high flows and large debris. The damage would likely be largely cosmetic and the pavilion would be designed to prevent it from breaking away and becoming a hazard during flood events.

The 100-year floodplain in this area has a water surface elevation of approximately 15 feet msl. The proposed design would construct the bus parking garage floor elevation at approximately 10 feet msl. As such, 100-year flood events would result in flood water entering the parking garage, and minor damage would occur from water and sediment.

The proposed lower level of the expansion is at approximately elevation 15.5 feet msl. This level will be surrounded by a fully waterproofed kneewall with a top elevation of 18.3 feet msl. Therefore, the lower level would be protected from the 100-year flood event.

The proposed action would include construction within the regulated 100-year floodplain of the Potomac River. In general, there is a negligible amount of additional impervious area proposed in the floodplain. Based on the relative magnitude of the Potomac River, the proposed action would not have appreciable effects which would increase the risk of flooding or hazards to human life or property.

As a result of the proposed action, there would be a small decrease in the flood storage capacity of the floodplain. However, in its current condition, the floodplain within the project area provides little flood storage. The majority of the floodplain in the project area has already been constructed with impervious area. Therefore, the decrease in flood storage capacity resulting from the proposed action would be too small to detect.

Removal of turfgrass and trees in the south plaza area would be necessary under the proposed action. The removal of vegetation and replacement with impervious area would have a minimal effect on runoff and flooding. The function of existing landscape vegetation in the project area is limited and the maintenance of the turfgrass and trees has precluded use of the area as a riparian zone. As a result, the removal of vegetation would not result in a measurable effect on flooding.

Mitigation

The preferred alternative is not expected to significantly alter the natural and beneficial functions of the floodplain.

Compliance with Development Requirements

Communities that participate in the National Flood Insurance Program, such as Washington, DC, are required to enforce floodplain management regulations that meet the requirements of the National Flood Insurance Program. Furthermore, in order to comply with Executive Order 11988, Federal Agencies must demonstrate there are no reasonable alternatives outside of the floodplain and study ways to reduce the

flood risk associated with the proposed action. Therefore, in order to follow guidelines for regulated development in the 100- year floodplain so that there are minimal impacts to the floodplain, adherence to general building and development requirements as outlined in the National Flood Insurance Program requirements is recommended.

Development in the floodway is also an issue to consider for compliance purposes. Development is generally not permitted in the floodway, and fill is prohibited in the floodway. The floodplain consists of two types of flood areas: the floodway and the flood fringe. The floodway is the area that encompasses the stream channel and is where floodwaters generally flow the fastest. By definition it is the area where fill cannot be placed without resulting in a cumulative one foot rise in the 100-year floodwater elevation. The flood fringe comprises the remainder of the floodplain that extends beyond the floodway area. According to the detailed hydraulic study for Washington, DC, the Potomac River does not have a designated floodway (FEMA, 1985). Therefore, the preferred alternative meets compliance requirements for floodway development. The proposed actions under the preferred alternative will be able to comply with these requirements.

Conclusions

The proposed action would include activities located within the regulated 100-year floodplain of the Potomac River. The proposed Kennedy Center expansion would create additional obstructions within the floodplain; however, the obstructions would not noticeably impact the water surface level during a flood event. A slight decrease in the capacity of the floodplain to store floodwaters would occur, as well as a slight decrease in infiltration. However, due to the limited capacity of the floodplain in its current condition, these alterations would not result in a measureable adverse impact. Based on the relative magnitude of the Potomac River, the proposed actions would not have appreciable effects which would increase the risk of flooding or hazards to human life or property.

In summary, the proposed pedestrian access improvements would have no significant effect on natural or beneficial floodplain functions. The project would not increase the risk associated with flooding for the 100-year event. Therefore, the National Park Service has determined the proposed actions would be consistent with Executive Order 11988.