National Park Service
U.S. Department of the Interior

Fort Pulaski National Monument
Georgia

FINDING OF NO SIGNIFICANT IMPACT for the FORT PULASKI BRIDGE PROJECT

February 2013

INTRODUCTION

The Environmental Assessment (EA) for the Fort Pulaski Bridge Project and this Finding of No Significant Impact (FONSI) constitute the record of the environmental impact analysis and decision-making process for making improvements to the Fort Pulaski Bridge in Chatham County, Georgia. The National Park Service (NPS) and Federal Highway Administration (FHWA) have approved the selection of Alternative D as identified in the EA. This FONSI summarizes the findings of the EA and incorporates the public input provided during the 30 day public comment period from January 4, 2013 through February 2, 2013.

BACKGROUND

The Fort Pulaski Bridge provides access from McQueens Island to Cockspur Island and Fort Pulaski. The bridge was originally constructed in 1938, and was rehabilitated in 1965. Repair projects were also completed in 1996 and 2008 to extend the life of the bridge. The bridge has continued to deteriorate; therefore, improvements to the bridge are proposed in order to maintain the Park's ability to safely serve visitors by providing safe vehicular access across the South Channel of the Savannah River to the Fort Pulaski.

SELECTED ALTERNATIVE

Based on the analysis presented in the EA, the NPS and FHWA have selected the Preferred Alternative (Alternative D) for implementation. FRP jackets will be installed on the most deteriorated timber piles as identified by previous bridge inspections. The jacket will be filled with epoxy grout to encapsulate the timber and protect it from further deterioration. The wrapping will 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 will have new FRP jackets installed, 30 piles will have their existing FRP jackets replaced, and that five piles will have sections replaced and FRP jackets installed. Additional substructure repairs will include replacing timber cross bracing and bent caps, installing timber corbels, and

repairing concrete bent caps. Superstructure repairs will also be completed, and will 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 will also be replaced around the bridge abutments. It is estimated that 18,500 cubic feet of riprap will be placed at the north abutment and 29,000 cubic feet will be placed at the south abutment. Dewatering will be necessary in order to install the riprap and may be necessary to replace sections of deteriorated timber piles. It is anticipated that the access for the repairs will be from a barge located alongside the pile bents.

MITIGATING MEASURES

The following are mitigation measures related to construction activities to be implemented under the Selected Alternative (Alternative D).

- Before any bridge work is completed, the bridge will be surveyed for roosting birds and bats. If any are present, bridge work will be delayed until the birds and/or bats are no longer using the site.
- Localized turbidity curtains will be installed where the River floor may be disturbed in order to not increase the turbidity of the River.
- The Standard Manatee Conditions for Boating Facilities will be implemented.
- No in-water work will be done during the months of February and March in order to avoid disruption of the Atlantic sturgeon spawning season.
- Debris shields will be installed to capture any debris released due to repairs completed above the surface of the water.
- Temporary BMPs will be utilized to minimize erosion and sedimentation from ground disturbing activities the expose bare soil. The BMPs may include the use of silt-fence, sediment logs, erosion matting, or check dams. These BMPs will be used only during construction and will be removed once the disturbed area has been permanently stabilized.
- Any dewatering activities will include the filtering of the water prior to reintroducing it to the River. Pumping water directly into the channels will be prohibited.
- Disturbed soil will be re-vegetated using specific native seed mixes that do not include invasive or exotic species.
- Any soil excavated during construction will be stockpiled and reused as fill in needed. Fill material is not anticipated for this project; however, should additional soil be needed, the soils will be clean, native soils.
- Should construction unearth previously undiscovered archeological resources, work will be stopped in the area of any discovery and the Park will consult with the State Historic Preservation Officer/Tribal Historic Preservation Officer and the Advisory Council on Historic Preservation (ACHP), as necessary, according to §36 CFR 800.13, Post Review Discoveries. In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) will be followed as appropriate.

OTHER ALTERNATIVES ANALYZED IN THE EA

Additional alternatives were considered in order to meet the purpose and need, as described in the EA in Chapter 1: Purpose and Need. These alternatives include: Alternative A – No Action Alternative, Alternative B – Emergency Repairs, Alternative C – FRP Jacketing of All Piles, and Alternative E – Install Additional Support on Existing Bridge, Alternative F – Replace on Existing Alignment, and Alternative G – Replace on a New Alignment. A detailed discussion of these alternatives can be found in Chapter 2 of the EA.

Under Alternative A, no substantial improvements other than routine maintenance operations would be performed. Implementation of Alternative A would not maintain the Fort Pulaski Bridge as safe public access, or maintain visitor access to the Fort Pulaski National Monument.

Under Alternative B, emergency repairs would be performed. The bridge would continue to be monitored every two years. Emergency repairs would be made to address all serious structural deficiencies on an as needed basis. It is anticipated that the emergency repairs would be similar to the repairs made in 2008, which included jacketing the piles with a fiber-reinforced polymer (FRP) jacket which was then filled with epoxy grout to encapsulate the timber and reduce the rate of deterioration. Alternative B would make short-term repairs because only the most seriously deteriorated elements would be repaired. Additional repairs would likely be necessary after each two-year inspection.

Under Alternative C, all of the timber piles would be jacketed with a FRP jacket that would then be filled with epoxy grout to encapsulate the timber and thus protect it from deteriorate. The wrapping would extend approximately two feet below the mud line and approximately two feet above high water level. Additional substructure (elements of the bridge that support the deck) 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.

Under Alternative E, two new steel piles and one new floorbeam would be installed on each side of the existing pile bent. The new piles and floorbeams would support the existing superstructure. Alternative E would improve the bridge so that it could provide safe access to Fort Pulaski; however, these repairs would have a shorter lifespan because of corrosion of the steel piles from the saltwater.

Under Alternative F, the existing bridge would be replaced with a new bridge that would be built in sections on the same alignment. The most deteriorated bridge spans would be replaced first and emergency repairs would be made as they are needed to maintain the remaining sections until they can be replaced. The new bridge would have two 12-foot travel lanes and two 4.5 foot shoulders, and would be approximately 36 feet wide including the railing width. Riprap would be placed at each of the bridge abutments in order to protect the abutments from scour. It is estimated that 52,500 cubic feet of riprap would be placed at each end of the bridge. The bridge would be replaced in multiple construction phases as funding is available.

Under Alternative G, The existing bridge would be replaced with a two one-lane bridges. Each one-lane bridge would be approximately 22 feet wide with a 12-foot wide travel lane and two three-foot wide shoulders. Concrete piles would be driven into the river bottom. There would be Riprap would be placed at each of the bridge abutments in order to protect the abutments from scour. It is estimated that 52,500 cubic feet of riprap would be placed at each end of the bridge. The bridge would be replaced in multiple construction phases as funding is available. Once constructed, the new one-lane bridge would carry all truck loading with a signal system. The existing bridge would then only serve cars and other light vehicles until the second one-lane bridge is built. The second one-lane bridge would also be built in phases as funding is available. The existing bridge could service as a pedestrian/fishing bridge for several years.

ALTERNATIVES DISMISSED FROM FURTHER ANALYSIS IN THE EA

The NPS and FHWA considered and dismissed from further analysis several alternatives before development of the range of reasonable alternatives for full impact analysis. Descriptions of these preliminary alternatives and reasons for their dismissal are provided in Chapter 2 of the EA.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The Environmentally Preferred Alternative is determined by applying the criteria from Section 2.7 (D) of NPS Director's Order 12. This is also the criteria laid out by the Council on Environmental Quality regulations that state, "the environmentally preferable alternative is the alternative that will best promote the national environmental policy as expressed in Section 101(b) of NEPA." This alternative will have the least impact to the biological and physical environment while preserving historic, cultural, and natural resources. The Selected Alternative is the alternative that best rehabilitates the bridge while minimizing impacts to the Fort Pulaski National Monument.

THE SELECTED ALTERNATIVE AND SIGNIFICANCE CRITERIA

As defined in 40 CFR § 1508.27(b), significance is determined by examining the following 10 criteria. A discussion on why the Selected Alternative (Alternative D) will not have a significant effect on the human environment follows each criterion.

1. *Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.*

   There will be no significant impacts as a result of implementing the Selected Alternative. Effects from the Selected Alternative to the resources analyzed in the EA are described below.

   Floodplains
   The Selected Alternative will result in long-term, minor, and adverse direct impacts to floodplains from the placement of riprap at the bridge abutments.

Species of Special Concern
The Selected Alternative will result in short- and long-term, minor, and adverse direct impacts to species of special concern from the installation of the FRP jackets and riprap.

Wetlands
The Selected Alternative will result in long-term, minor, and adverse direct impacts to wetlands from the placement of riprap at the bridge abutments. Approximately 0.07 acres of wetlands will be impacted, including 0.05 acres of tidal marsh and 0.02 acres of open water wetlands.

Wildlife and Wildlife Habitat
The Selected Alternative will have short- and long term, minor, and adverse direct impacts to wildlife and wildlife habitat.

2. *The degree to which the action affects public health or safety.*

Implementation of the Selected Alternative will repair the conditions of the Fort Pulaski Bridge, which will have a moderate beneficial impact to public health and safety.

3. *Unique characteristics of the geographic area such as proximity to historic or cultural resources, parklands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.*

Historic or Cultural Resources
The Fort Pulaski Bridge connecting McQueens Island and Cockspur Island was built by the Civilian Conservation Corps in 1938. The bridge is considered eligible for listing on the National Register of Historic Places because, although it has undergone considerable rehabilitation and repair since it was built, it retains its integrity of location, feeling, association, workmanship, design, and setting. The Georgia Department of Natural Resources (GADNR) Historic Preservation Division concurred that the Selected Alternative will have no adverse effect to historic properties.

Parklands
No other Federal, State, or local parklands occur in the vicinity of the project area.

Prime Farmlands
No prime farmlands occur in the vicinity of the project area.

Wetlands
Although the approaches to the Fort Pulaski Bridge were constructed on fill material, the area surrounding the roadway approaches is tidal marsh wetlands. The South Channel of the Savannah River is an open water wetland. The Selected Alternative will impact approximately 0.07 acres of wetlands, including 0.05 acres of tidal marsh and 0.02 acres of open water wetlands. Wetland impacts have been minimized to the maximum extent possible and mitigation measures will be implemented.

Wild and Scenic Rivers
No wild or scenic rivers occur in the vicinity of the project area.

Ecologically Critical Areas
No ecologically critical areas occur in the vicinity of the project area.

4. *The degree to which the effects on the quality of the human environment are likely to be highly controversial.*

   The impacts of the Selected Alternative are not controversial. No public comments were received.

5. *Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risks.*

   Potential impacts from implementation of the Selected Alternative are not highly uncertain and do not involve unique or unknown risks.

6. *The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.*

   The Selected Alternative will not establish a precedent for future actions.

7. *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.*

   The Selected Alternative, when considered with other reasonably foreseeable past, present and future projects, is anticipated to result in cumulative effects. None of the anticipated effects are significant.

   Cumulative impacts are expected to be minor as a result of this project. The bridge rehabilitation will be performed on the existing structure and primarily within the existing disturbed bridge approaches.

8. *The degree to which the action may adversely affect items listed or eligible for listing in the National Register of Historic Places, or other significant scientific, cultural or historic resources.*

   The bridge is considered eligible for listing on the National Register of Historic Places because although it has undergone considerable rehabilitation and repair since it was built, it retains its integrity of location, feeling, association, workmanship, design, and setting. Consultation per Section 106 of the National Historic Preservation Act was completed with the GA-DNR Historic Preservation Division. The GADNR Historic Preservation Division concurred that the Selected Alternative will have no adverse effect to historic properties in a letter dated August 29, 2012.

9. *The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.*

   Consultation per Section 7 of the Endangered Species Act was completed with the United States Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration (NOAA) Fisheries Service. In a letter dated August 29, 2012 to the USFWS, the FHWA determined that Selected Alternative may affect, but is not likely to adversely

affect the West Indian manatee. In a letter dated October 25, 2012 the USFWS concurred with FHWA's determination of "not likely to adversely affect" for West Indian manatee. In a letter dated August 29, 2012 to the NOAA Fisheries Service and subsequent coordination, the FHWA determined that the Selected Alternative may affect, but is not likely to adversely affect the Atlantic Sturgeon, shortnose sturgeon, and green turtle, Kemp's ridley turtle, and loggerhead turtle. Turbidity curtains will be used in the areas where the river floor may be disturbed. In-water work will be restricted during the months of February and March to avoid impacts to the Atlantic sturgeon during the migration season. A vibratory hammer will be used to install the sheet-pile cofferdams instead of an impact hammer in order to reduce noise impacts to the Atlantic sturgeon and sea turtles. The NOAA Fisheries service stated in a letter dated November 27, 2012 that, "We believe the project may affect, but is not likely to adversely affect shortnose sturgeon, Atlantic sturgeon, and sea turtles."

10. *Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.*

    Applicable Federal, State, and local laws and requirements were considered in the development of the improvements to the Fort Pulaski Bridge. The Selected Alternative does not violate any Federal, State, or local environmental protection laws.

PUBLIC INVOLVEMENT

Comments from the public were solicited at two stages in the project planning process, public scoping and the public comment period. Information about the proposed project was made available to the public on the NPS's Planning, Environment, and Public Comment website during the public scoping comment period, from January 28, 2011 through February 28, 2011. Flyers providing details of the proposed project and contact information for comments was sent to a mailing list comprised of Federal, State, and local agencies, elected officials, organizations, and advocacy groups. A legal notice was run in the Savannah Morning News on January 28, 2011 announcing the public scoping comment period. No comments were provided by the public.

The EA was available for public review from January 4, 2013 through February 2, 2013. Flyers providing information about the availability of the EA were sent to the mailing list. During this 30-day period, hardcopies of the EA were available for review at the Fort Pulaski National Monument Visitor Center, and the Tybee Island Branch of the Chatham County Library located at 405 Butler Avenue, Tybee Island, Georgia 31328. An electronic version of the EA was made available on the NPS's PEPC website at http://parkplanning.nps.gov/fopu. A legal notice was run in the Savannah Morning News on January 3, 2013 announcing the public comment period. No comments were provided by the public.

CONCLUSION

As described above, the Selected Alternative does not constitute an action meeting the criteria that normally requires the preparation of an Environmental Impact Statement (EIS). The Selected Alternative will not have a significant effect on the human environment. Environmental impacts that could occur are limited in context and intensity, with generally adverse impacts that are localized, short-to long-term, and range from negligible to moderate. There are no

unmitigated adverse effects on public health and safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence were identified. Implementation of the action will not violate any Federal, State, or local environmental protection law.

Based on the foregoing, it has been determined that an EIS is not required for this project and thus will not be prepared.

Recommended: Terri L. Wales — 3/11/2013

Terri Wales
Acting Superintendent
Fort Pulaski National Monument

Recommended: Kurt Dowden — 2/26/13

Kurt A. Dowden
Planning and Programming Manager
Eastern Federal Lands Highway Division

Approved: Karen A Schmidt — 3/4/2013

Karen A. Schmidt
Director of Program Administration
Eastern Federal Lands Highway Division

Approved: — 3/6/13

Gordon Wissinger
Acting Regional Director
National Park Service, Southeast Region

APPENDIX A
IMPAIRMENT DETERMINATION

The Prohibition on Impairment of Park Resources and Values

NPS *Management Policies 2006*, Section 1.4.4, explains the prohibition on impairment of park resources and values:

> While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them.

What is Impairment?

NPS *Management Policies 2006*, Section 1.4.5, *What Constitutes Impairment of Park Resources and Values*, and Section 1.4.6, *What Constitutes Park Resources and Values*, provide an explanation of impairment.

> Impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values.

Section 1.4.5 of *Management Policies 2006* states:

An impact to any park resource or value may, but does not necessarily, constitute impairment. An impact would be more likely to constitute impairment to the extent that it affects 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 natural or cultural integrity of the park or to opportunities for enjoyment of the park, or
- Identified as a goal in the park's general management plan or other relevant NPS planning documents as being of significance.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated.

Per Section 1.4.6 of *Management Policies 2006*, park resources and values that may be impaired include:

- the park's scenery, natural and historic objects, and wildlife, and the processes and condition that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes an smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structure, and objects; museum collections; and native plants and animals;
- appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them;
- the park's role in contributing g to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- any additional attributes encompassed by the specific values and purposes for which the park was established.

Impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by concessionaires, contractors, and others operating in the park. Impairment may also result from sources or activities outside the park, but this would not be a violation of the Organic Act unless the NPS was in some way responsible for the action.

How is an Impairment Determination Made?

Section 1.4.7 of *Management Policies 2006* states, "[i]n making a determination of whether there would be an impairment, an NPS decision make must use his or her professional judgment. This means that the decision-maker must consider any environmental assessments or environmental impact statements required by the National Environmental Policy Act of 1969 (NEPA); consultations required under Section 106 of the National Historic Preservation Act (NHPA); relevant scientific and scholarly studies; advice or insights offered by subject matter experts and others who have relevant knowledge or experience; and the results of civic engagement and public involvement activities relating to the decision.

Management Policies 2006 further define "professional judgment" as "a decision or opinion that is shaped by study and analysis and full consideration of all the relevant facts, and that takes into account the decision maker's education, training, and experience; advice or insights offered by subject matter experts and others who have relevant knowledge and experience; good science and scholarship; and, whenever appropriate, the results of civic engagement and public involvement activities relation to the decision.

Impairment Determination for the Selected Alternative

This determination on impairment has been prepared for the Preferred Alternative as described on pages 18 and 19 of the Environmental Assessment (EA). An impairment determination is

made for all resource impact topics analyzed for the Selected Alternative. An impairment determination is not made for visitor use and experience, park operations or health and safety because impairment findings relate back to park resources and values, and these impact areas are not generally considered to be park resources or values according to the Organic Act, and cannot be impaired in the same way that an action can impair park resources and values.

Floodplains

The Selected Alternative will result in long-term, minor, and adverse impacts to floodplains from the jacketing of the timber piles and the placement of riprap at the abutments of the bridge. The decrease in floodwater storage capacity of the floodplain will be negligible; therefore, the Selected Alternative will not result in impairment to floodplains.

Species of Special Concern

The Selected Alternative will result in short-term and long-term, minor, and adverse impacts to species of special concern. Endangered Species Act consultation was completed with the United States Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries Service). USFWS and NOAA Fisheries Service concurred that the Selected Alternative "may affect, but is not likely to adversely affect" any Federally-listed species. Impacts to State-listed species would be minor. Therefore, the Selected Alternative will not result in impairment to species of special concern.

Wetlands

Approximately 0.07 acres of wetland would be impacted by the placement of riprap in order to implement the Selected Alternative, causing a long-term, minor and adverse impact to wetlands. The amount of riprap to be placed has been minimized to the extent possible that would still provide adequate protection from scour. Therefore, the Selected Alternative will not result in impairment to wetlands.

Wildlife and Wildlife Habitat

The Selected Alternative will have short-term, minor, and adverse and long-term, negligible, and adverse impacts to wildlife and wildlife habitat. The wildlife habitat impacted by the Selected Alternative is that located primarily around the bridge abutments. This area is primarily un-vegetated rock and the adjacent tidal marsh. The un-vegetated rock habitat would be replaced in-kind, and tidal marsh habitat is abundant in the surrounding area. Therefore, the Selected Alternative will not result in impairment to wildlife and wildlife habitat.

The NPS has determined that implementation of the Preferred Alternative, as described as Alternative D on pages 18 and 19 of the EA and identified as the Selected Alternative in the Finding of No Significant Impact, will not result in impairment of park resources and values at Fort Pulaski National Monument. This determination is based on a thorough analysis of the environmental impacts described in the EA, the agency comments received, and the application of the provisions of the *NPS Management Policies 2006*. The rehabilitation of the Fort Pulaski Bridge will maintain the Park's ability to safely serve visitors by providing safe vehicular access to Cockspur Island and Fort Pulaski while minimizing impacts to Park resources.

STATEMENT OF FINDINGS
EXECUTIVE ORDER 11988: Floodplain Management

PRA-FOPU 10(3) Fort Pulaski Bridge Project
Chatham County, GA

Recommended:

Terri L. Hales — 3/11/13

Superintendent, Fort Pulaski National Monument — Date

Certified for Technical Adequacy and Servicewide Consistency:

T. Edwin Dawson — 3/14/13

Chief, WASO Water Resources Division — Date

Approved:

[signature] — 3/26/13

Director, Southeast Region — Date

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 resent 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

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

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 the 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/

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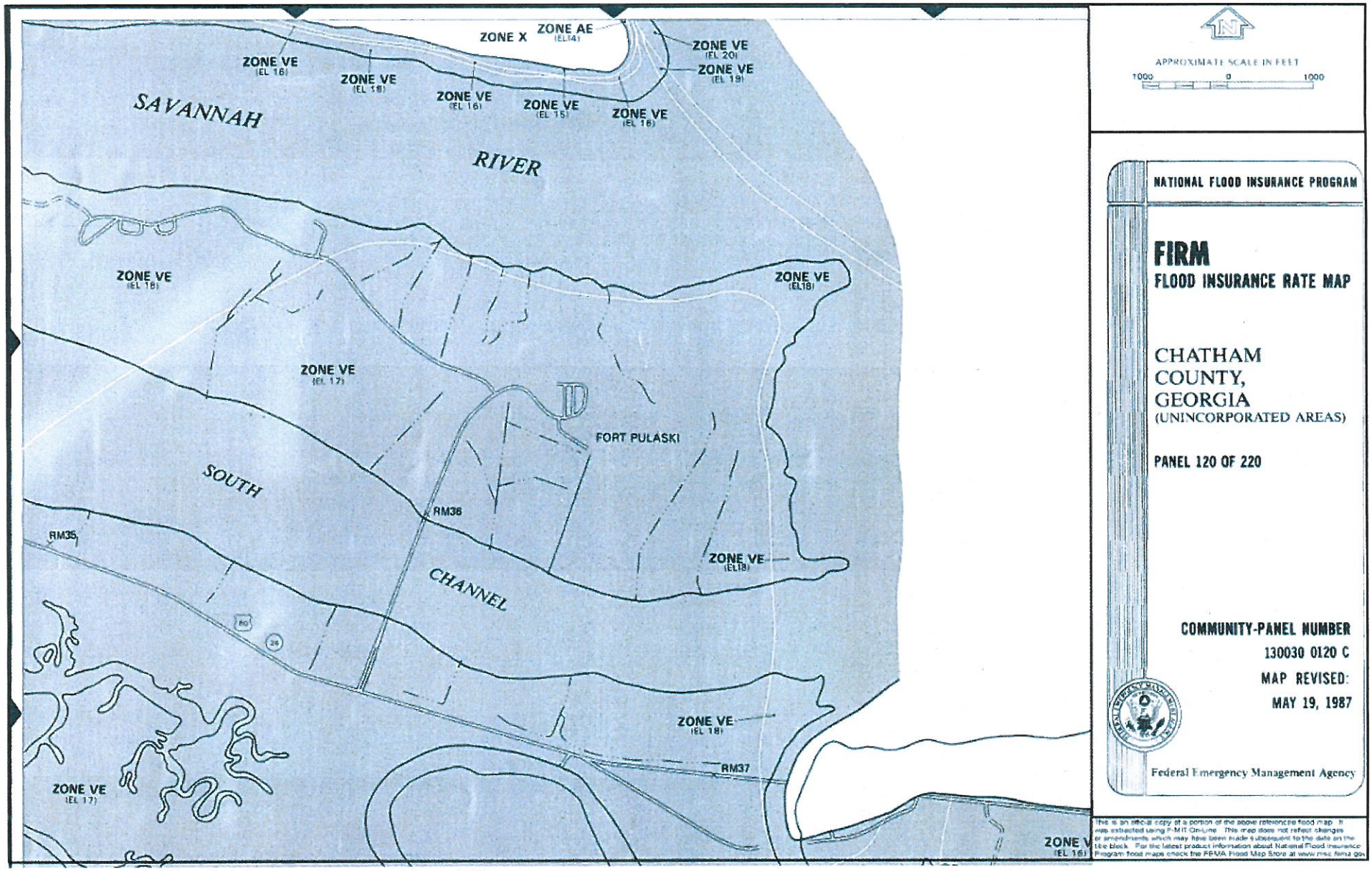

Figure 1. Floodplains are shown as Zone VE.