

## **APPENDIX C: DRAFT STATEMENT OF FINDINGS FOR FLOODPLAINS**





## INTRODUCTION

Executive Orders 11988 (Floodplain Management) requires the National Park Service (NPS), the Federal Highway Administration (FHWA) and other federal agencies to evaluate the likely impacts of actions in floodplains. The objective of E.O. 11988 is to avoid, to the extent possible, the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. NPS Director's Order #77-2 Floodplain Management and Procedural Manual #77-2 provide NPS policies and procedures for complying with E.O. 11988. This Statement of Findings (SOF) documents compliance with these NPS floodplain management procedures.

The purpose of this SOF is to present the rationale for the proposed improvements to the Fort Pulaski Bridge in the floodplain area and to document the anticipated effects on these resources. The project area is located in a Class 1 Action, per DO #77-2. Avoidance of impacts to the floodplain is not possible because the existing bridge is located in the 100-year floodplain; therefore, any improvements made to the existing bridge would be located in the floodplain.

## PROPOSED ACTION

Under Alternative D (Preferred Alternative), as described in the *Fort Pulaski Bridge Project Environmental Assessment*, the existing deteriorated bridge would be rehabilitated. FRP shells would be installed on the most deteriorated timber piles as identified by previous bridge inspections. The shell would be filled with epoxy grout to encapsulate the timber and protect it from further deterioration. The wrapping would extend from the mud line (but not below) to above the high water level. Sections of severely deteriorated timber piles may be replaced, if needed. It is estimated that 20 piles would have new FRP jackets installed, 30 piles would have their existing FRP jackets replaced, and that five piles would have sections replaced and FRP jackets installed. Additional substructure repairs would include replacing timber cross bracing and bent caps, installing timber corbels, and repairing concrete bent caps. Superstructure repairs would also be completed, and would likely consist of cleaning and painting all of the structural steel in the main span, cleaning exposed rebar in the bridge deck and diaphragms in the main span and coating them with protective sealant, and replacing timber deck shims. Riprap would also be replaced around the bridge abutments. Dewatering would be necessary in order to install the riprap and may also be necessary to replace sections of deteriorated timber piles. It is anticipated that the access for the repairs would be from a barge located along side the pile bents. The barge would likely be moored through the use of spuds (vertical steel shafts).

Table 1. Impact Summary

<b>Activity/Material</b>	<b>Alternative D – Preferred Alternative</b>
Dewatering at abutments (temporary)	280 cubic yards
Placement of Riprap	1,770 cubic yards
<b>Total</b>	<b>2,050 cubic yards of displacement (280 cubic yards of this is temporary)</b>

## **SITE DESCRIPTION**

Federal Emergency Management Agency (FEMA) Flood Insurance Rate maps show that the project area is within a Zone VE flood hazard zone (Figure 1). Zone VE is the flood insurance rate zone that corresponds to areas within the one percent annual chance coastal floodplain that have additional hazards associated with storm waves (FEMA). The base flood elevation is the computed elevation to which floodwater is anticipated to rise during the base flood. The base flood is the flood having a one percent chance of being equaled or exceeded in any given year. This is also referred to as the 100-year flood. The base flood elevation in the study area is in between 17 and 18 feet. In this area, the Savannah River exhibits one of the highest tidal ranges on the U.S. East Coast. The differences between low tide and high tide can be more than seven feet (Seabrook, 2009).

Fort Pulaski Road (NPS Route 10) is the only route connecting Cockspur Island, and Fort Pulaski, McQueens Island. The Fort Pulaski Bridge across the South Channel of the Savannah River was originally constructed in 1938. The bridge is approximately 1,300 feet in length. The bridge is 25 feet wide, and carries a two-lane roadway with a railing on each side. The bridge is comprised of 62 composite timber/concrete spans. Each span is approximately 20 feet in length, and the bridge has a main channel span of approximately 40 feet. The 64 substructure units (pile bents) are each comprised of five timber piles and a timber beam cap. There are a total of 330 timber piles supporting the structure. The existing timber/concrete composite deck is the original deck.

The Fort Pulaski Bridge was rehabilitated in 1965. More recently, repair projects in 1996 and 2008 have been completed to extend the life of the bridge. However, the bridge has continued to deteriorate. The timber piles, steel beams and bearings, and composite timber/concrete spans all exhibit signs of deterioration. In addition, the embankment no longer provides adequate protection from the flow of the River.

The mean high water and mean low water elevations in the project area are 7.13 feet and 0.22 feet, respectively. Fort Pulaski Road was constructed on fill material. The flood stage in the project area is 9.2 feet.

## **JUSTIFICATION FOR USE OF THE FLOODPLAIN**

The project proposes improvements to an existing transportation facility, which is located within the 100-year floodplain. The improvements are needed in order to address the deterioration of the bridge. Continued deterioration poses a potential safety hazard to park visitors and staff. The entire project area is located within the 100-year floodplain; therefore, use of a site outside of the 100-year floodplain is not possible.

## **IMPACTS TO FLOODPLAIN FUNCTIONS AND VALUES**

Implementation of Alternative D, the Preferred Alternative, would result in temporary impacts to the floodplain from the dewatering in order to place the riprap. Approximately 7,500 cubic feet would be dewatered; however after construction is completed, the cofferdams and dewatering would be removed. Construction materials may be stockpiled in the project area to be ready for use during construction.

Implementation of Alternative D, the Preferred Alternative, would also result in permanent impacts to the floodplain. New material would be placed in the project area in the form of riprap (large sized rock). The riprap would be used to protect the bridge abutments from scour from tidal movement through the River channel. Approximately 47,600 cubic feet of riprap would be placed at the abutments. The displacement of floodwaters as a result of the riprap placement would not be noticeable. The additional material would be visibly noticeable. However, a change in the function of the floodplain such as the frequency, duration, or extent of flooding, would not be noticeably different.

## **MINIMIZATION OF HARM OR RISKS TO LIFE AND PROPERTY**

Minimization and mitigation include the protection of human health and safety, protection of investment, and protection of floodplain resources and processes. Flooding in the project area is caused by traceable storm events, such as hurricanes and nor'easters that allow for adequate warning time. Harm or risks to human health and safety is minimized through a warning and evacuation plan.

Although the improvements to the Fort Pulaski Bridge would not construct a new investment; the rehabilitation and widening of the bridge re-invests in an existing facility. Risk to the investment exists and will continue to exist after the improvements to the bridge are completed. The NPS would repair or reconstruct the facility if and when damage occurs.

Protection of floodplain resources and processes was achieved to the extent possible. The amount of riprap proposed to protect the bridge abutments was minimized to the extent possible.

## **COMPLIANCE**

### **National Environmental Policy Act**

The *Fort Pulaski Bridge Environmental Assessment* has been prepared for the proposed project pursuant to the National Environmental Policy Act, and a Finding of No Significant Impact is expected to be signed.

### **Coastal Zone Management Act and Georgia's Coastal Area Management Act**

The Coastal Zone Management Act of 1972 was enacted by Congress to protect the coastal environment from growing demands associated with residential, recreational, commercial, and industrial uses. The provisions of this Act help States develop coastal management programs to manage and balance competing uses of the coastal zone. A request for concurrence with a Federal Consistency Determination will be requested from the State of Georgia (Appendix B). It is expected that the proposed project will be found to be consistent to the maximum extent possible with the Coastal Zone Management Act and all applicable components of Georgia's Coastal Area Management Act.

## CONCLUSION

The National Park Service concludes that there is no practical alternative for improving the Fort Pulaski Bridge in its existing location. Mitigation and compliance with regulations and policies to prevent impacts to water quality, floodplain values, and loss of property or human life would be strictly adhered to during and after the construction. Individual permits with other federal and cooperating state and local agencies would be obtained prior to construction activities. No long-term adverse impacts would occur from Alternative D, the Preferred Alternative. Therefore, the National Park Service finds the Preferred Alternative to be acceptable under Executive Order 11988 for the protection of floodplains.

## REFERENCES

Federal Emergency Management Agency. 2011. Map Viewer. Available on the Internet at <https://hazards.fema.gov/femaportal/wps/portal/>

National Park Service. 2003 Procedural Manual #77-2: Floodplains Management. Available on the Internet at <http://www.nature.nps.gov/rm77/floodplain.cfm>



Figure 1. Floodplains are shown as Zone VE.