

Natchez Trace Parkway

Alabama, Mississippi, Tennessee

National Park Service
Department of the Interior



Little Swan Creek Bridge Replacement Environmental Assessment

March 2014



Little Swan Creek Bridge Replacement

Natchez Trace Parkway

Environmental Assessment

Summary

At the Natchez Trace Parkway (parkway), the National Park Service (NPS), in cooperation with the Federal Highway Administration (FHWA), proposes to replace the parkway bridge over Little Swan Creek. This action is needed because the existing bridge is deteriorating. Proposed improvements would maintain parkway infrastructure and help ensure the safety of visitors and preservation of the parkway's natural and cultural resources.

This Environmental Assessment (EA) evaluates the No Action Alternative and three action alternatives. The No Action Alternative would continue operations of the bridge as they are now. Two of the action alternatives include the demolition of the current bridge and replacement of the bridge structure. The third action alternative addresses the replacement of the bridge superstructure only.

This EA has been prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that (1) analyzes a reasonable range of alternatives to meet the objectives of the proposal; (2) evaluates potential issues and impacts on the parkway's resource's and values; and (3) identifies mitigation measures to lessen the degree or extent of these impacts. Resource topics evaluated in detail in this document are wetlands and riparian areas, water quality, special status species, parkway operations, visitor use and experience, human health and safety, historic structures, and cultural landscapes. All other resource topics were dismissed from detailed analysis because the project would result in negligible impacts. No major effects were identified as a result of this assessment.

Public Comment

If you wish to comment on the EA, you may mail comments to the name and address below. This EA will be on public review for 30 days. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. We will make all submissions from organizations, businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses publicly available in their entirety.

Acting Superintendent
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Attention: Little Swan Creek Bridge Replacement EA

An electronic version of this document can be found on the National Park Service's Planning Environment and Public Comment (PEPC) website at <http://parkplanning.nps.gov>. This site provides access to current plans, environmental impact analyses, and related documents on public review. Users of the site can submit comments for documents available for public review.

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Acronyms and Abbreviations

ARAP	Aquatic Resource Alteration Permit
BMP	Best Management Practice
CEQ	Council on Environmental Quality
Corps	U.S. Army Corps of Engineers
DO	Director's Order
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
NPDES	National Pollutant Discharge Elimination System
NEPA	National Environmental Policy Act
NHPA	National Historical Preservation Act
NPS	National Park Service
PEPC	Planning, Environment and Public Comment
TDEC	Tennessee Department of Environment and Conservation
TWRA	Tennessee Wildlife Resources Agency
USFWS	U.S. Fish and Wildlife Service

1 INTRODUCTION / PURPOSE AND NEED

1.1 PURPOSE AND NEED FOR THE PROPOSED ACTION

Purpose

The purpose of this project is to replace all or portions of the Little Swan Creek Bridge to restore its original structural capacity and continue to provide visitors with a safe and enjoyable experience. Although the bridge's current structural capacity meets or exceeds what it was designed to hold, its load bearing capacity will decline as the bridge ages. The bridge was built in 1962, making it 52 years old to date. The parkway would like to replace the bridge without diminishing the visitor experience, parkway resources, or the interpretive value and historic importance of the parkway. The objectives of the project are to:

- Provide visitors with a safe and enjoyable experience.
- Reduce maintenance requirements and costs due to deficiencies in the condition of the bridge.
- Provide parkway employees with a safe and healthy working environment to better meet parkway goals.
- Protect parkway natural and cultural resource values.
- Provide for a sustainable new bridge that is practical and can be cost effectively constructed.

Need

The project is proposed to address safety concerns due to continued deterioration of the bridge. Continuing to prolong bridge maintenance could lead to further safety concerns and more costly repairs in the future. Specifically, the Bridge Inspection Report (FHWA 2013) indicates the bridge's concrete deck is separating (also known as "delamination") from its pier caps. This will continue to reduce the pier's overall stability and lead to a loss of load bearing capacity (see Figure 1a) as will pop-outs under the bridge deck, which have caused concrete fragments to push through the deck's surface. Adding to the bridge's deterioration, efflorescence (heavy salt deposits) has built up on concrete surfaces, including load bearing surfaces (see Figure 1b).

Other signs of aging include cracking and spalling of curbs and railings; cracking of the asphalt surface over the expansion joints (designed to allow for expansion and contraction produced by

temperature changes and other forces); a lack of sealant in the expansion joints; and a hole in the surface of the north pier. Upon technical analysis of project alternatives, the project team found that making individual repairs to the bridge components (e.g. piers, railing and curbing) is not a cost effective solution.

Current bridge conditions



Figure 1a: Delamination of pier caps



Figure 1b: Efflorescence buildup

1.2 PURPOSE AND SIGNIFICANCE OF THE PARKWAY

The Natchez Trace Parkway was authorized by Congress on May 18, 1938 (52 Stat. 407) as a unit of the NPS to commemorate the historic travel route known as the “Natchez Trace.” The parkway is unique among federal recreational motorways because it commemorates an earlier transportation route. Completed in 2005, the parkway is 444 miles in length, covers 52,289 acres, and averages 800 feet in width. The parkway is located in Mississippi, Alabama, and Tennessee. The parkway is a National Historic Landmark, as well as one of America’s 150 National Scenic Byways.

The Little Swan Creek Bridge is located in Lewis County, Tennessee. It is a three span structure constructed of steel cable reinforced concrete with a concrete cast-in-place deck.

1.3 PROJECT LOCATION

Figure 2: Little Swan Creek Bridge Location

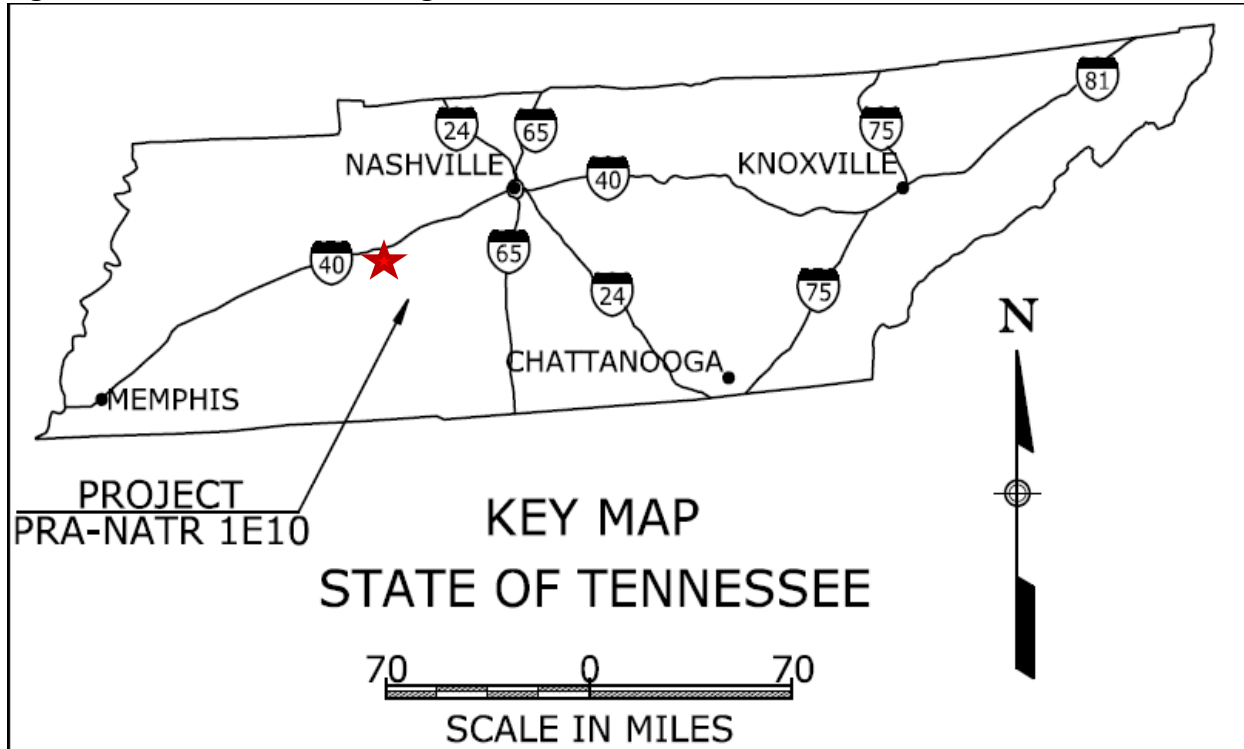


Figure 3: Little Swan Creek Bridge Location – Vicinity

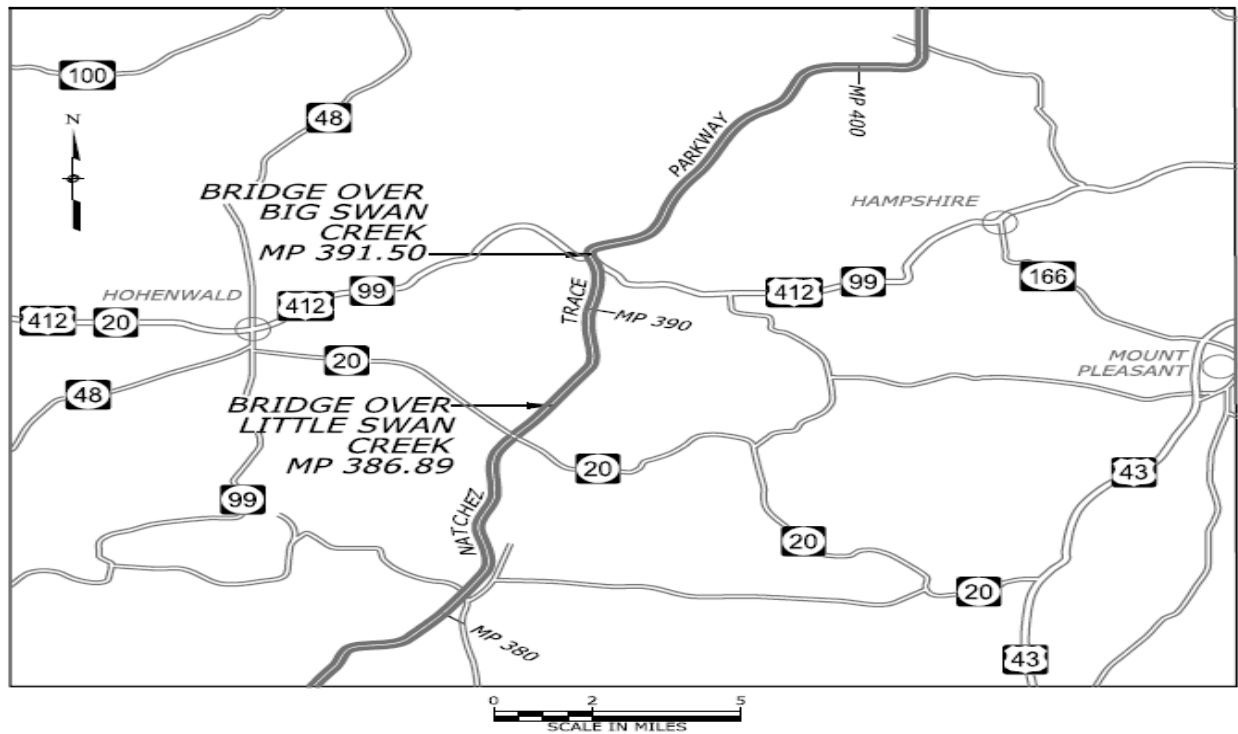


Figure 4: Little Swan Creek Bridge Location – Detail



The Little Swan Creek Bridge is located in Lewis County, Tennessee at mile post 386.9.

1.4 RELATED PROJECTS AND PLANS

The Natchez Trace Parkway currently operates under the direction of the 1987 General Management Plan (GMP). Management objectives identified in the GMP direct the maintenance and upgrading of roadways and associated bridges in order to provide a positive visitor experience and to ensure effective parkway operations. In addition, the 1990 Statement for Management further identifies goals and objectives based on planning efforts and activities completed in the 1970s and 1980s. The purpose and need for this project are consistent with these objectives.

1.5 ABOUT THIS DOCUMENT

In 1969, the United States Congress passed the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.) to establish a national policy:

“...which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation...”

NEPA also established the Council on Environmental Quality (CEQ) as an agency of the Executive Office of the President. In enacting NEPA, Congress recognized that nearly all federal activities affect the environment in some way. Section 102 of NEPA mandates that before federal agencies make decisions, they must consider the effects of their actions on the quality of the human environment. NEPA assigns CEQ the task of ensuring that federal agencies meet their obligations under the Act.

The CEQ developed regulations (40 CFR 1500-1508) for federal agencies to develop Environmental Impact Statements (EIS) mandated by NEPA in Section 102. The CEQ regulations developed the Environmental Assessment (EA) to be used when there is not enough information to decide whether a proposed action may have significant impacts. If an EA concludes that a federal action will result in significant impacts, an EIS will be needed. If not, a Finding of No Significant Impact (FONSI) is issued. This EA meets each of these laws and policies, as well as the CEQ regulations listed below:

Section 1508.09 of the CEQ regulations states that the purposes of an EA are to:

1. Briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or a FONSI.
2. Aid an agency's compliance with the Act when no EIS is necessary.
3. Facilitate preparation of an EIS when an EIS is necessary.

The preparation of an EA is also used to aid an agency’s compliance with Section 102(2) of NEPA, which requires agencies to “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.”

The Department of the Interior (DOI) produced NEPA regulations as Part 516 of its Departmental Manual (DM), and the NPS produced several NEPA handbooks to provide implementation guidance. In October, 2011 the NPS released Director’s Order 12 (DO-12): Conservation Planning, Environmental Impact Analysis, and Decision Making. The FHWA’s NEPA regulations are part of 23 CFR 771. The FHWA Tech Advisory T6640.8A was written in 1987 to provide guidance on environmental documents.

1.6 ISSUE IDENTIFICATION

Public and agency scoping was conducted for this EA to identify what relationships exist between the proposed action and environmental resources. The following issues were identified during this process:

- Impacts of detouring traffic off of the parkway for local residents who use the parkway for commuting purposes and those visitors seeking a continuous, long-distance experience.
- Locating the detour to ensure the bridge is accessible for construction and emergency services.
- Potential impacts and compatibility of the replaced or repaired bridge on the parkway’s cultural landscape.
- General construction impacts related to local water quality.

1.7 IMPACT TOPICS

Impact topics carried forward for further analysis in this EA are listed in Table 1 along with the reasons why each topic is retained. Issues and impact topics for this project have been identified based on federal laws and regulations; NPS Director’s Orders; NPS *Management Policies 2006*; NPS knowledge of resources at the parkway, as well as questions and comments brought forth during scoping.

Table 1: Impact Topics Retained for Further Analysis and Relevant Laws, Regulations, and Policies

Impact Topic	Reasons for Retaining Impact Topic	Relevant Laws, Regulations, and Policies
Wetlands and Riparian Areas	Most of bridge work would	Executive Order (EO) 11990,

	occur above the creek bed, but the project would require widening activities for bridge approaches and the bridge itself; and excavation and filling activities, which may result in disturbances to riverine and riparian areas.	"Protection of Wetlands"; <i>NPS Management Policies 2006</i> ; DO 77-1; Clean Water Act.
Water Quality	Widening approaches to the bridge would add a small amount of impervious surface and possibly increase erosion and sedimentation adjacent to Little Swan Creek. Replacement of bridge piers and abutments would disturb the surrounding area, expose bare soil, and may affect stream flow characteristics during high water events.	<i>NPS Management Policies 2006</i> requires protection of water quality consistent with the Clean Water Act.
Special Status Species	Tennessee yellow-eyed grass (<i>Xyris tennesseensis</i>), a federally listed endangered species, has been planted in a bog habitat approximately one-quarter mile downstream from the proposed project. Potential disturbances from construction activities need to be considered.	<i>NPS Management Policies 2006</i> and the Endangered Species Act.
Visitor Use and Experience	The quality of the visitor experience could be affected during construction from the detour around the bridge closure.	<i>NPS Management Policies 2006</i> .
Human Health and Safety	Deteriorating bridge conditions pose safety concerns for vehicle travel, decreased load capacity, and potential for accidents.	<i>NPS Management Policies 2006</i> .
Parkway Operations	Construction activities would require temporary changes in parkway operations to	<i>NPS Management Policies 2006</i> ; OMB Circular A-123; Federal Managers' Financial

	address traffic control and keep the public informed about road conditions.	Integrity Act of 1982 (31 United States Code (USC) 3512(d)); Government Performance and Results Act of 1993.
Historic Structures	The bridge itself is eligible for listing on the National Register of Historic Places.	Section 106 of the National Historic Preservation Act (NHPA); <i>NPS Management Policies 2006</i> ; and DO-28.
Cultural Landscape	The parkway is a designed cultural landscape and parkway bridges are contributing features to the landscape design. The proposed bridge replacement involves extensive or complete removal of the historic fabric.	Section 106 of the National Historic Preservation Act (NHPA), <i>NPS Management Policies 2006</i> , and DO-28.

1.8 IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

Impact topics were dismissed from further analysis if it was determined the project did not have the potential to cause substantial change to these resources or values.

Floodplains

Executive Order 11988, “Floodplain Management” requires all federal agencies to avoid construction within the 100-year floodplain unless no other practicable alternative exists. Similarly, *NPS Management Policies 2006* and DO-77-2 (Floodplain Management) requires the NPS to preserve floodplain values and minimize hazardous floodplain conditions. Federal Emergency Management Agency (FEMA) floodplain data were reviewed for this site and the proposed project is not located within a 100-year floodplain. The nearest 100-year floodplain is located 1.13 miles northwest of the project area (AquAeTer 2013). In addition, DO-77-2 does not apply to historic structures whose location is integral to its significance, such as the rock retaining wall along the creek bank under the bridge. Therefore this topic has been dismissed from further analysis in this EA.

Topography, geology and soils

NPS Management Policies 2006 requires the protection of parkway resources, including soils, to protect the parkway’s scenery, natural and historic objects, and the processes and conditions that sustain them. The soils in the project area are made up of Riverby gravelly sandy loam (frequently flooded) and Tarklin-Humphreys complex by the National Resource Conservation

Service (NRCS). Project improvements would cause minimal changes in topography, geology and soils due to their small disturbance footprint. Therefore this topic has been dismissed from further analysis in this EA.

Wildlife

The NPS Organic Act, which directs park units to conserve wildlife unimpaired for future generations, is interpreted by the agency to mean that native animal life should be protected and perpetuated as part of the parkway's natural ecosystem. Parkway lands provide habitat for a wide variety of wildlife mammal species, including deer, rabbits, squirrels, foxes, opossums, and raccoons, and a variety of birds, reptiles, amphibians, and fish. The proposed project would have negligible short-term adverse impacts to wildlife and wildlife habitat during construction. The increased noise and presence of humans would disrupt wildlife, but most species could relocate to similar habitat widely available near the project vicinity. After construction is completed, wildlife is expected to return to the area.

The new piers for the proposed bridge would not be located in water in either of the action alternatives. However, Action Alternative One would require a temporary creek diversion to construct the north pier, directly adjacent to the creek. No diversions are expected for Action Alternative Two due to the location of the proposed pier, which would be located away from Little Swan Creek and the spread footing for the pier would be constructed on rock. Some temporary dewatering may be required in Action Alternative Two, depending on water table elevations. No diversion or dewatering would occur in Action Alternative Three.

Pier replacement is not expected to impact aquatic species and impacts to other wildlife would not be detectable. Therefore this topic has been dismissed from further analysis in this EA.

Ethnographic resources

The NPS defines ethnographic resources as any "landscape, objects, plants and animals, or sites and structures that are important to a people's sense of purpose or a way of life." Ethnographic resources are not known to exist in the proposed project area. Previous contacts with tribal representatives provide no reason to expect impacts on ethnographic resources. Copies of this EA will be forwarded to each associated tribal group and other interested parties for review and comment. If subsequent issues or concerns are identified, appropriate consultations would be undertaken. Appropriate steps would be taken to protect any human remains, funerary objects, sacred objects, or objects of cultural patrimony inadvertently discovered. Therefore this topic has been dismissed from further analysis in this EA.

Museum collections

According to DO-24, the NPS requires consideration of impacts on museum collections. Museum collections (historic artifacts, natural specimens, and archival and manuscript material) may be threatened by fire, theft, vandalism, natural disasters, and careless acts. The preservation of museum collections is an ongoing process of preventive conservation,

supplemented by conservation treatment, when necessary. The primary goal is preservation of artifacts in the most stable condition possible to prevent damage and minimize deterioration. No museum collections are present in the project area. Therefore this topic has been dismissed from further analysis in this EA.

Archeological resources

Section 106 of the NHPA of 1966, as amended (16 USC 470 et seq.) and its implementing regulations under 36 CFR 800 require all federal agencies to consider effects of federal actions on cultural properties eligible for or listed in the National Register. In order for an archeological site to be listed in the National Register, it must have the potential to provide information important to history or prehistory. During construction the NPS would monitor ground disturbances outside of the road prism that have not been surveyed to determine if any unknown cultural resources are present. There would be no effect on any known archeological sites and appropriate steps would be taken to monitor and protect any archeological sites that are inadvertently discovered. Therefore this topic has been dismissed from further analysis in this EA.

Environmental justice

Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority and Low Income Populations) prohibits federal agencies from disproportionately affecting minority and/or low-income communities. The project area and all related work would be within the boundaries of the parkway. Any impacts from the project would affect all parkway visitors equally and would not disproportionately affect low-income or minority individuals or populations. Scoping information and supporting data identify no low-income or minority individuals or populations in the project area. Therefore this topic has been dismissed from further analysis in this EA.

Socioeconomics

Implementation of the proposed project would result in construction-related spending. Construction expenditures would be used for labor, supplies, equipment, and other services. Labor would likely come from nearby communities and possibly from the Nashville metropolitan area. Secondary economic effects from construction related spending also would generate economic benefits to the region. Construction related spending would have a short-term beneficial effect on the regional economy. Construction activity and the proposed detour may inconvenience and possibly deter some visitors from using the parkway. However, no substantial change in visitor use is anticipated. Maintaining traffic flow and visitor access over the long-term would help sustain parkway visitation and tourist-related spending. Impacts on socioeconomics would be negligible or less and the proposed project would result in beneficial effects on socioeconomics. Therefore this topic has been dismissed from further analysis in this EA.

Air quality

The Clean Air Act of 1963 (42 USC 7401 et seq.) was established to promote public health and welfare by protecting and enhancing the nation's air quality. The act establishes specific

programs that provide special protection for air resources and air quality-related values associated with national park system units. Section 118 of the Clean Air Act requires a national park system unit to meet all federal, state, and local air pollution standards. In addition, the Clean Air Act provides that the federal land manager have an affirmative responsibility to protect air quality-related values (including visibility, plants, animals, soils, water quality, cultural resources, and visitor health) from adverse pollution impacts. There would be temporary increases in localized air pollution as a result of dust and equipment emissions during construction. Idling limitations, for example, and additional measures may be used during construction to reduce impacts. There would be adverse impacts to local air quality during construction, as well afterwards by visitor vehicle use, but these impacts would be negligible. Therefore, this topic has been dismissed from further analysis in this EA.

Visual resources

The proposed bridge replacement would occur mainly within the existing roadway prism with minimal change to the existing landscape. The visual impact of a two span versus a three span bridge is negligible to minor since the under carriage of the bridge is not visible from any vantage point from any location on the parkway. Visual impacts would occur during construction from the presence of construction equipment, materials, and some ground disturbance. Visual impacts from construction activities for the proposed project would be local, short-term, and negligible. Long-term scenic views along the parkway – both north and south of the project area – as well as Little Swan Creek would not be adversely affected by the proposed project. Therefore this topic has been dismissed from further analysis in this EA.

Natural soundscapes

In accordance with *NPS Management Policies 2006* and DO-47: Sound Preservation and Noise Management, an important part of the NPS mission is preservation of natural soundscapes associated with national park system units. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all natural sounds that occur in park system units, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among park system units, as well as potentially throughout each park system unit, being generally greater in developed areas and less in undeveloped areas. Traffic along the parkway is the primary source of artificial noise in the unit. Construction-related activities from equipment, vehicles, and workers would introduce dissonant sounds, but such sounds would be temporary. Construction noise would be audible above typical background noise and therefore adverse, however it would be localized, short-term and minor. Therefore, this topic has been dismissed from further analysis in this EA.

Prime and unique farmland

In 1980, the CEQ directed federal agencies to assess the effects of their actions on farmland soils classified as prime or unique by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). Prime or unique farmland is defined as soil that

produces general crops such as common foods, forage, fiber, and oil seed; and specialty crops such as fruits, vegetables, and nuts. Both categories require that the land be available for farming uses. Lands within the parkway are available for farming via agricultural leasing; however no land within the project area is available for farming. Construction related impacts from the proposed project would have an almost non-existent impact to farmlands even if such lands were available for lease in the project area. Therefore this topic has been dismissed from further analysis in this EA.

Climate change

Climate change refers to any significant changes in average climatic conditions (such as mean temperature, precipitation, or wind) or variability (such as seasonality and storm frequency) lasting for an extended period (decades or longer). Recent reports by the U.S. Climate Change Science Program, the National Academy of Sciences, and the United Nations Intergovernmental Panel on Climate Change provide evidence that climate change is occurring as a result of rising greenhouse gas (GHG) emissions and could accelerate in the coming decades. While climate change is a global phenomenon, its impacts vary based on regional and local factors. Construction activities associated with the proposed bridge replacement would contribute to increased GHG emissions, but such emissions would be short-term. The bridge replacement impacts on climate change would be so low, they would not be detectable. Therefore this topic has been dismissed from further analysis in this EA.

Indian trust resources

Secretarial Order 3175 requires that any anticipated impacts on Indian trust resources from a proposed project or action by Department of the Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights. The order represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. The land comprising the project area is not an Indian trust resource according to this definition. Therefore this topic has been dismissed from further analysis in this EA.

2 DESCRIPTION OF ALTERNATIVES

The No Action Alternative and three action alternatives are discussed in this EA. The No Action Alternative would continue operations of the bridge as they are now. Two of the action alternatives include the demolition of the current bridge and replacement of the bridge structure. The third action alternative addresses the replacement of the superstructure only. Although impacts vary among the alternatives, each action alternative requires some form of bridge replacement and each action alternative would have an adverse effect under Section 106 of the NHPA.

2.1 ACTIONS COMMON TO ALL ACTION ALTERNATIVES

Construction Materials

The use of Accelerate Bridge Construction (ABC) methods would be used in all action alternatives. ABC uses prefabricated bridge components (e.g. precast substructure and superstructure units) to reduce onsite construction time, reduce environmental impacts, and increase work zone safety. The accelerated approach is intended to reduce the duration of the project's traffic detour as well as reduce costs that would result from the temporary loss of the bridge during construction.

Road Detour

The parkway would implement a number of steps to provide timely and accurate information to parkway visitors during bridge construction to maintain a quality visitor experience. Information on road construction and travel restrictions would be communicated via the parkway website, newspaper, visitor center, news releases, and social media such as Facebook. A detailed detour plan (See Appendix B) is provided in this document. All action alternatives share the same bridge closure detour plan.

Action Alternative One would likely require a roadway closure of 9 – 12 months. Action Alternative Two would require a roadway closure of 8 – 10 months and Action Alternative Three would require a roadway closure of 7 – 8 months, respectively. However, it is possible the project area section of the roadway would be closed for more than one year for each of the action alternatives after taking into account weather delays and potential construction delays. The use of precast offsite elements can reduce the amount of closure time if properly coordinated. The NPS would require the selected contractor to take video of the entire detour route prior to starting bridge construction. This would enable the NPS to identify any road repairs and maintenance caused by the use of these materials during construction.

2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, no improvements to the existing bridge over Little Swan Creek would occur. The existing bridge structure would remain in place and only routine maintenance operations would be performed. Taking no action would lead to unacceptable and unsafe conditions. The bridge would continue to deteriorate and eventually force road closure. This would prevent visitors from using this portion of the parkway.

The No Action Alternative provides a basis for comparison with the Preferred Alternative and the respective environmental consequences. Should the No Action Alternative be selected, the NPS would respond to future needs and conditions without major actions or changes to current operations.

2.3 ACTION ALTERNATIVE ONE – THREE SPAN BRIDGE

Demolish and Remove Existing Roadway Bridge

The existing roadway bridge would be demolished and removed, followed by site grading and revegetation. The bridge deck would be demolished first, and then beams would be removed individually with a crane. Demolition would likely require the use of a track mounted jack hammer. Some of the bridge may also be removed by saw cutting and lifting debris with a crane. All components of the bridge, including the deck, support structure, abutments, and piers would be removed and disposed of off-site. An erosion control plan would be prepared and appropriate BMPs (Best Management Practices) to control erosion would be implemented during construction to prevent or minimize the potential for erosion and transport of sediments to Little Swan Creek.

Construct Three Span Bridge

A new 198.5' three span continuous prestressed concrete girder bridge would replace the existing 197' bridge. The new bridge would have the same total span lengths as the existing bridge: 64.5', 66.0', and 64.5'. New piers would be constructed at the same locations as the existing piers. Excavation work would include a temporary creek diversion (e.g. cofferdam) to construct the north pier, located directly adjacent to the creek. The typical section would be widened from an 8' to an 11' lane and from a 3' shoulder to a 6' shoulder (total travel way from 28' to 34'), to meet current bridge design standards for shoulder widths. From the embankment and pavement transition at the bridge approach, as vehicles approach the bridge, the 6' roadway shoulder would widen to 12' over a 120' length.

2.4 ACTION ALTERNATIVE TWO – TWO SPAN BRIDGE (PREFERRED ALTERNATIVE)

The Preferred Alternative determined by the NPS for this project is Action Alternative Two (two span bridge), which addresses the need to replace the bridge over Little Swan Creek. Although construction activities for this alternative may cause adverse impacts, these would be minimized by the use of BMPs and mitigation methods.

Construct Two Span Bridge

Demolition and removal of existing bridge would be same as for Action Alternative One. A new 241.3' two span continuous prestressed concrete girder bridge would replace the existing 197' bridge. The new bridge would be lengthened by a total of 42.8' and each span would be 120.6' in length. A single hammerhead pier and new abutments would be located further from the stream than the existing bridge and roadway alignment. Depending on water table elevations, temporary dewatering may be required for pier construction.

The typical section would be widened from an 8' to an 11' lane and from a 3' shoulder to a 6' shoulder (total travel way from 28' to 34'), to meet current bridge design standards for shoulder widths. From the embankment and pavement transition at the bridge approach, as vehicles approach the bridge, the 6' roadway shoulder would widen to 12' over a 120' length. This alternative would include excavation, pavement removal and installation, roadway profile adjustment and transitions to the existing roadway grade, and striping. An erosion control plan would be prepared and BMPs to control erosion would be implemented during construction to prevent or minimize the potential for erosion and transport of sediments to Little Swan Creek.

2.5 ACTION ALTERNATIVE THREE – REPLACE BRIDGE SUPERSTRUCTURE

Action Alternative Three would replace individual components of the bridge superstructure (e.g. pier caps, beam, deck, and rails). This alternative would re-use the existing abutments and pier columns and footings. No widening of the road shoulder and approach would be necessary. This alternative would use the same detour and traffic plan as Action Alternatives One and Two.

2.6 RESOURCE PROTECTION MEASURES

To prevent and minimize potential adverse impacts associated with the action alternatives, BMPs and resource protection measures would be implemented during the construction and post-construction phases of the project (see Table 2).

Table 2: Resource Protection Measures

Resource Area	Mitigation
General Considerations	<p>Construction vehicles would enter Natchez Trace Parkway at the point of access nearest the work site, which is U.S. Route 412 or Tennessee State Route (SR) 20. Delivery of concrete girders would be from U.S. Route 412. The contractor would plan the route and provide oversized load protection as required by the Manual on Uniform Traffic Control Devices (MUTCD).</p> <p>Construction zones would be identified with construction fence, silt fence, or some similar material prior to any construction activity. The fencing would define the construction zone and confine activity to the minimum area required for construction. All protection measures would be clearly stated in the construction specifications and workers would be instructed to avoid conducting activities beyond the construction zone. Disturbances would be limited to areas inside the designated construction limits.</p> <p>Temporary access ramps or roads would be removed and graded to existing finish grades when construction of the bridge is complete.</p> <p>Construction workers and supervisors would be informed about the special sensitivity of the parkway's values, regulations, and appropriate housekeeping.</p>
Park Operations	<p>Staging and parking for vehicles, equipment and materials would be at or near the immediate bridge area, within a single lane of the parkway and within the project's designated closure area. Other areas utilized for the project would be designated and approved by parkway staff.</p> <p>Project manager would provide a copy of all environmental permits to the parkway Chief of Resource Management for the project's administrative record.</p>
Human Health and Safety	<p>Material and equipment hauling would comply with all legal load restrictions. All tools, equipment, barricades, signs, surplus materials, and rubbish would be removed from the project work limits upon project completion.</p>
Visitor Use and Experience	<p>Visitors would be informed in advance of construction activities from the parkway website, newspaper, the visitor center, news releases, and social media such as Facebook. The parkway would coordinate with the contractor on the construction schedule and update visitors and information sources</p>

	<p>periodically.</p> <p>A traffic control plan would be implemented during construction. A detailed detour plan would also be implemented.</p>
Visual Resources	<p>The intent of the new bridge is to be compatible but distinguishable with the cultural landscape design of the existing bridge (built in 1962). The new bridge would be constructed of concrete and have identical concrete curb and railing. The concrete deck would be overlain with asphalt to continue the cultural landscape design of a continuous ribbon of asphalt along the entire parkway.</p> <p>Disturbed areas would be revegetated as soon as practicable following construction.</p>
Wetlands and Riparian Areas	<p>When the existing bridge is demolished and removed, under Action Alternative Two (Preferred Alternative), the two concrete pier footings from the existing bridge would permanently remain in place and the footings would be removed only to the level of the finished grade. This measure would reduce the overall amount of excavation and minimize erosion, turbidity, and other disturbances near the site.</p> <p>When constructing a two span bridge in the Preferred Alternative, the center pier would be constructed further from the creek to minimize potential impacts.</p> <p>When constructing the three span bridge under Action Alternative One, new piers would be constructed at the same locations as the existing piers, which would minimize disturbances near the site.</p> <p>Under Action Alternative One, the temporary use of a diversion shield (e.g. cofferdams) near the stream channel during construction would be used to minimize construction debris from entering the creek during demolition of the existing bridge.</p> <p>All temporarily disturbed ground would be reclaimed using appropriate BMPs that include planting with NPS-approved species. Until the soil is stable and vegetation is established, erosion control measures would be implemented to minimize erosion and prevent sediment from reaching streams.</p> <p>Temporary barriers would be used to protect trees, plants, and root zones adjacent to the construction site as needed.</p> <p>To prevent the introduction of, and minimize the spread of, nonnative vegetation and noxious weeds, the following measures would be</p>

	<p>implemented during construction:</p> <ul style="list-style-type: none"> • Soil disturbance and removal of riparian vegetation would be minimized. • All construction equipment would be pressure washed or steam cleaned before entering the parkway to ensure that all equipment, machinery, rocks, gravel, and other materials are clean and weed free. • All haul trucks bringing fill materials from outside the parkway would be covered to prevent seed transport. • Vehicle and equipment parking would be limited to within construction limits or approved staging areas. • All fill, rock, and additional topsoil obtained from sources outside the parkway would be taken from weed-free sources. <p>After the bridge is replaced, the site would be graded to match the natural contours of the creek channel.</p> <p>Native vegetation would be used to revegetate all disturbed areas.</p> <p>Monitoring and follow-up treatment of exotic vegetation would occur after project activities are completed.</p>
Water Quality	<p>Erosion control BMPs for drainage and sediment control, as identified and used by the NPS and FHWA would be implemented to prevent or reduce nonpoint source pollution and minimize soil loss and sedimentation in drainage areas. Under Action Alternative One, the temporary use of a diversion shield (e.g. cofferdams) near the stream channel during construction would be used to minimize construction debris from entering the creek during demolition of the existing bridge.</p> <p>Depending on water table elevations, temporary dewatering may be required for pier construction under Action Alternative Two. Temporarily diverting water from the work site would reduce downstream turbidity and erosion during construction. It would also provide the driest possible working conditions, allowing workers to do a better job building a structurally sound pier. For Action Alternative One, a small bypass channel, possibly lined by a bladder dam on non-inflatable barrier may be constructed around the pier site and lined with plastic, and one or two small water pumps would be used to divert the water around the work area. The bladder dam or non-inflatable barrier would be removed after the work is completed.</p> <p>Silt fencing fabric would be inspected daily during project work and weekly after project completion, until removed. Accumulated sediments would be</p>

	<p>removed when the fabric is estimated to be approximately half full. Silt removal would be accomplished in such a way as to avoid introduction into any flowing water bodies.</p> <p>Regular site inspections would be conducted to ensure that erosion control measures are properly installed and functioning effectively.</p> <p>The operation of ground-disturbing equipment would be temporarily suspended during large precipitation events to reduce the production of sediment that may be transported to streams.</p> <p>An erosion control plan would be prepared and appropriate BMPs to control erosion would be implemented during construction to prevent or minimize the potential for erosion and transport of sediments to Little Swan Creek.</p> <p>All equipment would be maintained in a clean and well-functioning state to avoid or minimize contamination from fluids and fuels. Prior to starting work each day, all machinery would be inspected for leaks (e.g., fuel, oil, and hydraulic fluid) and all necessary repairs would be made before commencing work.</p> <p>A hazardous spill plan would be required from the contractor prior to the start of construction stating what actions would be taken in the case of a spill and preventive measures to be implemented.</p> <p>Hazardous spill clean-up materials would be on-site at all times. This measure is designed to avoid and minimize the introduction of chemical contaminants associated with machinery (e.g., fuel, oil, and hydraulic fluid) used in project implementation.</p>
Special Status Species and Wildlife	<p>All construction activities would be performed in a manner having the least possible detrimental effect upon the surrounding terrain or vegetation, particularly beneath the bridge and near Little Swan Creek. If Action Alternative One is selected, some in-water work may be required. In the event of in-water work, mitigation would occur to protect the state-listed, saddled madtom fish, which may be in the area. In this case, Tennessee Wildlife Resources Agency (TWRA) measures would be taken.</p>
Air / Noise	<p>Contractors would be required to properly maintain construction equipment (i.e., mufflers and brakes) to minimize noise. Construction vehicle engines would not be allowed to idle for extended periods.</p> <p>Dust control would occur, as needed, on active work areas where dirt or fine particles are exposed.</p>
Historic Structures and	<p>The new bridge would be constructed of concrete and have identical concrete curb and railing. The concrete deck would be overlain with asphalt</p>

Cultural Resources	<p>to continue the cultural landscape design of a continuous ribbon of asphalt along the entire route of the parkway.</p> <p>The historic dry stacked stone wall around the existing footing nearest Little Swan Creek Bridge would remain in situ to the greatest extent possible¹. The contractor would reset any stone that may be accidentally moved during the construction process.</p> <p>Documentation drawings would be completed for the existing bridge, including the Historic American Buildings Survey (HABS) and Historic American Engineering Record (HAER).</p> <p>When constructing a two span bridge, the center pier would be constructed further from the historic stone wall to minimize potential impacts.</p> <p>Monitoring by a professional archeologist would be conducted during construction activities.</p> <p>In the unlikely event that previously unknown archeological resources are discovered during construction, all work in the immediate vicinity of the discovery would be halted until the resources are identified and documented and, if the resources cannot be preserved in situ, an appropriate mitigation strategy developed in consultation with the state historic preservation officer and, if necessary, associated American Indian tribes. Members of American Indian Tribes would be allowed to monitor excavation activities during construction for the presence of cultural resources.</p> <p>In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed.</p> <p>The NPS would ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging archeological sites or historic properties. Contractors and subcontractors would also be instructed on procedures to follow if previously unknown archeological resources are uncovered during construction.</p> <p>Equipment and material staging areas would avoid known archeological resources.</p>
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¹ Parkway staff have documented that the creek was once lined with stone, but the rock retaining wall is no longer visible from the surface and has been subject to extensive erosion.

2.7 ALTERNATIVES CONSIDERED BUT DISMISSED FROM DETAILED ANALYSIS

An alternative was considered to remove the existing asphalt surface and repair cracks and spalls on the bridge deck and expansion joints, then install a waterproofing membrane and overlay the roadway with asphalt. Concrete bridge piers and caps would be replaced and bridge bearings would be repaired. However, this alternative was dismissed because it would not address the need to preserve adequate load bearing capacity. Maintenance costs would increase in the long-term if structural deficiencies are not corrected. Limiting repairs to these specific construction activities does not meet the purpose and need of the project, so this alternative was dismissed.

2.8 ENVIRONMENTALLY PREFERRED ALTERNATIVE

According to the CEQ regulations implementing NEPA (43 CFR 46.30), the Environmentally Preferred Alternative is the alternative that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical cultural, and natural resources. The Environmentally Preferred Alternative is identified based on consideration of long-term environmental impacts against short-term impacts in evaluating what is the best protection of the parkway's resources. In some situations, such as when different alternatives impact different resources to different degrees, there may be more than one Environmentally Preferred Alternative.

Action Alternative Three is the Environmentally Preferred Alternative because it requires the least amount of disturbance. Action Alternative Three would involve shorter periods of road closures for individual superstructure improvements. It would also require the least amount of new construction and embankment materials and would produce the least amount of wasted materials (concrete, asphalt, and steel). Although Action Alternative Three has the lowest level of environmental effects compared to the other alternatives, it is not the Preferred Alternative because of its significantly higher life cycle costs due to a lengthened construction cycle with frequent repairs. These recurrent repairs would also affect the visitor experience and pose increased structural issues over the long-term. In addition to life cycle costs, bridge engineers suggested that continuing to use existing hammer head piers could limit the structural sustainability of the bridge by a significant number of years. In addition, the existing piers are constructed with reactive aggregate concrete with questionable long-term structural integrity. Therefore Action Alternative Three was not selected as the Preferred Alternative. Action Alternative Two has an intermediate level of impact compared with Action Alternatives One and Three.

By contrast, the No Action Alternative is not the Environmentally Preferred Alternative. Although there would be no construction or ground-disturbing activities that would damage previously undisturbed elements of the biological and physical environment, the No Action Alternative would not protect parkway natural resources as the bridge would continue to deteriorate without rehabilitation. In addition, the No Action Alternative would continue to have high maintenance requirements that would not be as cost effective or efficient as the action alternatives.

2.9 ALTERNATIVES COMPARISON

A comparison of the alternatives and the degree to which each alternative fulfills the needs and objectives of the proposed project is summarized in Table 3.

Table 3: Alternatives Comparison and How Each Alternative Meets Project Objectives

No Action Alternative	Action Alternative One Three Span Bridge	Action Alternative Two (Preferred Alternative) Two Span Bridge	Action Alternative Three Replace Bridge Superstructure
Under the No Action Alternative, no improvements to the existing bridge over Little Swan Creek would occur. The existing bridge structure would remain in place and only routine maintenance operations would be performed. The bridge would continue to deteriorate and eventually force road closure. This would prevent visitors from using this portion of the parkway.	The existing roadway bridge would be demolished and removed. A new 198.5' three span continuous prestressed concrete girder bridge would replace the existing bridge. The new bridge would have the same total span lengths as the existing bridge. New piers would be constructed at the same locations as the existing piers. The typical section would be widened to an 11' lane with a 6' shoulder (total travel way 34'), to meet current bridge design standards for shoulder widths. This alternative would require widening the road shoulder to accommodate the wider bridge shoulder.	The existing roadway bridge would be demolished and removed. A new 241.5' two span continuous prestressed concrete girder bridge would replace the existing bridge. The bridge would be lengthened by a total of 40' to reduce unnecessarily tall abutments. Each span would be 120' in length. A single pier and new abutments would be located further from the stream. This alternative would require widening of the road shoulder to accommodate the wider bridge shoulder.	This alternative would replace bridge superstructure components (e.g. pier caps, beam, deck, and rails). This alternative would reuse the existing abutments and pier columns and footings. No widening of the road shoulder would be necessary.
Meets Objectives?			
Project objectives would not be fulfilled because	Action Alternative One would fulfill the project objectives, but it was not	The Preferred Alternative fulfills the project objectives by addressing safety and	Action Alternative Three would fulfill the project objectives, but it was not

the deteriorating condition and load capacity of the existing bridge would not be addressed and would continue to pose an increasing safety risk to vehicle travel.	identified as the Preferred Alternative because of its more extensive excavation and removal impacts (e.g. different pier and abutment locations) compared to the other action alternatives.	structural capacity concerns with the existing bridge. Visitors and parkway staff would be provided a safe environment and the parkway natural and cultural resources would be protected by mitigation measures.	identified as the Preferred Alternative because although it would require the least amount of new construction, it has the highest lifecycle cost among the action alternatives due to a lengthened construction cycle with frequent repairs. Such recurrent repairs would also affect the visitor experience and pose increased structural issues over the long-term.
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2.10 IMPACT SUMMARY

A summary of potential environmental effects for the alternatives is presented in Table 4.

Table 4: Impact Summary Table

Impact Topic	No Action Alternative	Action Alternative One Three Span Bridge	Action Alternative Two (Preferred Alternative) Two Span Bridge	Action Alternative Three Replace Bridge Superstructure
Wetlands and Riparian Areas	There would be no new impacts. However, the No Action Alternative would result in local, long-term, negligible impacts on riverine and riparian areas from continued maintenance and repair activities.	Action Alternative One would have a local short and long-term minor adverse impact to riverine and riparian areas due to the construction of two new piers, potentially shifting the location of the bridge's abutments, and temporary placement of a cofferdam during construction.	Action Alternative Two would have a local short and long-term negligible to minor adverse impact to riverine and riparian areas due to the construction of a single new pier and possibly incorporating a dewatering method during construction.	Action Alternative Three would have a local long-term negligible adverse impact to riverine and riparian areas due to individual future repairs and maintenance activities.
Water Quality	There would be local, long-term, minor impacts to water quality due to parkway operations, such as routine	There would be local, long and short-term, minor impacts to water quality due to erosion and	Similar to Action Alternative One, there would be local, long and short-term, minor impacts to water	There would be local, long-term, negligible impacts to water quality due to construction activities for

	<p>maintenance that could result in vegetation clearing or placement of fill material adjacent to roadway surfaces.</p>	<p>sediment control needed to mitigate additional impervious area. The three span bridge replacement would be 6' wider than the existing bridge (3' widening on each side) and result in an additional 1,191 square feet of impervious area.</p>	<p>quality due to erosion and sediment control needed to mitigate additional impervious area. The two span bridge replacement would be 6' wider than the existing bridge (3' widening on each side) and result in an additional 1,448 square feet of impervious area.</p>	<p>superstructure and pier cap replacement. However, Action Alternative Three would not involve widening bridge shoulders or approaches and would not add to the existing bridge's impervious surface.</p>
<p>Special Status Species</p>	<p>There would be no new impacts on special status species. Existing impacts from vehicle traffic and human activity in the area would continue unchanged. Periodic bridge maintenance and repairs would result in local short-term negligible adverse impacts on special status species.</p>	<p>There would be no new impacts on special status species. Existing impacts from the current bridge would continue after construction of the new three span bridge, having a short-term, negligible adverse impact on special status species.</p>	<p>Same as Action Alternative One.</p>	<p>Action Alternative Three would have no new impacts on special status species. Impacts would be similar to Action Alternatives One and Two. Impacts would be negligible and adverse, but would be long-term due to the need for more frequent maintenance and repairs compared to Action Alternatives One and Two.</p>

Parkway Operations	There would be no change in current parkway operations or infrastructure; however the bridge would eventually need to be replaced or repaired, resulting in a parkway-wide long-term minor adverse impact on parkway operations.	Action Alternative One would have a local short-term minor adverse impact on parkway operations during construction due to additional staff time requirements and a roadway closure of possibly more than one year. It would have a parkway-wide long-term minor beneficial effect on parkway operations from improved safety and reduced maintenance requirements.	Same as Action Alternative One.	Same as Action Alternatives One and Two, with the exception that Action Alternative Three would likely require a shorter roadway closure of 7 – 8 months.
Visitor Use and Experience	There would be local, long-term minor to moderate adverse effects on visitor use and experience from ongoing deterioration of the bridge and the related long-term maintenance and repairs. Periodic maintenance projects would require traffic delays at random times, which would inconvenience visitors. Visitors that may wish to drive longer stretches or perhaps the entire length of the parkway, would experience long-term, minor adverse effects during maintenance projects. Local users would experience a long-term, minor to	Demolition of the current bridge and replacement with a new bridge would provide a minor beneficial effect on the quality of the visitor experience and ensure protection of the road's structural features for visitor enjoyment and safe travel for many years. Construction would require a road closure of 9 – 12 months and possibly more than one year. The detour would cause visitors to experience short-term minor, adverse impacts and local users would experience a long-term, minor to moderate adverse impact.	Same as Action Alternative One, except that bridge construction and the road closure and associated detour would last approximately 8 – 10 months.	Similar to Action Alternatives One and Two, with the exception that Action Alternative Three may require multiple closures for reconstruction and maintenance activities for years to come as opposed to completing construction activities within a single bridge replacement project. Construction, road closure and the associated detour would last approximately 7 – 8 months.

	moderate adverse impact.			
Human Health and Safety	There would be local long-term, minor adverse effects on human health and safety. As the bridge ages, structural issues would become more evident and need to be addressed.	During construction there would be a local, short-term negligible adverse impact on the health and safety of parkway staff, visitors, and workers that would occur from construction activities, equipment, and traffic redirection. However, Action Alternative One would result in local long-term beneficial effects on human health and safety due to the bridge replacement improvements.	Same as Action Alternative One.	Similar to Action Alternatives One and Two, with the exception that Action Alternative Three would have an increased maintenance schedule over the following years and there would be short-term negligible adverse impacts that would occur during each maintenance period.
Historic Structures	Negligible impacts.	Removal and replacement of the bridge would impact the bridge itself and would likely impact the historic rock retaining wall and have a local, moderate adverse impact. There would be an adverse effect to historic structures under Section 106 of the NHPA.	Same as Action Alternative One.	Impacts would be less than those in Action Alternatives One and Two because shoulder widening would not occur. However, there would still be an adverse effect to historic structures under Section 106 of the NHPA.
Cultural Landscape	Negligible impacts.	Replacing the bridge would remove a part of the parkway's historic fabric and would have a local, moderate adverse impact. There would be an adverse effect to the cultural landscape under Section 106 of the NHPA.	Same as Action Alternative One.	Impacts would be less than those in Action Alternatives One and Two because shoulder widening would not occur. However, there would still be an adverse effect to the cultural landscape under Section 106 of the NHPA.

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter provides a description of the resources potentially impacted by the alternatives and the likely environmental consequences. It is organized by impact topics that were derived from scoping. Impacts are evaluated based on context, duration, intensity, and whether they are direct, indirect, or cumulative. The “Affected Environment” section describes only those environmental resources that are relevant to the decision being made and does not describe the entire existing environment; only those environmental resources that could be affected by the alternatives if they were implemented are discussed. This section, in conjunction with the description of the No Action Alternative, forms baseline conditions for determining the environmental impacts of the proposed action.

3.1 GENERAL METHODS

This section contains the environmental impacts, including direct and indirect effects, and their significance for each alternative. The analysis is based on the assumption that the mitigation measures and BMPs identified in the “Resource Protection Measures” section of this EA would be implemented for the Preferred Alternative. Overall, the NPS based these impact analyses and conclusions on the review of existing literature and parkway studies, information provided by experts within the parkway, other agencies, professional judgment, and public input.

The following terms are used in the discussion of environmental consequences to assess the impact intensity threshold and the nature of impacts associated with each alternative.

Type: Impacts can be beneficial or adverse. Beneficial effects are those that have a positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition; adverse effects have a negative change in the condition or appearance of the resource or a change that moves the resource away from a desired condition.

Context: Context is the setting within which an impact would occur, such as local (areas near the proposed project) or regional (Lewis County, Tennessee).

Impact Intensity: Impact intensity is defined individually for each impact topic. There may be no impact, or adverse impacts may be negligible, minor, moderate, or major. Thresholds are defined for each resource.

Duration: Duration of impact is analyzed independently for each resource because impact duration is dependent on the resource being analyzed. Depending on the resource, impacts

may last for the construction period, a single year or growing season, or longer. For the purposes of this analysis, the short-term and long-term impact duration for each resource is defined.

Direct, Indirect, and Cumulative Impacts: Effects can be direct, indirect, or cumulative. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by the action and occur later or farther away, but are still reasonably foreseeable. Direct and indirect impacts are considered in this analysis, but are not specified in the narratives. Cumulative effects are discussed as well.

Threshold for Impact Analysis: The duration and intensity of effects vary by resource. Therefore, the definitions for each impact topic are described separately. These definitions were formulated through the review of existing laws, policies, and guidelines; and with assistance from parkway staff and regional NPS and Washington office NPS specialists. Impact intensity thresholds for negligible, minor, moderate, and major adverse effects are defined in a table for each resource topic.

3.2 CUMULATIVE EFFECTS

Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions” (40 CFR 1508.7). Cumulative effects can result from individually minor, but collectively significant, actions taking place over a period of time. The CEQ regulations that implement NEPA require assessment of cumulative impacts in the decision-making process for federal projects.

Methods for Assessing Cumulative Effects

Cumulative impacts were determined by combining the impacts of the Action Alternatives (Little Swan Creek Bridge replacement) with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects near the parkway or the surrounding region that might contribute to cumulative impacts. The geographic scope of the analysis includes actions within the Big Swan Creek watershed, which includes Little Swan Creek. The temporal scope includes past actions that have influenced the current condition of the resource and reasonably foreseeable actions within a range of approximately 10 years in the future. The geographic scope for this analysis includes actions within and immediately adjacent to the project area.

Past, present, and reasonably foreseeable future actions were then assessed in conjunction with the impacts of the alternatives to determine if they would have any added adverse or beneficial effects on a particular resource, parkway operation, human health and safety, or visitor use. The impact of reasonably foreseeable actions would vary for each of the resources. Cumulative effects are considered for each alternative and are presented in the environmental consequences discussion for each impact topic.

3.3 PAST ACTIONS

The lands adjacent to and surrounding the Little Swan Creek Bridge have been modified by human activities, including parkway construction, mowing, agricultural activities, fire suppression, and various developments, such as campgrounds, picnic areas, roads and trails.

3.4 CURRENT AND FUTURE ACTIONS

Planned future actions such as repair work on the Big Swan Creek Bridge and the U.S. Route 412/State Route 99 bridge replacement would potentially contribute to cumulative effects by improving parkway operations and reducing maintenance requirements.

3.5 WETLANDS AND RIPARIAN AREAS

Affected Environment

Potential wetlands and riparian resources in the project area were delineated on October 3, 2010 and November 10, 2013 (AquAeTer 2013). The project area was delineated according to the classification scheme of Cowardin et al. (1979) and methods outlined in NPS DO 77-1: Wetland Protection (NPS 2012). The project area includes three riverine systems that encompass Little Swan Creek and two tributaries. Subject to federal and state agency review and verification, these systems are considered “waters of the U.S.” and are under the jurisdiction of the United States Army Corps of Engineers (USACE) pursuant to the Clean Water Act §404; 33 U.S.C. 1344. In addition to meeting USACE jurisdictional requirements, the NPS is the regulatory agency for land it administers and NPS standards are defined by DO 77-1.

According to the Cowardin classification, Little Swan Creek is a perennial stream that flows in a northwest direction under the existing bridge at mile post 368.9 (see Figure 5). Within the project area, Little Swan Creek is bounded by upland areas along its banks. This stream can be classified as a riverine system, perennial subsystem under the rock bottom class, due to the presence of bedrock greater than 75% and vegetative cover less than 30%. This stream, at the ordinary high water mark (OHWM), comprises approximately 0.032 acres within the project area.

The two unnamed tributaries of Little Swan Creek that exist within the project area are located as follows:

- Tributary 1 flows into Little Swan Creek to the southeast of the bridge
- Tributary 2 flows into Little Swan Creek northwest of the bridge.

Both of these tributaries are classified as a riverine system, intermittent subsystem and rock bottom class due to the high percentage of bedrock and stones, with less than 30% vegetative cover. Tributary 1 comprises approximately 0.072 acres and Tributary 2 comprises approximately 0.047 acres within the project area.

In addition to delineation work conducted for Little Swan Creek and its two tributaries, the assessment indicated the project area does not contain a jurisdictional wetland pursuant to USACE regulations (AquAeTer 2013).

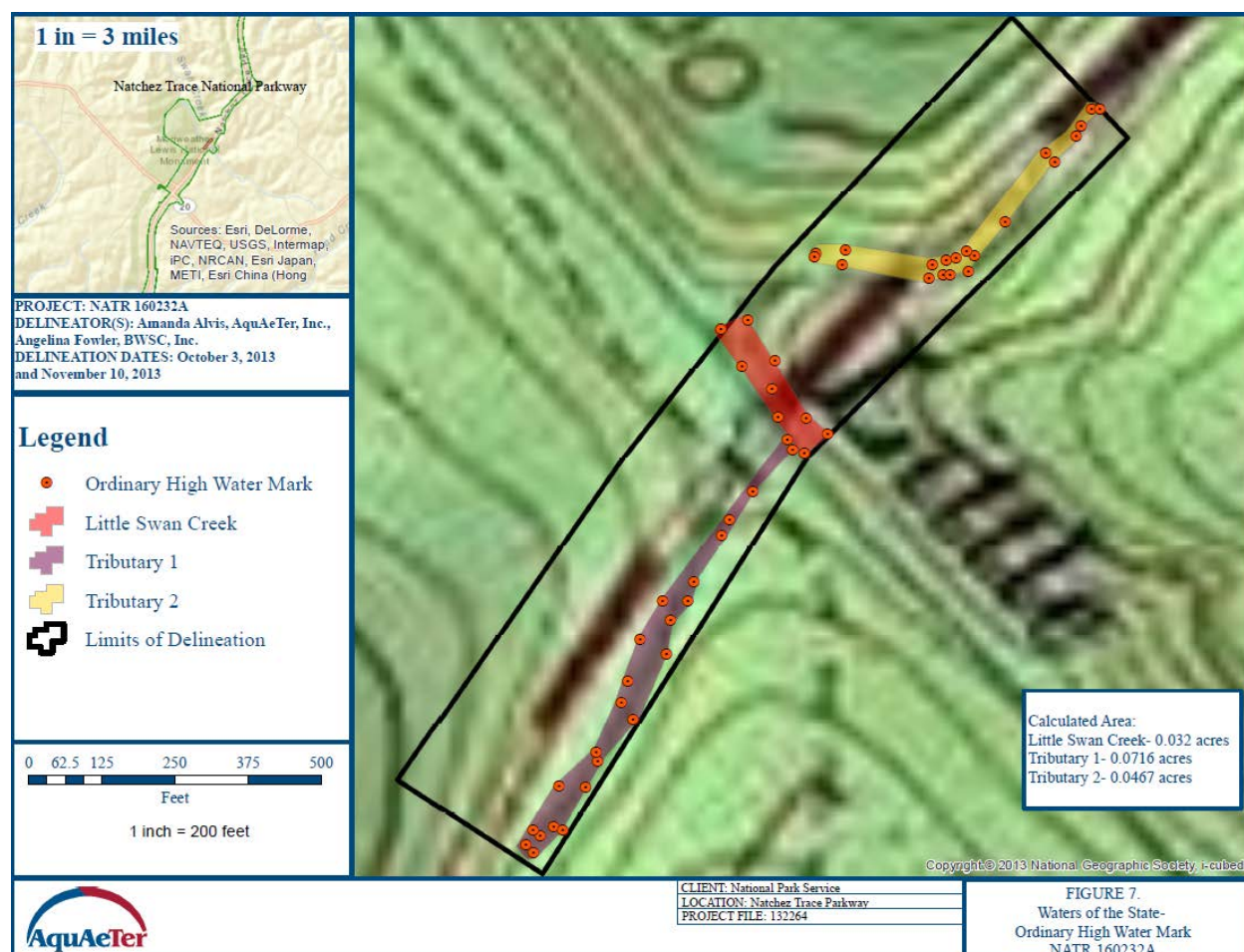


Figure 5: Riverine Systems Within the Project Area

Vegetation within the project vicinity consists primarily of undeveloped forestland, characterized by sloping terrain and rocky soils (AquAeTer 2013). Lower lying portions of the

project area near the creek contain riparian habitat such as swamp hickory (*Carya cordiformis*), white oak (*Quercus alba*), sassafras (*Sassafras albidum*), red cedar (*Juniperus virginiana*), and a common woody vine called greenbrier (*Smilax rotundifolia*). Plant communities on hillsides of the project area contain shrubs such as slippery elm (*Ulmus rubra*), trees such white ash (*Fraxinus Americana*) and red maple (*Acer rubrum*), and herbs such as wild yam (*Dioscorea villosa*) and poison ivy (*Toxicodendron radicans*).

There are four soil types within the project area, all of which are classified as non-hydric (AquAeTer 2013). Most of the project area is comprised of “Riverby gravelly sandy loam” and “Tarklin-Humphreys complex”. The Riverby soil is characterized as a frequently flooded, gravelly alluvium that is excessively drained on nearly level soils. The Tarklin-Humphreys complex occurs on 5 to 12 percent slopes, is moderately drained, and is a gravelly colluvium derived from cherty limestone. Biffle gravelly silt loam and Biffle-Sulphura-Rock comprise primarily comprise the soil types on the project area’s steep, well-drained hillsides.

Most of the bridge work in the action alternatives would occur above the ordinary high-water mark (OHWM). However, the project would require excavation for new abutments and other infrastructure in Action Alternatives One and Two, which may result in disturbances to vegetation near riverine features. The total area of disturbance to riverine and riparian areas would not exceed 0.1 acres in any of the project alternatives. Because the proposed project would impact less than 0.1 acres and would comply with best management practices and conditions per DO-77-1 (section 4.2.1. (d)), the project would be excepted from preparing a wetlands Statement of Findings and compensation requirements.

Impacts to this area would be avoided and minimized to the extent practicable. In Action Alternatives One and Two there may be a small amount of additional runoff from the widened approaches and shoulders that could deposit small amounts of sediments near the tributaries. However, mitigation practices specified in this document should minimize the amount of additional erosion and sedimentation near the tributaries. No direct fill activities would occur to jurisdictional Waters of the U.S. without authorization from USACE and appropriate permitting under the Clean Water Act. The FHWA would coordinate with USACE regarding Section 404 permitting under the Clean Water Act.

Impact Intensity Threshold

Predictions about impacts were based on the expected disturbance to riparian and wetland communities and professional judgment. The thresholds of change for the intensity of an impact on riparian and wetland plant species are defined in Table 5.

Table 5: Wetlands and Riparian Areas Impact and Intensity Thresholds

Impact Intensity	Intensity Description
Negligible	The impacts on wetlands and riparian areas would be at the lower level of detection. The effects would be on a small scale. Ecological processes and biological productivity would not be affected.
Minor	The action would not necessarily decrease or increase the project area's overall biological productivity. The alternative would affect localized wetlands and riparian areas, but would not affect the viability of regional wetlands and riparian areas. Mitigation to offset adverse effects would be required. Mitigation may be needed to offset adverse effects, would be relatively simple to implement, and would likely be successful.
Moderate	The action would result in effects to some localized wetlands and riparian areas and would also affect a sizeable segment of wetlands and riparian areas over a relatively large area. Permanent impacts would occur to wetlands and riparian areas, but within relatively small vicinity. Mitigation measures would be necessary to offset adverse effects and would likely be successful.
Major	The action would have considerable effects on wetlands and riparian areas and would affect a relatively large area within and outside the parkway boundaries. Extensive mitigation measures to offset the adverse effects would be required.
Beneficial	Effects would improve the condition, abundance, or distribution of localized wetlands and riparian areas in the project vicinity.

Short-term impact – recovers in less than one year

Long-term impact – takes more than one year to recover

Environmental Consequences

No Action Alternative

Direct and Indirect Impacts: No new project-related ground disturbance with the potential to adversely impact riverine and riparian areas would occur. Current maintenance activities on the roadway and bridge would continue. Repairs to the deteriorating bridge would occur on an intermittent basis as parkway funds become available and would have minimal disturbance to riverine and riparian areas. Riverine and riparian impacts from continued maintenance and repair activities are expected to be local, long-term, and negligible.

Cumulative Impacts: Past, present, and reasonably foreseeable actions have the potential to impact riverine and riparian areas. Past land use activities adjacent to and surrounding the Little Swan Creek Bridge, including parkway construction, mowing, agricultural activities, fire suppression, and various developments, such as campgrounds, picnic areas, roads and trails, have impacted riverine and riparian areas. Current and future parkway operations, such as routine maintenance and upkeep could also result in impacts on riverine and riparian areas

from vegetation clearing or placement of fill material. Impacts from past, present, and reasonably foreseeable future actions would be local, long-term, minor, and adverse. The overall cumulative impacts on riverine and riparian areas from the No Action Alternative in combination with past, present, and reasonably foreseeable future actions would be local, long-term, minor, and adverse. The No Action Alternative would have a negligible, adverse contribution to cumulative impacts on riverine and riparian areas over the short and long-term.

Conclusion: The No Action Alternative would result in local, long-term, negligible impacts on riverine and riparian areas from continued maintenance and repair activities. Cumulative effects would be local, long-term, minor, and adverse.

Action Alternative One – Three Span Bridge

Direct and Indirect Impacts: Although most of the work for the proposed three span concrete bridge replacement would occur above the OHWM, two new piers, constructed at the same locations as the existing piers, would require excavation and fill activities. Approximately 204 square feet (0.0047 acres) of the riverine area directly below the bridge would be permanently disturbed to construct the new piers. For the pier excavation work, other impacts may include a temporary creek diversion (e.g. cofferdam) to construct the north pier, directly adjacent to the creek. Permanent rip rap would be placed near culvert discharge headwalls, although it is unlikely this rip rap placement would disturb riverine or riparian vegetation. The location of the north and south abutments may need to be shifted in this alternative and the project would also require widening the road shoulder to accommodate the wider bridge shoulder. These activities may disturb small areas of riparian vegetation because they would require additional excavation and fill activities.

Overall, none of the proposed activities would substantially affect riverine and riparian area functions. Removal and trampling of riparian vegetation would be minimized. Disturbed areas would be graded, contoured, and revegetated as soon as practicable following construction. Any work conducted near Little Swan Creek would occur during low stream flow. Construction would be halted if high precipitation or high flows occur.

Cumulative Impacts: Past, present, and reasonably foreseeable actions have the potential to impact riverine and riparian areas. Past land use activities adjacent to and surrounding the Little Swan Creek Bridge, including parkway construction, mowing, agricultural activities, fire suppression, and various developments, such as campgrounds, picnic areas, roads and trails, have had various adverse impacts to riverine and riparian areas. Current and future parkway operations, such as routine maintenance and upkeep could also result in impacts on riverine and riparian areas from vegetation clearing or placement of fill material. Impacts from past, present, and reasonably foreseeable future actions would be local, long-term, minor, and adverse. The overall cumulative impacts on riverine and riparian areas from Action Alternative One in combination with past, present, and reasonably foreseeable future actions would be

local, long-term, minor, and adverse. Action Alternative One would have a negligible, adverse contribution to cumulative impacts on riverine and riparian areas over the short and long-term.

Conclusion: Construction of two new piers, potentially shifting the location of the bridge's abutments, temporary placement of a cofferdam during construction would result in a local short and long-term minor adverse impact to riverine and riparian areas. Cumulative effects would be local, long-term, minor, and adverse with a small adverse contribution from Action Alternative One.

Action Alternative Two – Two Span Bridge (Preferred Alternative)

Direct and Indirect Impacts: Similar to Action Alternative One, most of the work for the preferred two span concrete bridge replacement would occur above the OHWM. However, the Preferred Alternative would construct a single pier away from Little Swan Creek. The pier's spread footing would be constructed on rock, which would minimize impacts to riverine and riparian areas. Approximately 102 square feet (0.0023 acres) of the riverine area directly below the bridge would be permanently disturbed to construct the new piers. When the existing bridge is demolished and removed, the two concrete pier footings from the existing bridge would permanently remain in place and the footings would be removed only to the level of the finished grade. This measure would reduce the overall amount of excavation and minimize erosion, turbidity, and other disturbances near the site. The project would also require widening the road shoulder to accommodate the wider bridge shoulder, which may disturb small areas of riparian vegetation because they would require additional excavation and fill activities. Some temporary dewatering may be required in Action Alternative Two, depending on water table elevations.

Overall, none of the proposed activities in the Preferred Alternative would substantially affect riverine and riparian area functions. Removal and trampling of riparian vegetation would be minimized. Disturbed areas would be graded, contoured, and revegetated as soon as practicable following construction. Any work conducted near Little Swan Creek would occur during low stream flow. Construction would be halted if high precipitation or high flows occur.

Cumulative Impacts: Past, present, and reasonably foreseeable actions have the potential to impact riverine and riparian areas in the Preferred Alternative. Similar to Action Alternative One, past land use activities adjacent to and surrounding the Little Swan Creek Bridge, including parkway construction, mowing, agricultural activities, fire suppression, and various developments, such as campgrounds, picnic areas, roads and trails, have had various adverse impacts to riverine and riparian areas. Current and future parkway operations, such as routine maintenance and upkeep could also result in impacts on riverine and riparian areas from vegetation clearing or placement of fill material. Impacts from past, present, and reasonably foreseeable future actions would be local, long-term, minor, and adverse. The overall cumulative impacts on riverine and riparian areas from the Preferred Alternative in combination with past, present, and reasonably foreseeable future actions would be local, long-term, minor, and adverse. The Preferred Alternative would have a negligible, adverse contribution to cumulative impacts on riverine and riparian areas over the short and long-term.

Conclusion: Construction of a single new pier, including excavation activities and possible temporary dewatering (depending on water table elevations) would result in a local short and long-term negligible to minor adverse impact to riverine and riparian areas. Cumulative effects would be local, long-term, negligible to minor, and adverse with a small adverse contribution from the Preferred Alternative.

Action Alternative Three – Replace Bridge Superstructure

Direct and Indirect Impacts: No disturbance to riverine and riparian areas is expected to occur under this alternative as replacement of the bridge superstructure (pier caps, beam, deck, and rails) would occur above the OHWM.

This alternative would re-use the existing abutments and pier columns and footings. No excavation would be required. No widening of the road shoulder would be necessary. This alternative would require the least amount of new construction and embankment materials and would produce the least amount of wasted materials (e.g. concrete, asphalt, and steel). No creek diversions or dewatering activities would be used in this alternative. Infrastructure replacement would likely occur on an individual basis and would have minimal disturbance to riverine and riparian areas. Riverine and riparian impacts from the proposed individual activities are expected to be local, long-term, and negligible.

Cumulative Impacts: Past, present, and reasonably foreseeable actions have low potential to impact riverine and riparian areas in Action Alternative Three. Similar to Action Alternatives One and Two, past land use activities adjacent to and surrounding the Little Swan Creek Bridge, including parkway construction, mowing, agricultural activities, fire suppression, and various developments, such as campgrounds, picnic areas, roads and trails, have had various adverse impacts to riverine and riparian areas. Current and future parkway operations, such as routine maintenance and upkeep could also result in impacts on riverine and riparian areas from vegetation clearing or placement of fill material. Impacts from past, present, and reasonably foreseeable future actions would be local, long-term, negligible, and adverse. The overall cumulative impacts on riverine and riparian areas from Action Alternative Three in combination with past, present, and reasonably foreseeable future actions would be local, long-term, negligible, and adverse. This alternative would have a negligible, adverse contribution to cumulative impacts on riverine and riparian areas over the short and long-term.

Conclusion: Replacement of the bridge superstructure (pier caps, beam, deck, and rails) would result in a local long-term negligible adverse impact to riverine and riparian areas. Cumulative effects would be local, long-term, negligible, and adverse with a small contribution from Action Alternative Three.

3.6 WATER QUALITY

Affected Environment

As discussed in the wetlands and riparian areas section of this EA, the Little Swan Creek stream channel is composed of gravel underlain by limestone. The Riverby soil is characterized as a frequently flooded, gravelly alluvium that is excessively drained on nearly level soils. The Tarklin-Humphreys complex occurs on 5 to 12 percent slopes, is moderately drained, and composed of a gravelly colluvium derived from cherty limestone. Little Swan Creek has very good water quality and is rated as one of the highest quality of the 32 monitored streams along the parkway (personal communication with NPS Inventory and Monitoring Gulf Coast Network Hydrologist Joe Meiman).

Development near Little Swan Creek is regulated by the Clean Water Act to protect waterways and avoid polluting these waters by human activities. Most of the bridge work would occur above the OHWM, but the project would require excavation for the new pier and abutments in Action Alternatives One and Two, which may temporarily expose bare soil. Rainfall on the bare soil may increase erosion and sedimentation to Little Swan Creek and its tributaries near the project area. In addition to federal regulations under the Clean Water Act, activities impacting Little Swan Creek must comply with certain state regulations and any water quality impacts would require a Tennessee Department of Environment and Conservation (TDEC) Section 401 / Aquatic Resource Alteration Permit (ARAP).

Overall, none of the proposed activities would substantially affect water quality. Disturbances to soil and vegetation would be minimized, which would minimize potential sedimentation impacts to the creek. As mentioned in the wetlands and riparian areas impact section, disturbed areas would be graded, contoured, and revegetated as soon as practicable following construction. Any work conducted near Little Swan Creek would occur during low stream flow. Construction would be halted if high precipitation or high flows occur.

Impact Intensity Threshold

Predictions about impacts were based on the expected disturbance to water quality, professional judgment, and experience with similar projects. The thresholds of change for the intensity of an impact on water quality are shown in Table 6.

Table 6: Water Quality Impact and Intensity Thresholds

Impact Intensity		Intensity Description
Negligible		There would be very little detectable change in water quality within the watershed.
Minor		The effects to water quality and nature of the change would be detectable and

	small within the watershed.
Moderate	The effects to water quality would be readily apparent over a relatively small area within the watershed but the impact could be mitigated through best management practices (BMPs). The action would have a measurable effect on water quality within the watershed.
Major	The effects to water quality would be readily apparent over a relatively large area. The action would have measurable consequences for water quality within the watershed that could not be mitigated.
Beneficial	Effects would improve the condition of water quality within the watershed. The intensity of the beneficial effect can be negligible, minor, moderate, or major.

Short-term impact—recovery usually takes less than one year; impacts would not be measurable or would be measurable only during the life of construction.

Long-term impact—recovery usually takes more than one year; impacts would be measurable during and after project construction.

Environmental Consequences

No Action Alternative

Direct and Indirect Impacts: No new project-related ground disturbance with the potential to adversely impact water quality would occur. Current maintenance activities on the roadway and bridge would continue. Repairs to the deteriorating bridge would occur on an intermittent basis as parkway funds become available and would have minimal disturbance to water quality. Water quality impacts from continued maintenance and repair activities are expected to be local, long-term, and negligible.

Cumulative Impacts: Past, present, and reasonably foreseeable actions have the potential to impact water quality. Past land use activities adjacent to and surrounding the Little Swan Creek Bridge, including parkway construction, mowing, agricultural activities, fire suppression, and various developments, such as campgrounds, picnic areas, roads and trails, have impacted water quality. Current and future parkway operations, such as routine maintenance and upkeep could also result in impacts on water quality from vegetation clearing or placement of fill material. Impacts from past, present, and reasonably foreseeable future actions would be local, long-term, minor, and adverse. The overall cumulative impacts on water quality from the No Action Alternative in combination with past, present, and reasonably foreseeable future actions would be local, long-term, minor, and adverse. The No Action Alternative would have a negligible, adverse contribution to cumulative impacts on water quality over the short and long-term.

Conclusion: The No Action Alternative would result in local, long-term, negligible impacts on water quality from continued maintenance and repair activities. Cumulative effects would be local, long-term, minor, and adverse.

Action Alternative One – Three Span Bridge

Direct and Indirect Impacts: Action Alternative One would require excavation to construct the north pier. The three span bridge replacement would be 6' wider than the existing bridge (3' widening on each side) and result in an additional 1,191 square feet of impervious area. A temporary creek diversion shield (e.g. cofferdam) would be placed near the creek to create a dry work environment for pier construction. Depending on water levels in the creek, the cofferdam may temporarily affect streamflow characteristics, but it would also minimize sedimentation from construction activities. Permanent rip rap would be placed near the culvert discharge headwalls, although it is unlikely this rip rap placement would have a noticeable impact to water quality. The location of the north and south abutments may need to be shifted in this alternative, which would require excavation and fill activities. Widening the road shoulder to accommodate the wider bridge shoulder would temporarily expose bare soil and possibly increase sedimentation in Little Swan Creek. Project activities, including the potential removal of riparian vegetation may also affect the filtration capacity of the vegetative buffer, which would indirectly affect water quality.

In addition, Action Alternative One would require the temporary use of a diversion shield (e.g. cofferdams) near the stream channel during construction may impact stream flow characteristics during high water events. However, cofferdams provide a beneficial function to minimize construction debris from entering the creek during demolition of the existing bridge. Cofferdams are unlikely to have more than a minor impact to existing sediment levels and streamflow.

Cumulative Impacts: Past, present, and reasonably foreseeable actions have the potential to impact water quality. Past land use activities adjacent to and surrounding the Little Swan Creek Bridge, including parkway construction, mowing, agricultural activities, fire suppression, and various developments, such as campgrounds, picnic areas, roads and trails, have had various adverse impacts to water quality. Current and future parkway operations, such as routine maintenance and upkeep could also result in impacts on water quality from vegetation clearing or placement of fill material. Impacts from past, present, and reasonably foreseeable future actions would be local, long-term, minor, and adverse. The overall cumulative impacts on water quality from Action Alternative One in combination with past, present, and reasonably foreseeable future actions would be local, long-term, minor, and adverse. Action Alternative One would have a negligible, adverse contribution to cumulative impacts on water quality over the short and long-term.

Conclusion: Construction of two new piers, potentially shifting the location of the bridge's abutments, widening bridge approaches and shoulders, and the temporary placement of a cofferdam during construction would result in a local short and long-term minor adverse impact to water quality. Cumulative effects would be local, long-term, minor, and adverse with a small adverse contribution from Action Alternative One.

Action Alternative Two – Two Span Bridge (Preferred Alternative)

Direct and Indirect Impacts: Similar to Action Alternative One, most of the work for the preferred two span concrete bridge replacement would occur above the OHWM. The two span bridge replacement would also be 6' wider than the existing bridge (3' widening on each side) and result in an additional 1,448 square feet of impervious area. However, Action Alternative Two would construct a single pier away from Little Swan Creek, which would minimize the potential for soil disturbances to impact water quality. The pier's spread footing would be constructed on rock, which would further minimize soil disturbances and potential sedimentation impacts to water quality. Depending on water table elevations, temporary dewatering may be required for pier construction. Temporarily diverting water from the work site would reduce downstream turbidity and erosion during construction. It would also provide the driest possible working conditions to aid construction workers in building a structurally sound pier.

When the existing bridge is demolished and removed, the two concrete pier footings from the existing bridge would permanently remain in place and the footings would be removed only to the level of the finished grade. This measure would reduce the overall amount of excavation and minimize erosion, turbidity, and other disturbances near the site that would impact water quality. Widening the road shoulder to accommodate the wider bridge shoulder may also lead to an increase in temporary, localized sedimentation during construction.

Overall, none of the proposed activities in the Preferred Alternative would substantially affect water quality. Removal and trampling of riverine and riparian vegetation would be minimized. Disturbed areas would be graded, contoured, and revegetated as soon as practicable following construction. Any work conducted near Little Swan Creek would occur during low stream flow. Construction would be halted if high precipitation or high flows occur.

Similar to Action Alternative One, none of the proposed activities would substantially affect water quality. Disturbances to soil and vegetation would be minimized, which would minimize potential sedimentation impacts to the creek. Disturbed areas would be graded, contoured, and revegetated as soon as practicable following construction. Any work conducted near Little Swan Creek would occur during low stream flow. Construction would be halted if high precipitation or high flows occur.

Cumulative Impacts: Past, present, and reasonably foreseeable actions have the potential to impact water quality in the Preferred Alternative. Similar to Action Alternative One, past land use activities adjacent to and surrounding the Little Swan Creek Bridge, including parkway construction, mowing, agricultural activities, fire suppression, and various developments, such as campgrounds, picnic areas, roads and trails, have had various adverse impacts to water

quality. Current and future parkway operations, such as routine maintenance and upkeep could also result in impacts on water quality from vegetation clearing or placement of fill material. Impacts from past, present, and reasonably foreseeable future actions would be local, long-term, minor, and adverse. The overall cumulative impacts on water quality from the Preferred Alternative in combination with past, present, and reasonably foreseeable future actions would be local, long-term, minor, and adverse. The Preferred Alternative would have a negligible, adverse contribution to cumulative impacts on water quality over the short and long-term.

Conclusion: Construction of a new pier, widening bridge approaches and shoulders, and temporary dewatering activities during construction would result in a local short and long-term minor adverse impact to water quality. Cumulative effects would be local, long-term, minor, and adverse with a small adverse contribution from Action Alternative Two.

Action Alternative Three – Replace Bridge Superstructure

Direct and Indirect Impacts: Action Alternative Three would replace only bridge superstructure components (e.g. pier caps, beam, deck, and rails). This alternative would reuse existing abutments and pier columns and footings, which would greatly minimize potential impacts to water quality. No excavation is proposed in this alternative and no diversion or dewatering activities would be implemented. No widening of the road shoulder would be necessary. This alternative would require the least amount of new construction and embankment materials and would produce the least amount of wasted materials (concrete, asphalt, and steel).

Cumulative Impacts: Past, present, and reasonably foreseeable actions have low potential to impact water quality in Action Alternative Three. Similar to Action Alternatives One and Two, past land use activities adjacent to and surrounding the Little Swan Creek Bridge, including parkway construction, mowing, agricultural activities, fire suppression, and various developments, such as campgrounds, picnic areas, roads and trails, have had various adverse impacts to water quality. Current and future parkway operations, such as routine maintenance and upkeep could also result in impacts on water quality from vegetation clearing or placement of fill material. Impacts from past, present, and reasonably foreseeable future actions would be local, long-term, negligible, and adverse. The overall cumulative impacts on water quality from Action Alternative Three in combination with past, present, and reasonably foreseeable future actions would be local, long-term, negligible, and adverse. This alternative would have a negligible, adverse contribution to cumulative impacts on water quality over the short and long-term.

Conclusion: Replacement of the bridge superstructure would result in a local long-term negligible adverse impact to water quality. Cumulative effects would be local, long-term, negligible, and adverse with a small contribution from Action Alternative Three.

3.7 VISITOR USE AND EXPERIENCE

Affected Environment

The Natchez Trace Parkway, which extends from Nashville, Tennessee to Natchez, Mississippi, is visited by approximately 5,600,000 people annually. Motorist travel and scenic viewing along the Old Trace comprise the primary use of the parkway. There are also many hiking trails and other recreational opportunities along the parkway.

Impact Intensity Threshold

NPS *Management Policies 2006* states the enjoyment of park resources and values by U.S. citizens is among the fundamental purposes of all parks, and that the NPS is committed to providing appropriate high-quality opportunities for visitors to enjoy the parks. The parkway provides a diversity of recreational opportunities and the potential for change in visitor experience was evaluated as part of the proposed bridge replacement project. The threshold of change for impact intensity on visitor use and experience and recreational resources are described in Table 7.

Table 7: Visitor Use and Experience Impact and Intensity Thresholds

Impact Intensity	Intensity Description
Negligible	Changes in visitor use and experience would be barely perceptible. The visitor would not likely be aware of the effects associated with the project.
Minor	The visitor might be aware of the effects associated with the project, but would likely not express an opinion about it.
Moderate	Changes in visitor use and experience would be readily apparent. The visitor would be aware of the effects associated with the project and would not likely express an opinion about the changes.
Major	Changes in visitor use and experience would be readily apparent and severely adverse. The visitor would be aware of the effects associated with the project and would likely express a strong opinion about the changes.
Beneficial	The project would improve visitor safety and maintain use of the parkway for continued visitor use opportunities and experiences. The intensity of the beneficial effect can be negligible, minor, moderate, or major.

Short-term impact occurs only during project construction.

Long-term impact continues after project construction is complete.

Environmental Consequences

No Action Alternative

Direct and Indirect Impacts of the Alternative: There would be no change in the fundamental nature and quality of the visitor experience or recreational opportunities of the parkway under the No Action Alternative. As bridge conditions continue to deteriorate, periodic maintenance projects would require traffic delays at random times that would inconvenience visitors. Effects on visitor use and experience for local users under the No Action Alternative would result in a long-term minor to moderate adverse effect. Visitors that may wish to drive longer stretches or perhaps the entire length of the parkway, would experience long-term, minor adverse effects during maintenance projects. For additional information on potential impact on visitor safety, see the “Human Health and Safety” section.

Cumulative Impacts: Past actions have resulted in improved opportunities for visitors to enjoy the parkway. Past maintenance of the parkway such as mowing, parkway construction and developments of campgrounds, picnic areas, roads, and trails have greatly improved visitor’s access to use and experience the parkway. Planned future actions such as repairing the Big Swan Creek Bridge and the U.S. Route 412 / State Route 99 bridge would further improve visitor experience and use. Past, present, and reasonably foreseeable future projects would have a long-term, beneficial effect on visitor use and experience. The overall cumulative effects to visitor experience and use from the No Action Alternative in combination with past, present, and reasonably foreseeable future actions would be parkway-wide, long-term, and beneficial with a relatively small adverse contribution from the No Action Alternative.

Conclusion: The No Action Alternative would have local, long-term, minor to moderate adverse impact on visitor use and experience from ongoing deterioration of the bridge and the long-term related maintenance and repairs. Although the bridge would stay open, as structural deterioration progresses, periodic maintenance projects would require traffic delays at random times, which would inconvenience visitors. Visitors using the parkway would experience a long-term minor adverse impact and local users would experience a long-term, minor to moderate effect. Cumulative effects would be parkway-wide, long-term, and beneficial with a relatively small adverse contribution from the No Action Alternative.

Action Alternative One- Three Span Bridge

Direct and Indirect Impacts of the Alternative: Action Alternative One would have local, long-term, beneficial impacts to visitor use and experience. The demolition of the current bridge and replacement with a new three span would provide a beneficial effect on the quality of the visitor experience and ensure protection of the road’s structural features for visitor enjoyment

and safe travel for many years. While construction activities, detours, and traffic delays would temporarily inconvenience visitors and local users, substantial changes in the number of visitors to the parkway are not expected. The construction would require a road closure of 9 – 12 months and possibly more than one year. The detour would cause visitors to experience short-term, minor, adverse impacts and local users would experience a short-term, minor to moderate adverse impact.

Cumulative Impacts: Past actions have resulted in improved opportunities for visitors to enjoy the parkway. Past maintenance of the parkway such as mowing, parkway construction and developments of campgrounds, picnic areas, roads, and trails have greatly improved visitor's ability to use and experience the parkway. Planned future actions such as repairing the Big Swan Creek Bridge and the U.S. Route 412 / State Route 99 bridge would further improve visitor experience and use. Past, present, and reasonably foreseeable future projects would have a long-term, beneficial effect on visitor use and experience. The overall cumulative effects to visitor experience and use from Action Alternative One in combination with past, present, and reasonably foreseeable future actions would be parkway-wide, long-term, and beneficial with a minor adverse contribution from Action Alternative One to visitors and a minor to moderate adverse impact to local users.

Conclusion: Action Alternative One would result in a short-term, minor, adverse impact to parkway visitors and a short-term, minor to moderate, adverse impact to local users. Cumulative impacts would be parkway-wide, long-term, and beneficial.

Action Alternative Two – Two Span Bridge (Preferred Alternative)

Direct and Indirect Impacts of the Alternative: Impacts to visitor use and experience would be similar to Action Alternative One. Action Alternative Two would have a long-term, beneficial impact to visitor use and experience. The demolition of the current bridge and replacement with a new two span would provide a beneficial effect on the quality of the visitor experience. While construction activities, detours, and traffic delays would temporarily inconvenience visitors, substantial changes in the number of visitors to the parkway are not expected. The construction would require a road closure of 8 – 10 months. During construction, visitors would experience short-term, minor, adverse impacts and local users would experience a short-term, minor to moderate, adverse impact.

Cumulative Impacts: Past actions have resulted in improved opportunities for visitors to enjoy the parkway. Past maintenance of the parkway such as mowing, parkway construction and developments of campgrounds, picnic areas, roads, and trails have greatly improved visitor's access to use and experience the parkway. Planned future actions such as repairing the Big Swan Creek Bridge and the U.S. Route 412 / State Route 99 bridge would further improve

visitor experience and use. Past, present, and reasonably foreseeable future projects would have a long-term, beneficial effect on visitor use and experience. The overall cumulative effects to visitor experience and use, in combination with past, present, and reasonably foreseeable future actions would be parkway-wide, long-term, and beneficial with a relatively small adverse contribution from Action Alternative Two.

Conclusion: Action Alternative Two would result in a short-term, minor, adverse impact to parkway visitors and a short-term, minor to moderate, adverse impact to local users. Cumulative impacts would be parkway-wide, long-term, and beneficial.

Action Alternative Three- Replace Bridge Superstructure

Direct and Indirect Impacts of the Alternative: Impacts to visitor use and experience would be similar to Action Alternatives One and Two. Unlike the other action alternatives, however, Action Alternative Three may require multiple closures for reconstruction and maintenance activities for years to come as opposed to completing construction activities within a single bridge replacement project.

The replacement of the bridge's superstructure (pier caps, beam, deck, rails) would help maintain a safe environment for parkway staff and visitors. While construction activities, detours, and traffic delays would temporarily inconvenience visitors, substantial changes in the number of visitors to the parkway are not expected. The construction would require a road closure of 7 – 8 months. Visitors would experience short-term, minor, adverse impacts during construction activities. Local users would experience a long-term, minor to moderate, adverse impacts during construction activities.

Cumulative Impacts: Past actions have resulted in improved opportunities for visitors to enjoy the parkway. Past maintenance of the parkway such as mowing, parkway construction and developments of campgrounds, picnic areas, roads, and trails have greatly improved visitor's access to use and experience the parkway. Planned future actions such as repairing the Big Swan Creek Bridge and the U.S. Route 412 / State Route 99 bridge would further improve visitor experience and use. Past, present, and reasonably foreseeable future projects would have a long-term, beneficial effect on visitor use and experience. The overall cumulative effects to visitor experience and use, in combination with past, present, and reasonably foreseeable future actions would be parkway-wide, long-term, and beneficial with a relatively small adverse contribution from Action Alternative Three.

Conclusion: Action Alternative Three would result in a long-term, minor, adverse impact to parkway visitors and a long-term, minor to moderate, adverse impact to local users. Cumulative impacts would be parkway-wide, long-term, and beneficial.

3.8 HUMAN HEALTH AND SAFETY

Affected Environment

The Natchez Trace Parkway is visited by approximately 5,600,000 people annually. The bridge's load-bearing capacity will decline as the bridge ages and load capacity would have to be reduced to maintain user safety. In order to address health and safety concerns bridge inspections are done every two years, the findings during these inspections are reported.

Impact Intensity Threshold

Human health and safety refers to the ability of the NPS to provide a healthy and safe environment for visitors and parkway staff, to protect human life, and to provide for injury-free visits and appropriate responses when accidents and injuries occur. The project area for evaluating impacts on human health and safety includes the Little Swan Creek Bridge and its associated approaches on the parkway. The thresholds of change for the intensity of an impact on human health and safety are described in Table 8.

Table 8: Human Health and Safety Impact and Intensity Thresholds

Impact Intensity	Intensity Description
Negligible	The effects would be at low levels of detection and would not have appreciable effects on human health and safety.
Minor	The effects would be detectable and would be of a magnitude that would not have appreciable effects on public health, safety, and parkway operations. If mitigation is needed to offset adverse effects, it would be simple and likely successful.
Moderate	The effects would be readily apparent and would result in a change in public health, safety, and parkway operations that would be noticeable to parkway staff and the public. Mitigation measures would be necessary to offset adverse effects and would likely be successful.
Major	The effects would be readily apparent; would result in a substantial change in public health, safety, and parkway operations in a manner noticeable to parkway staff and the public; and would be markedly different from existing operations. Mitigation measures to offset adverse effects would be necessary and extensive, and success could not be guaranteed.

Beneficial	The action would improve human health and safety. The intensity of the beneficial effect can be negligible, minor, moderate, or major.
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Short-term impact—effects lasting for the duration of the bridge replacement

Long-term impact—effects continuing after the bridge replacement

Environmental Consequences

No Action Alternative

Direct and Indirect Impacts of the Alternative: The No Action Alternative would have long-term, minor, adverse impact to health and safety. The existing bridge would continue to deteriorate, and the load capacity would be reduced. Weight restrictions would be placed on the bridge and there would be a need for more frequent repairs and temporary closures as deterioration continues.

Cumulative Impacts: Past actions have resulted in increased human health and safety for visitors to enjoy the parkway. Past maintenance of the parkway such as mowing, parkway construction and fire mitigation have greatly improved the human health and safety along the parkway. Planned future actions such as repairing the Big Swan Creek Bridge and the U.S. Route 412 / State Route 99 bridge would further improve human health and safety. Past, present, and reasonably foreseeable future projects would have a long-term, beneficial effect on human health and safety. The overall cumulative effects to human health and safety from the No Action Alternative in combination with past, present, and reasonably foreseeable future actions would be parkway-wide, long-term, and beneficial with a relatively small adverse contribution from the No Action Alternative.

Conclusion: The No Action Alternative would result in local long-term, minor adverse effects on human health and safety. As the bridge ages, structural issues would become more evident and need to be addressed. Cumulative effects would parkway wide, long-term, and beneficial.

Action Alternative One- Three Span Bridge

Direct and Indirect Impacts of the Alternative: The proposed bridge replacement and improvements would address safety and bridge maintenance concerns associated with deteriorating bridge conditions and drainage problems. The demolition of the current bridge and construction of a new 198.5' three span bridge would meet and correct all safety issues related to the deteriorating of the current bridge. Maintaining a safe environment for parkway staff, contractors, and visitors during and after construction would be a primary objective. The

construction period for this alternative is 9 – 12 months. A variety of measures would be used during construction to inform and direct visitors to the detour and around the construction area. A local, short-term negligible adverse impact on the health and safety of parkway staff, visitors, and workers would occur from construction activities, equipment, and traffic redirection. Upon completion of construction work, local long-term beneficial effects on human health and safety are expected from the bridge replacement.

Cumulative Impacts: Past actions have resulted in increased human health and safety for visitors to enjoy the parkway. Past maintenance of the parkway such as mowing, parkway construction and fire mitigation have greatly improved the human health and safety along the parkway. Planned future actions such as repairing the Big Swan Creek Bridge and the U.S. Route 412 / State Route 99 bridge would further improve human health and safety. Past, present, and reasonably foreseeable future projects would have a long-term, beneficial effect on human health and safety. The overall cumulative effects to human health and safety from Action Alternative One in combination with past, present, and reasonably foreseeable future actions would be parkway-wide, long-term, and beneficial with a local, short-term, negligible adverse contribution from Action Alternative One during construction, followed by a local beneficial effect.

Conclusion: The proposed bridge replacement in Action Alternative One would address human health and safety concerns associated with the current deteriorating bridge. A local, short-term negligible adverse impact on the health and safety of parkway staff, visitors, and workers would occur from construction activities, equipment, and traffic redirection. Action Alternative One would result in local, long-term beneficial effects on human health and safety. The demolition of the current deteriorating bridge and construction of a new three span bridge would reduce the potential for safety issues and accidents. Cumulative effects would be parkway-wide, long-term, and beneficial.

Action Alternative Two – Two Span Bridge (Preferred Alternative)

Direct and Indirect Impacts of the Alternative: The impacts of Action Alternative Two are similar to Action Alternative One. The proposed bridge replacement and improvements would address safety and bridge maintenance concerns associated with deteriorating bridge conditions and drainage problems. The demolition of the current bridge and construction of a new two span bridge would meet and correct all safety issues related to the deteriorating of the current bridge. Maintaining a safe environment for parkway staff, contractors, and visitors during and after construction would be a primary objective. A local, short-term negligible adverse impact on the health and safety of parkway staff, visitors, and workers would occur

from construction activities, equipment, and traffic redirection. A variety of measures would be used during construction to inform and direct visitors to the detour and around the construction area. The construction period for Action Alternative Two would take approximately 8 – 10 months. During this time the same detour plan as Action Alternative One would be used. Upon completion of construction work, local, long-term beneficial effects on human health and safety are expected from the bridge replacement.

Cumulative Impacts: Past actions have resulted in increased human health and safety for visitors to enjoy the parkway. Past maintenance of the parkway such as mowing, parkway construction and fire mitigation have greatly improved the human health and safety along the parkway. Planned future actions such as repairing the Big Swan Creek Bridge and the U.S. Route 412 / State Route 99 bridge would further improve human health and safety. Past, present, and reasonably foreseeable future projects would have a long-term, beneficial effect on human health and safety. The overall cumulative effects to human health and safety from Action Alternative Two in combination with past, present, and reasonably foreseeable future actions would be parkway-wide, long-term, and beneficial with a local, short-term, negligible adverse contribution from Action Two Alternative during construction, followed by a local beneficial effect.

Conclusion: The proposed bridge replacement in Action Alternative Two would address human health and safety concerns associated with the current deteriorating bridge. A local, short-term negligible adverse impact on the health and safety of parkway staff, visitors, and workers would occur from construction activities, equipment, and traffic redirection. Action Alternative Two would result in local long-term beneficial effects on human health and safety. The demolition of the current deteriorating bridge and construction of a new two span bridge would reduce the potential for safety issues and accidents. Cumulative effects would be parkway-wide, long-term, and beneficial.

Action Alternative Three – Replace Bridge Superstructure

Direct and Indirect Impacts of the Alternative: The impacts of Action Alternative Three are similar to Action Alternatives One and Two. The proposed bridge replacement and improvements would address safety and bridge maintenance concerns associated with deteriorating bridge conditions and drainage problems. The replacement of the bridge superstructure (pier caps, beam, deck, and rails) and the caps of the hammerhead piers would lengthen the current bridge's structural life. This approach would meet current safety issues, but entails an increased maintenance schedule for years to come. Maintaining a safe environment for parkway staff, contractors, and visitors during and after construction would be a primary objective. A variety of measures would be used during construction to inform and direct visitors to the detour and around the construction area. The replacement of the bridge's

superstructure would take approximately 7 – 8 months. A local, long-term, negligible adverse impact on the health and safety of parkway staff, visitors, and workers would occur from construction activities, equipment, and traffic redirection. The impact would be considered long-term because of the more frequently needed repairs and maintenance required by this alternative. During this time the same detour plan as Action Alternatives One and Two would be used. Upon the completion of construction work, local long-term, beneficial effects on human health and safety are expected from replacing bridge superstructure.

Cumulative Impacts: Past actions have resulted in increased human health and safety for visitors to enjoy the parkway. Past maintenance of the parkway such as mowing, parkway construction and fire suppression have greatly improved the human health and safety along the parkway. Planned future actions such as repairing the Big Swan Creek Bridge and the U.S. Route 412 / State Route 99 bridge would further improve human health and safety. Past, present, and reasonably foreseeable future projects would have a long-term, beneficial effect on human health and safety. The overall cumulative effects to human health and safety from Action Alternative Three Alternative in combination with past, present, and reasonably foreseeable future actions would be parkway-wide, long-term, and beneficial with a local, long-term, negligible adverse contribution from Action Alternative Three during construction.

Conclusion: The proposed superstructure replacement activities in Action Alternative Three would address human health and safety concerns associated with the current deteriorating bridge. A local, long-term, negligible adverse impact on the health and safety of parkway staff, visitors, and workers would occur from construction activities, equipment, and traffic redirection. Action Alternative Three would result in parkway-wide, long-term, beneficial effect on human health and safety. The demolition of the current deteriorating bridge and construction of a new two span bridge would reduce the potential for safety issues and accidents.

3.9 SPECIAL STATUS SPECIES

Affected Environment

Under the Endangered Species Act of 1973 (ESA), the NPS has responsibility to address impacts on federally listed, candidate, and proposed species. In addition, NPS policy requires that state-listed species, and others identified as species of management concern by the parkway, be managed in a manner similar to federally listed species.

Twenty-two listed federal and state protected species potentially occur within this area of the parkway (see Table 9). Of these species, only two species of vegetation (Tennessee yellow-eyed

grass – *Xyris tennesseensis* and Eggert’s sunflower – *Helianthus eggertii*) and one mammal species (gray bat – *Myotis grisecens*) are thought to occur in the area. According to a response letter from TDEC dated July 17, 2013, no Tennessee yellow-eyed grass is known to occur in the project area. According to a response letter from the USFWS, dated July 19, 2013 there is no documentation that Eggert’s sunflower occurs within the project area. Parkway staff does not believe there is any suitable gray bat habitat in the project area. The USFWS further documented in its letter dated July 19, 2013 that obligations under Section 7 of the ESA have been met for this project.

A state listed threatened species, the saddled madtom (*Noturus fasciatus*), may also exist in the project area. Although the Preferred Alternative does not call for in-water work, the project team would assume saddled madtom exists in the project area and would take appropriate measures to mitigate potential disturbance. If another alternative is selected or if the current, Preferred Alternative is altered, the NPS would take appropriate measures to mitigate potential disturbance.

Table 9: State and Federally Listed Threatened and Endangered Species Known to Occur Within Natchez Trace Parkway

Common Name	Scientific Name	Federal Status	State Status	Found in Project Area
Mammals				
Gray bat	<i>Myotis grisecens</i>	E		No
Indiana bat	<i>Myotis sodalis</i>	E		No
Clams				
Clubshell	<i>Pleurobema clava</i>	E		No
Cumberlandian combshell	<i>Epioblasma brevidens</i>	E		No
Orangefoot pimpleback	<i>Plethobasus cooperianus</i>	E		No
Oyster mussel	<i>Epioblasma capsaeformis</i>	E		No
Pale Lilliput	<i>Toxolasma cylindrellus</i>	E		No
Slabside pearlymussel	<i>Lexingtonia dolabelloides</i>	E		No
Spectaclecase	<i>Cumberlandia monodonta</i>	E		No

Tan riffleshell	<i>Epioblasma florentina walkeri</i>	E		No
Fish				
Pygmy madtom	<i>Noturus stanauli</i>	E		No
Saddled madtom	<i>Noturus fasciatus</i>		T	Yes
Flowering Plants				
Tennessee yellow-eyed grass	<i>Xyris tennesseensis</i>	E		No
Large-leaved grass-of-parnassus	<i>Parnassia grandifolia</i>		S	No
Broad-leaved Barbara's-buttons	<i>Marshallia trinervia</i>		T	No
Butternut	<i>Juglans cinerea</i>		T	No
Shining ladies'-tresses	<i>Spiranthes lucida</i>		T	No
Michigan Lily	<i>Lilium michiganense</i>		T	No
Eggert's sunflower	<i>Helianthus eggertii</i>		S	No
Small-headed rush	<i>Juncus brachycephalus</i>		S	No
Reptiles				
Western pygmy rattlesnake	<i>Sistrurus miliarius streckeri</i>		T	No
Insects				
Acuminate snaketail	<i>Ophiogomphus acuminatus</i>		R	No

Source: USFWS and TDEC, 2013

T= Species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

E= Species in danger of extinction throughout all or a significant portion of its range.

S= State listed species that is considered a special concern.

R= Not state listed, but considered rare

Plants

Tennessee yellow-eyed grass and Eggert's sunflower are not thought to occur in the project area (USFWS, 2013). There is a population of Tennessee yellow-eyed grass that is monitored by TDEC approximately one-quarter mile downstream, but all work on the proposed bridge

replacement would be localized to the immediate bridge site. According to TDEC, these species are not currently known to occur near the Little Swan Creek Bridge. Therefore, there is no anticipation of impacts to these plant species.

Mammals

The NPS Certified Species List indicates that the only threatened or endangered mammal located and confirmed within the parkway is the gray bat, which has no suitable habitat within the project area.

Impact Intensity Threshold

The methodology used to assess impacts on special status species is based on how the project would affect species dynamics, population levels, and habitat function. To analyze these impacts, all available information on special status species in the parkway was compiled from parkway documents, outside research, and federal (USFWS) and state (TWRA) species lists. The thresholds for this impact assessment are described in Table 10.

Table 10: Special Status Species Impact and Intensity Thresholds

Impact Intensity	Intensity Description
Negligible	Impacts would result in a change to a population or individuals of a special status species, but the change would be well within the range of natural fluctuations.
Minor	The project would affect a few individuals of a special status species or has very localized impact on their habitat. The change would have barely perceptible consequences to the species or habitat function. Sufficient habitat would remain functional to maintain species viability. Impacts would be outside of critical reproduction periods. Mitigation measures, if needed to offset adverse effects, would be simple and successful.
Moderate	The project would cause measurable effects on: (1) a relatively small percentage of the species population; (2) the existing dynamics between multiple species; or (3) a relatively large habitat area or important habitat attributes. A population or habitat might deviate from normal levels under existing conditions, but would remain indefinitely viable within the project vicinity. Response to disturbance by some individuals could be expected, with some negative impacts on reproduction or other factors impacting short-term population levels. Mitigation measures, if needed to offset adverse effects, could be extensive, but would likely be successful.
Major	An action that would have drastic and permanent consequences for a species population, dynamics between multiple species, or almost all available unique

	habitats. A population or its habitat would be permanently altered from normal levels under existing conditions, and the species would be at risk of extirpation. Frequent responses to disturbance by some individuals would be expected, with negative impacts on reproduction, or other factors, resulting in a decrease in population levels. Extensive mitigation measures would be needed to offset any adverse effects and their success could not be guaranteed.
Beneficial	The effects would improve the condition, abundance, or distribution of individual special status species in the project area.

Short-term impact—effects last for less than one year

Long-term impact—effects last longer than one year

Environmental Consequences

No Action Alternative

Direct and Indirect Impacts of the Alternative: The No Action Alternative would have no new impacts on special status species. Existing impacts from vehicle traffic and human activity in the project area would continue unchanged. Periodic bridge maintenance and repairs would result in local, short-term, negligible adverse impacts on special status species. In the case of the state-listed, saddled madtom fish, mitigation measures stipulated by TWRA (see Appendix A) would be implemented if in-water work is required.

Cumulative Impacts: Past, present, and reasonably foreseeable actions have the potential to impact special status species. Past land use activities adjacent to and surrounding the Little Swan Creek Bridge, including parkway construction, mowing, agricultural activities, fire suppression, and various developments, such as campgrounds, picnic areas, roads and trails, may have impacted special status species. Current and future parkway operations, such as routine maintenance and upkeep could also result in impacts on special status species. Impacts from past, present, and reasonably foreseeable future actions would be parkway-wide, long-term, negligible, and adverse. The overall cumulative impacts on special status species from the No Action Alternative in combination with past, present, and reasonably foreseeable future actions would be parkway-wide, long-term, negligible, and adverse.

Conclusion: The No Action Alternative would result in parkway-wide, long-term, negligible adverse effects on special status species.

Action Alternative One – Three Span Bridge

Direct and Indirect Impacts of the Alternative: Action Alternative One would have no new impacts on special status species. Because there are no special status species known to inhabit the area, impacts would be negligible. In order to avoid affecting any potential special status species downstream, debris nets and limitations on site access would be implemented to avoid contamination of the creek. There is a state-listed threatened species that may be in the area. If in-water work is conducted in this alternative, mitigation measures stipulated by TWRA would be put into place.

Cumulative Impacts: Past, present, and reasonably foreseeable actions have the potential to impact special status species. Past land use activities adjacent to and surrounding the Little Swan Creek Bridge, including parkway construction, mowing, agricultural activities, fire suppression, and various developments, such as campgrounds, picnic areas, roads and trails, may have impacted special status species. Current and future parkway operations, such as routine maintenance and upkeep could also result in impacts on special status species. Impacts from past, present, and reasonably foreseeable future actions would be parkway-wide, long-term, negligible, and adverse. The overall cumulative impacts on special status species from the Action One Alternative in combination with past, present, and reasonably foreseeable future actions would be parkway-wide, long-term, negligible, and adverse.

Conclusion: Action Alternative One would have no new impacts on special status species. The proposed construction of the three span bridge would have negligible adverse impacts over the short-term, if special status species return to the area. Cumulative effects would be parkway-wide, long-term, negligible, and adverse.

Action Alternative Two – Two Span Bridge (Preferred Alternative)

Direct and Indirect Impacts of the Alternative: Action Alternative Two would have no new impacts on special status species. Because there are no special status species known to occur in the project area, impacts would be negligible. In order to avoid affecting any potential special status species downstream, debris nets and limitations on site access would be implemented to avoid contamination of the creek. There is a state-listed threatened species that may be in the area. If in-water work is conducted in this alternative, mitigation measures stipulated by TWRA would be put into place.

Cumulative Impacts: Past, present, and reasonably foreseeable actions have the potential to impact special status species. Past land use activities adjacent to and surrounding the Little Swan Creek Bridge, including parkway construction, mowing, agricultural activities, fire suppression, and various developments, such as campgrounds, picnic areas, roads and trails,

may have impacted special status species. Current and future parkway operations, such as routine maintenance and upkeep could also result in impacts on special status species. Impacts from past, present, and reasonably foreseeable future actions would be parkway-wide, long-term, negligible adverse. The overall cumulative impacts on special status species from Action Alternative Two in combination with past, present, and reasonably foreseeable future actions would be parkway-wide, long-term, negligible, and adverse.

Conclusion: Action Alternative Two would have no new impacts on special status species. The construction of the two span bridge would have negligible adverse impacts over the short-term. If special status species return to the project area, construction of the bridge would have a long-term, negligible adverse impact. Cumulative effects would be parkway-wide, long-term, negligible, and adverse.

Action Alternative Three - Replace Bridge Superstructure

Direct and Indirect Impacts of the Alternative: Action Alternative Three would have no new impacts on special status species and the impacts would be similar to Action Alternatives One and Two. Since there are no special status species known to inhabit the area, impacts would be negligible, but would be long-term due to need of more frequent maintenance and repairs, as compared to Action Alternatives One and Two. In order to avoid affecting any special status species downstream, debris nets and limitations on site access would be implemented during construction activities to avoid contamination of the creek. There is a state-listed threatened species that may be in the area. If any in-water work is needed, mitigation measures stipulated by TWRA would be put into place.

Cumulative Impacts: Past, present, and reasonably foreseeable actions have the potential to impact special status species. Past land use activities adjacent to and surrounding the Little Swan Creek Bridge, including parkway construction, mowing, agricultural activities, fire suppression, and various developments, such as campgrounds, picnic areas, roads and trails, may have impacted special status species. Current and future parkway operations, such as routine maintenance and upkeep could also result in impacts on special status species. Impacts from past, present, and reasonably foreseeable future actions would be parkway-wide, long-term, negligible, and adverse. The overall cumulative impacts on special status species from Action Alternative Three in combination with past, present, and reasonably foreseeable future actions would be parkway-wide, long-term, negligible, and adverse.

Conclusion: Action Alternative Three would have no new impacts on special status species. The construction of bridge superstructure and long-term maintenance activities would have

negligible adverse impacts over the long-term. Cumulatively, effects would be local, long-term, negligible, and adverse.

3.10 PARKWAY OPERATIONS

Affected Environment

Ongoing operations strive to maintain the parkway's physical, natural, and cultural resources for the enjoyment, understanding, and appreciation of parkway visitors. Parkway staff is responsible for the day-to-day maintenance of parkway infrastructure. Parkway buildings, roads, and structures are maintained to provide a safe and pleasant environment for visitors and staff. The condition of the existing Little Swan Creek Bridge adversely affects parkway operations because it is in a deteriorated state and needs replacement or extensive maintenance.

Impact Intensity Threshold

For the purposes of this EA, operations refer to the quality and effectiveness of the parkway's infrastructure, and the ability of staff to maintain infrastructure to provide for a high-quality visitor experience. In addition, parkway operations include the ability of staff to engage with visitors and provide necessary information to protect parkway resources. The area for evaluating impacts on parkway's operations include the immediate Little Swan Creek Bridge project area, as well as the larger area encompassed by the detour plan (see Appendix B). The thresholds of change for the intensity of an impact on parkway operations are described in Table 11.

Table 11: Parkway Operations Impact and Intensity Thresholds

Impact Intensity	Intensity Description
Negligible	The effects would be at low levels of detection and would not have appreciable effects on park operations.
Minor	The effects would be detectable and would be of a magnitude that would not have appreciable effects on park operations. If mitigation is needed to offset adverse effects, it would be simple and likely successful.
Moderate	The effects would be readily apparent and would result in a change in parkway operations that would be noticeable to parkway staff and the public. Mitigation measures would be necessary to offset adverse effects and would likely be successful.

Major	The effects would be readily apparent, would result in a substantial change in parkway operations in a manner noticeable to staff and the public, and would be markedly different from existing operations. Mitigation measures to offset adverse effects would be needed and extensive, and success could not be guaranteed.
Beneficial	The effects would improve the quality and effectiveness of parkway infrastructure and the ability of parkway staff to maintain the infrastructure used in parkway operations to protect and preserve vital resources and provide for a high-quality visitor experience.

Short-term impact – effects lasting for the duration of the bridge replacement.

Long-term impact – effects continuing after the bridge replacement.

Environmental Consequences

No Action Alternative

Direct and Indirect Impacts: Under the No Action Alternative, there would be no change in current parkway operations or infrastructure. The existing Little Swan Creek Bridge would continue to be used by parkway visitors and staff and would remain in its current condition. Although there would be no immediate impact on parkway operations, the bridge would eventually need to be replaced or repaired, resulting in a parkway-wide, long-term, minor adverse impacts on parkway operations.

Cumulative Impacts: Past actions such as bridge and parkway construction, mowing, routine maintenance and upkeep have had a beneficial effect on parkway operations. Planned future actions such as repair work on the Big Swan Creek Bridge and the U.S. Route 412 / State Route 99 bridge replacement would improve parkway operations by reducing maintenance requirements. Past, present, and reasonably foreseeable future projects would result in parkway-wide long-term beneficial impacts to parkway operations, with a small adverse contribution from the No Action Alternative.

Conclusion: The No Action Alternative would have a parkway-wide, long-term, minor, adverse impact on parkway operations. Parkway operations would eventually be affected by the need to replace or repair the deteriorating Little Swan Creek Bridge. Cumulative effects to parkway operations would be parkway-wide, long-term, and beneficial.

Action Alternative One – Three Span Bridge

Direct and Indirect Impacts: Construction activities would require temporary changes in parkway operations to address traffic control and keep the public informed about road conditions. Removing the existing bridge and replacing it with a new three span bridge would reduce maintenance requirements and costs due to deficiencies in the condition of the existing bridge. The proposed bridge would be jointless, for example, which would reduce future maintenance costs associated with cleaning and resealing expansion joints. Other short-term maintenance reductions would include pot hole repair work and cleaning and unclogging bridge deck scuppers (openings in the floor portion of a bridge that allow water accumulated on the roadway surface to properly drain from the structure).

This alternative would likely require a roadway closure of 9 – 12 months. However, it is possible the project area section of the roadway would be closed for more than one year after taking into account weather delays and potential construction delays. Following the temporary detour would impact parkway operations during construction due to additional mileage accrued to staff vehicles, additional travel time, and additional coordination for routine operations.

Traffic control measures would be implemented to minimize visitor safety issues during construction. Combined with the construction detour, additional staff time would be required for coordinating operations during construction. Implementation of Action Alternative One would have a local, short-term, minor, adverse impact on parkway operations during construction due to additional staff time requirements and the detouring of parkway visitors.

Cumulative Impacts: Past actions such as bridge and parkway construction, mowing, routine maintenance and upkeep have had a beneficial effect on parkway operations. Planned future actions such as repair work on the Big Swan Creek Bridge and the U.S. Route 412 / State Route 99 bridge replacement would improve parkway operations by reducing maintenance requirements. Past, present, and reasonably foreseeable future projects combined with Action Alternative One would result in parkway-wide long-term, beneficial impacts to parkway operations. Although there would be a minor impact to operations during construction, there would be long-term beneficial impacts from repairing and extending the life of the bridge.

Conclusion: Action Alternative One would have a local, short-term, minor adverse impact on parkway operations during construction and a parkway-wide long-term, beneficial effect on parkway operations from safety improvements and reduced maintenance requirements.

Action Alternative Two – Two Span Bridge (Preferred Alternative)

Direct and Indirect Impacts: Construction activities would require temporary changes in parkway operations to address traffic control and keep the public informed about road conditions. Removing the existing bridge and replacing it with a new two span bridge would reduce maintenance requirements and costs due to deficiencies in the condition of the existing bridge. The proposed bridge would be jointless, for example, which would reduce future maintenance costs associated with cleaning and resealing expansion joints. Other short-term maintenance reductions would include pot hole repair work and cleaning and unclogging bridge deck scuppers (openings in the floor portion of a bridge that allow water accumulated on the roadway surface to properly drain from the structure).

This alternative would likely require a roadway closure of 8 – 10 months. However, it is possible the project area section of the roadway would be closed for more than one year after taking into account weather delays and potential construction delays. Implementing the parkway detour route would impact operations during construction due to additional mileage accrued to staff vehicles, additional travel time, and additional coordination for routine operations.

Traffic control measures would be implemented to minimize visitor safety issues during construction. Combined with the construction detour, additional staff time would be required for coordinating operations during construction. Implementation of Action Alternative Two would have a local, short-term, minor, adverse impact on parkway operations during construction due to additional staff time requirements and the detouring of parkway visitors.

Cumulative Impacts: Past actions such as bridge and parkway construction, mowing, routine maintenance and upkeep have had a beneficial effect on parkway operations. Planned future actions such as repair work on the Big Swan Creek Bridge and the U.S. Route 412 / State Route 99 bridge replacement would improve parkway operations by reducing maintenance requirements. Past, present, and reasonably foreseeable future projects combined with Action Alternative Two would result in parkway-wide long-term, beneficial impacts to parkway operations. Although there would be a minor impact to operations during construction, there would be long-term beneficial impacts from repairing and extending the life of the bridge.

Conclusion: Action Alternative Two would have a local, short-term, minor adverse impact on parkway operations during construction and a parkway-wide long-term, beneficial effect on parkway operations from safety improvements and reduced maintenance requirements.

Action Alternative Three – Replace Bridge Superstructure

Direct and Indirect Impacts: Construction activities would require temporary changes in parkway operations to address traffic control and keep the public informed about road conditions. Removing and replacing bridge superstructure components would reduce maintenance requirements and costs due to deficiencies in maintaining the existing bridge. However, this alternative would require a series of repair and maintenance activities over a long period of time that would increase lifecycle costs.

Action Alternative Three would likely require a roadway closure of 7 – 8 months for initial superstructure replacement and maintenance activities. The same temporary detour plan as used in the other action alternatives would impact parkway operations during construction due to additional mileage accrued to staff vehicles, additional travel time, and additional coordination for routine operations.

Traffic control measures would be implemented to minimize visitor safety issues during construction. Combined with the construction detour, additional staff time would be required for coordinating operations during construction. Implementation of Action Alternative Three would have a local, long-term, minor, adverse impact on parkway operations during construction due to additional staff time requirements and the detouring of parkway visitors.

Cumulative Impacts: Past actions such as bridge and parkway construction, mowing, routine maintenance and upkeep have had a beneficial effect on parkway operations. Planned future actions such as repair work on the Big Swan Creek Bridge and the U.S. Route 412 / State Route 99 bridge replacement would improve parkway operations by reducing maintenance requirements, staff time and increasing safety. Past, present, and reasonably foreseeable future projects combined with Action Alternative Three would result in parkway-wide long-term, beneficial impacts to parkway operations.

Conclusion: Action Alternative Three would have a local, short-term, minor adverse impact on parkway operations during construction and a parkway-wide long-term, beneficial effect on parkway operations from safety improvements.

3.11 HISTORIC STRUCTURES

Affected Environment

The parkway is eligible for listing in the National Register of Historic Places. All three action alternatives would involve extensive or complete removal of historic fabric (i.e. bridge demolition) and therefore, all would have an adverse effect to the historic bridge structure.

Original construction photos also show a hand-laid rock retaining wall along the creek bank under the bridge, which may be affected by construction activities. Parkway staff have documented that the wall is no longer visible from the surface and has been subject to extensive erosion. The Tennessee Historical Commission determined the action alternatives in the EA will adversely affect properties eligible for listing in the National Register of Historic Places (Tennessee Historical Commission, E.P. McIntyre, Jr., Executive Director and State Historic Preservation Officer, Nashville, TN, letter to D.C. Wilkerson, National Park Service, Tupelo, May 17, 2013). A separate Memorandum of Agreement (MOA) has been executed and meets the requirements of Section 106 of the NHPA in consultation with the Tennessee Historical Commission (see Appendix C).

Impact Intensity Threshold

Impact intensity under NEPA corresponds with effects under section 106 of the NHPA of 1966, as amended (16 USC 470, et seq.) and its implementing regulations under 36 CFR 800. Section 106 requires all federal agencies to consider the effects of federal actions on historic properties eligible for or listed in the national register. Historic structures in this EA refer to the existing bridge and the rock retaining wall along the creek bank under the bridge. The thresholds of change for the intensity of an impact on historic structures are described in Table 12.

Table 12: Historic Structures Impact and Intensity Thresholds

Impact Intensity	Intensity Description
Negligible	Impacts would be at the lowest levels of detection – barely perceptible and not measurable. There would be no change to defining features that contribute to the resource’s National Register eligibility. Under Section 106, the determination would be “no effect”.
Minor	Impacts would be detectable but would not diminish the overall integrity of the historic feature. Under Section 106, the determination would be “no adverse effect”.
Moderate	Impacts would alter the historic feature and result in measurable changes, and they could diminish the overall integrity of the resource to the extent that its National Register eligibility would be jeopardized. Under Section 106, the determination would be “adverse effect”.
Major	Impacts would result from substantial and highly noticeable changes that would alter the historic feature. These impacts would diminish the overall integrity of the resource to the extent that it would no longer be eligible to be listed on the National Register. Under Section 106, the determination would be “adverse effect”.

Short-term impact—following project completion, effects would remain less than one year.
Long-term impact—following project completion, effects would remain more than one year.

Environmental Consequences

No Action Alternative

Direct and Indirect Impacts: The existing bridge and historic rock retaining wall feature in the project area would not be affected under the No Action Alternative because there would be no new disturbances.

Cumulative Impacts: Lands near the Little Swan Creek Bridge have been modified by human activities, including parkway construction, mowing, agricultural activities, fire suppression, and various developments, such as campgrounds, picnic areas, roads and trails. These activities have had a negligible adverse impact to historic structures. The impacts of the No Action Alternative, in combination with the negligible adverse impacts of other past, present, and reasonably foreseeable future actions, would result in a long-term negligible adverse cumulative effect, with a relatively small adverse contribution from the no action alternative.

Conclusion: The No Action Alternative would have a local negligible impact on historic structures from the activities that have taken place near the Little Swan Creek Bridge. Cumulative impacts would be local, negligible adverse, with a relatively small adverse contribution from the No Action Alternative.

Action Alternative One – Three Span Bridge

Direct and Indirect Impacts: Action Alternative One would remove and replace the existing concrete bridge and would likely impact the rock retaining wall. Road shoulders and approaches to the new bridge would be widened. Ground-disturbing activities related to construction would have the potential to impact the wall as well.

If other historic resources are discovered during construction, all construction activities would cease until a cultural resource specialist assesses the site for its nature, extent, and significance. Continued consultation with the Tennessee Historical Commission would be required to determine appropriate mitigation measures. A separate Memorandum of Agreement (MOA) has been executed and meets the requirements of Section 106 of the NHPA in consultation with the Tennessee Historical Commission (see Appendix C). With the implementation of the mitigation measures described, Action Alternative One (and the other action alternatives, respectively) would have a local moderate adverse impact on historic structures.

Cumulative Impacts: Lands near the Little Swan Creek Bridge have been modified by human activities, including parkway construction, mowing, agricultural activities, fire suppression, and various developments, such as campgrounds, picnic areas, roads and trails. These activities

have had a negligible adverse impact to historic structures. The impacts of Action Alternative One, in combination with the negligible adverse impacts of other past, present, and reasonably foreseeable future actions, would result in a long-term moderate adverse cumulative effect, with a relatively small adverse contribution from Action Alternative One.

Conclusion: Implementation of Action Alternative One would result in local moderate adverse impacts on historic structures. The overall cumulative effects to historic structures from Action Alternative One in combination with past, present, and reasonably foreseeable future actions would be local, minor, and adverse, with a moderate adverse impact from Action Alternative One.

Action Alternative Two – Two Span Bridge

Direct and Indirect Impacts: Impacts would be the same as Action Alternative One, with the exception that the pier type and geometry of the two span bridge in Action Alternative Two would be more similar to the existing bridge compared to Action Alternative One. Overall, Action Alternative Two would have a local, moderate, adverse effect to historic structures.

Cumulative Impacts: Same as Action Alternative One.

Conclusion: Same as Action Alternative One.

Action Alternative Three – Replace Bridge Superstructure

Direct and Indirect Impacts: Same as Action Alternatives One and Two, with the exception that Action Alternative Three would not involve widening roadway approaches or bridge shoulders. Action Alternative Three has the least impact to historic structures among the action alternatives. Rehabilitating the existing bridge structure is preferable to bridge replacement from a cultural resource preservation perspective. Overall, Action Alternative Three would have a local, minor, adverse effect to historic structures.

Cumulative Impacts: Lands near the Little Swan Creek Bridge have been modified by human activities, including parkway construction, mowing, agricultural activities, fire suppression, and various developments, such as campgrounds, picnic areas, roads and trails. These activities have had a negligible adverse impact to historic structures. The impacts of Action Alternative Three, in combination with the negligible adverse impacts of other past, present, and reasonably foreseeable future actions, would result in a long-term minor adverse cumulative effect, with a relatively small adverse contribution from Action Alternative Three.

Conclusion: Implementation of Action Alternative Three would result in local minor adverse impacts on historic structures. The overall cumulative effects to historic structures from Action

Alternative Three in combination with past, present, and reasonably foreseeable future actions would be local, minor, and adverse, with a minor adverse impact from Action Alternative Three.

3.12 CULTURAL LANDSCAPE

Affected Environment

According to DO-28: Cultural Resource Management Guideline (page 87), a cultural landscape is:

...a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions.

The parkway is a designed cultural landscape and bridges are contributing features to its landscape design. The proposed bridge replacement involves extensive or complete removal of historic fabric. However, the intent of the new bridge is to replicate and be visually compatible with the cultural landscape design of the existing bridge, which was built in 1962. The new bridge would be constructed of concrete and have identical concrete curb and railing. The concrete deck would be overlain with asphalt to continue the cultural landscape design of a continuous ribbon of asphalt along the entire route of the parkway.

Impact Intensity Threshold

Cultural landscapes are the result of the long interaction between people and the land, and the influence of human beliefs and actions over time on the natural landscape. The thresholds of change for the intensity of an impact on the cultural landscape are defined in Table 13.

Table 13: Cultural Landscape Impact and Intensity Thresholds

Impact Intensity	Intensity Description
Negligible	Impact is at the lowest levels of detection - barely perceptible and not measurable.
Minor	Preservation of character defining patterns and features in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties With Guidelines for the Treatment of Cultural Landscapes.
Moderate	Rehabilitation of a landscape or its patterns and features in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties With

	Guidelines for the Treatment of Cultural Landscapes.
Major	Restoration of a landscape or its patterns and features in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties With Guidelines for the Treatment of Cultural Landscapes.

Short-term impact – following project completion, effects would remain less than one year.

Long-term impact – following project completion, effects would remain more than one year.

Environmental Consequences

No Action Alternative

Direct and Indirect Impacts: Under the No Action Alternative, removal and replacement of the Little Swan Creek Bridge would not occur. The No Action Alternative would have no impact to the cultural landscape.

Cumulative Impacts: Lands near the Little Swan Creek Bridge have been modified by human activities, including parkway construction, mowing, agricultural activities, fire suppression, and various developments, such as campgrounds, picnic areas, roads and trails. These activities have had a negligible adverse impact to the cultural landscape and have not diminished the character defining features of the cultural landscape. The impacts of the No Action Alternative, in combination with the negligible adverse impacts of other past, present, and reasonably foreseeable future actions, would result in a long-term negligible adverse cumulative effect, with a relatively small adverse contribution from the no action alternative.

Conclusion: The No Action Alternative would have a local negligible impact on the cultural landscape from the activities that have taken place near the Little Swan Creek Bridge. Cumulative impacts would be local, negligible adverse, with a relatively small adverse contribution from the No Action Alternative.

Action Alternative One – Three Span Bridge

Direct and Indirect Impacts: Under Action Alternative One, replacing the bridge would remove a part of the parkway's historic fabric. In addition, the typical section would be widened from an 8' to an 11' lane and from a 3' shoulder to a 6' shoulder (total travel way from 28' to 34'). However, the intent of the new bridge is to be compatible but distinguishable with the cultural landscape design of the existing bridge. The new bridge would continue the cultural landscape design of a continuous ribbon of asphalt along the entire route of the parkway. Impacts would be local, moderate, and adverse. Overall, Action Alternative One would have a local, moderate, adverse effect to the cultural landscape and contributing historic elements. Impacts for all action alternatives are further described under "historic structures".

Cumulative Impacts: Lands near the Little Swan Creek Bridge have been modified by human activities, including parkway construction, mowing, agricultural activities, fire suppression, and

various developments, such as campgrounds, picnic areas, roads and trails. These activities have had a negligible adverse impact to the cultural landscape and have not diminished the character defining features of the cultural landscape. The impacts of Action Alternative One, in combination with the negligible adverse impacts of other past, present, and reasonably foreseeable future actions, would result in a long-term moderate adverse cumulative effect, with a relatively small adverse contribution from Action Alternative One.

Conclusion: Implementation of Action Alternative One would result in local moderate adverse impacts on the cultural landscape. The overall cumulative effects to the cultural landscape from Action Alternative One in combination with past, present, and reasonably foreseeable future actions would be local, moderate, and adverse, with a moderate adverse impact from Action Alternative One.

Action Alternative Two – Two Span Bridge

Direct and Indirect Impacts: Impacts would be the same as Action Alternative One, with the exception that Action Alternative Two has a lower compatibility with the parkway's cultural landscape among the action alternatives. Nonetheless, its pier type and geometry would be similar to the existing bridge, consistent with the other action alternatives. Overall, Action Alternative Two would have a local, moderate, adverse effect to the cultural landscape and contributing historic elements.

Cumulative Impacts: Same as Action Alternative One.

Conclusion: Same as Action Alternative One.

Action Alternative Three – Replace Bridge Superstructure

Direct and Indirect Impacts: Impacts would be the same as Action Alternatives One and Two, with the exception that Action Alternative Three would not involve widening roadway approaches or bridge shoulders. Action Alternative Three has the least impact to the cultural landscape among the action alternatives. Rehabilitating the existing bridge structure is preferable to bridge replacement from a cultural resource preservation perspective. Overall, Action Alternative Three would have a local, minor, adverse effect to the cultural landscape and contributing historic elements.

Cumulative Impacts: Lands near the Little Swan Creek Bridge have been modified by human activities, including parkway construction, mowing, agricultural activities, fire suppression, and various developments, such as campgrounds, picnic areas, roads and trails. These activities have had a negligible adverse impact to the cultural landscape and have not diminished the character defining features of the cultural landscape. The impacts of Action Alternative Three, in combination with the negligible adverse impacts of other past, present, and reasonably

foreseeable future actions, would result in a long-term minor adverse cumulative effect, with a relatively small adverse contribution from Action Alternative One.

Conclusion: Implementation of Action Alternative Three would result in local minor adverse impacts on the cultural landscape. The overall cumulative effects to the cultural landscape from Action Alternative One in combination with past, present, and reasonably foreseeable future actions would be local, minor, and adverse, with a moderate adverse impact from Action Alternative Three.

4 CONSULTATION AND COORDINATION

4.1 SCOPING

Scoping is an early and open process to determine the extent of environmental issues and alternatives to be addressed. Scoping was initiated by an interdisciplinary team of professionals from Natchez Trace Parkway, FHWA, and DSC staff. Team members met multiple times in 2011 through 2013 to discuss the purpose and need for the project, various alternatives, potential environmental impacts, reasonably foreseeable actions that may have cumulative effects, and resource protection measures. Public scoping began with an announcement released on May 10, 2013 describing the Preferred Alternative and soliciting comments or concerns with the proposal to replace or rehabilitate Little Swan Creek Bridge. Scoping issues or impact topics that were considered, but not evaluated further, are discussed in “Impact Topics Dismissed from Further Consideration.”

4.2 AGENCY CONSULTATION

The NHPA (16 USC 470 et seq.): NEPA; NPS Organic Act; *NPS Management Policies 2006*; DO-12: Conservation Planning, Environmental Impact Analysis, and Decision-making (2001); and DO-28: Cultural Resources Management Guideline require the consideration of impacts on cultural resources, either listed in or eligible to be listed in the National Register. In accordance with Section 106 of the NHPA, the state historic preservation office (SHPO) was notified of the proposed project by letter on May 6, 2013. The Tennessee Historical Commission responded in a letter dated May 17, 2013 indicating the project “will adversely affect” properties that are eligible for listing in the National Register of Historic Places. Accordingly, the project team executed an MOA that was signed and dated February 4, 2014. The parkway will also consult with the SHPO/Commission if any other potential historic properties are discovered during project work. This EA will be submitted to the SHPO/Commission for review and comment.

In accordance with the Endangered Species Act, the NPS contacted the USFWS by letter on June, 17, 2013 to solicit input on threatened and endangered species concerns for the proposed project. The USFWS provided input on the Section 7 consultation process and other concerns in a letter dated July 19, 2013, concurring the agency does not expect adverse effects to listed species as a result of the project actions.

The NPS contacted TDEC to solicit input on any state and federally-listed species that NPS is unaware of and to confirm that the only potentially endangered vegetation near the project area, Tennessee yellow-eyed grass, is located one-quarter mile downstream in the nearby Autney Hollow conservation easement. The NPS and TDEC also confirmed that all project work

would be localized at the project site². TDEC responded with a letter dated July 17, 2013 that stated the Tennessee yellow-eyed grass is no longer in the area and is not a concern. FHWA would coordinate with the Army Corps of Engineers regarding Section 404 permitting under the Clean Water Act.

4.3 AMERICAN INDIAN CONSULTATION

American Indian tribes were contacted to determine if any ethnographic resources were in the project area and if a tribe wanted to be involved in the environmental compliance process. Those contacted include the United Keetoowah Band of the Cherokee, Absentee-Shawnee Tribe of Indians, Cherokee Nation, Chickasaw Nation, Eastern Band of Cherokee Indians, Eastern Band of Shawnee Tribe of Oklahoma, and the Shawnee Tribe. The United Keetoowah Band of Cherokee was the only tribe to respond. On June 26, 2013 the United Keetoowah Band of Cherokee Tribe responded by an email letter stating at that time they had no comments or objections to the proposed project, but requested to be informed if any human remains or funerary items of historical relevance were discovered. The NPS will continue to consult with American Indian Tribes throughout the planning and implementation of the proposed project as required under CFR 36.800.2. American Indian Tribes will have an opportunity to review and comment on this EA.

4.4 ENVIRONMENTAL ASSESSMENT REVIEW AND LIST OF RECIPIENTS

This EA will be released for a 30-day public comment period. To inform the public of the availability of the EA, the NPS will publish and distribute a letter to various agencies, tribes, and members of the public on the parkway's mailing list. A press release will also be produced. Copies of the EA will be provided to interested individuals, upon request. Copies of the document will also be available for review at the Natchez Trace Parkway Visitor Center and on the Internet at <http://parkplanning.nps.gov/NATR>.

During the public comment period, the public is encouraged to submit their comments to the NPS address provided on the cover page at the beginning of this document. Following the close of the comment period, all public comments will be reviewed and analyzed prior to the release of a decision document. The NPS will issue responses to substantive comments received during the public comment period and will make appropriate changes to this EA, as needed.

² TDEC also requested the NPS consult with TWRA, who responded to NPS consultation in a letter dated August 13, 2013 (see Appendix A).

4.5 LIST OF PREPARERS AND CONTRIBUTORS

National Park Service, Natchez Trace Parkway

Lisa McInnis, Chief of Resource Management
Christina Smith, Cultural Resource Manager
Kevin Tyler, Landscape Architect
Kevin Downs, Parkway Civil Engineer
Barry Boyd, Parkway Facility Manager

National Park Service, Denver Service Center

Larry Hultquist, Project Manager
Lee Terzis, NEPA Specialist
Steve DeGrush, Natural Resource Specialist
Dustin Hill, Compliance Assistant

Federal Highway Administration

Ramaniklal Satasiya, Project Manager
Lisa Landers, Environmental Protection Specialist

4.6 COMPLIANCE WITH FEDERAL AND STATE REGULATIONS

The NPS would comply with all applicable federal and state regulations and permitting requirements when implementing the Preferred Alternative. Permitting and regulatory requirements for the Preferred Alternative are listed in Table 14.

Table 14: Environmental Compliance Requirements

Agency	Statute, Regulation, Order	Purpose	Project Application
National Park Service	NEPA	Applies to federal actions that may significantly affect the quality of the environment.	Environmental review of the Preferred Alternative and decision to prepare a FONSI or EIS.
	NHPA, Section 106	Protection of historic and cultural resources.	The parkway consulted with the Tennessee Historical Commission and executed an MOA.

	NPS-DO-77-1: <i>“Wetland Protection”</i>	Protection of wetland resources.	The project would be excepted under D.O. 77-1 (4.2.1(d)).
	EO 11990, <i>“Protection of Wetlands”</i>	Requires avoidance of adverse wetland impacts, where practicable, and mitigation, if necessary.	Project is not located in a jurisdictional wetland area.
	EO 11988, <i>“Floodplain Management”</i>	Requires avoidance of adverse floodplain impacts, where practicable, and mitigation if necessary.	Project is not located in a floodplain.
	<i>NPS DO-77-2: Floodplain Management</i>	Protection of natural resources and floodplains.	The project is not located in a floodplain and would be excepted under D.O. 77-2
U.S. Army Corps of Engineers	Clean Water Act, Section 404 permit to discharge dredge and fill material	Authorizes placement of fill or dredge material in water of the U.S. including wetlands.	“Waters of the U.S.” are in the project area.
U.S. Fish and Wildlife Service	Endangered Species Act	Protection of federally listed threatened and endangered species.	Project team consulted with the USFWS and TDEC as part of the NEPA process.
Tennessee Division of Water Resources	Clean Water Act Section 401/ARAP to alter waters of the state/discharge.	Protection from physical alterations to properties of waters of the state.	“Waters of the state” are in the project area.

REFERENCES

- AquAeTer, Inc. 2013. Wetland Delineation: Wetlands and Other Waters Delineation Final Draft Report, Brentwood, TN.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service, Washington, D.C.
- Clean Water Act of 1972, 33 U.S.C. § 1251 et seq. (2002). Retrieved from <http://epw.senate.gov/water.pdf>
- Federal Highway Administration
2013. *Federal Bridge Inspection Report*. 2013 Bridge Program.
- National Park Service

1987 *General Management Plan*. Natchez Trace Parkway.
2001. Director's Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making*.
- 2002a. Director's Order 77-1: *Wetland Protection*.
- 2002b. Director's Order 28: *Cultural Resources Management*.
2003. Director's Order 77-2: *Floodplain Management*.
2006. *Management Policies* 2006.
2013. Value Analysis and Choosing By Advantages Report for Little Swan Creek Bridge Replacement. July 21, 2013. Transportation Division, Denver Service Center.
- U.S. Congress. 1916. 39th Congress, 535th Session. *The National Park Service Organic Act*, August 25, 1916.

APPENDIX A

Scoping Announcement and Agency Comments

Natchez Trace Parkway News Release

Natchez Trace Parkway 2680 Natchez Trace Pkwy Tupelo, MS 38804

662-680-4027 phone
www.nps.gov/natr

Release Date: Immediate

Contact: Lisa McInnis, lisa.mcinnis@nps.gov, 662-680-4055

Natchez Trace Parkway to Initiate the Public Scoping Process for Little Swan Creek Bridge Replacement

The National Park Service is seeking public comment on the proposed replacement of the Little Swan Creek Bridge, located at milepost 386.9 in Lewis County, Tennessee. The bridge must be replaced in order to restore the original structural capacity of the bridge, to provide visitors with a safe and enjoyable experience, and to reduce maintenance requirements and costs.

An environmental assessment will be prepared in compliance with the National Environmental Policy Act to provide a decision-making framework that analyzes alternatives to meet objectives, to evaluate impacts to park resources, and to identify measures to lessen the degree or extent of any impacts.

The public is invited to provide input on the proposed bridge repairs. Comments received during the scoping period will be used to help define the issues and concerns to be addressed in the environmental assessment. An open comment period will begin on May 15, 2013. Those wishing to provide comments should submit them in writing as soon as possible, but no later than June 15, 2013 to: <http://parkplanning.nps.gov/natr>, to natr_informantion@nps.gov, or to Natchez Trace Parkway, 2680 Natchez Trace Parkway Tupelo, MS 38804.

Respondents should include their name, address and email to be added to the mailing list for more information about this project. Unless requested otherwise, a list of all those that comment during public review periods, including their addresses, is available upon request.

A second opportunity for public comments will be available after preliminary alternatives have been developed, and a final public comment period will be available when the Little Swan Creek Bridge Replacement Environmental Assessment is released.

www.nps.gov

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EXPERIENCE YOUR AMERICA™ The National Park Service cares for special places saved by the American people so that all may experience our heritage.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

446 Neal Street
Cookeville, TN 38501

July 19, 2013

Mr. Dale Wilkerson
Acting Superintendent
Natchez Trace Parkway
2680 Natchez Trace Parkway
Tupelo, Mississippi 38804

Subject: FWS #2013-CPA-0577. Environmental Assessment for the replacement of the Natchez Trace Parkway Bridge over Little Swan Creek on National Park Service land, Lewis County, Tennessee.

Dear Mr. Wilkerson:

Thank you for your correspondence dated June 21, 2013, regarding the proposal to replace the Natchez Trace Parkway Bridge over Little Swan Creek in Lewis County, Tennessee. The new bridge would be a two-span concrete girder bridge approximately 242 feet in length. Proposed activities include excavation, roadway profile transition to meet the existing grade, milling and paving, and roadway striping. Personnel of the U.S. Fish and Wildlife Service have reviewed the subject proposal and offer the following comments.

Our records indicate that the federally endangered Tennessee yellow-eyed grass (*Xyris tennesseensis*) and recently delisted Eggert's sunflower (*Helianthus eggertii*) occur in the area. Habitat for these species was not found during preliminary surveys within the project area and the National Park Service (NPS) has committed to more intensive surveys by qualified personnel prior to construction.

Upon review of the information provided, we do not anticipate adverse effects to listed species as a result of this project. If preconstruction surveys reveal the presence of listed species within the project area, NPS will need to reinitiate consultation with our office for potential impacts. However, based on the best information available at this time, we believe that the requirements of section 7 of the Endangered Species Act of 1973, as amended, are fulfilled for all species that currently receive federal protection under the Act. Obligations under section 7 of the Act must be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

If you have any questions regarding our comments, please contact John Griffith of my staff at 931/525-4995 or by email at john_griffith@fws.gov.

Sincerely,

A handwritten signature in black ink that reads "Mary E. Jennings". The signature is written in a cursive style with a large, stylized "M" and "J".

Mary E. Jennings
Field Supervisor



STATE OF TENNESSEE

DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Division of Natural Areas
Natural Heritage Program
7th Floor L&C Tower
401 Church Street
Nashville, Tennessee 37243
Phone 615/532-0431 Fax 615/532-0046

July 17, 2013

Lisa McInnis
United States Department of the Interior, National Park Service
2680 Natchez Trace Parkway
Tupelo, Mississippi 38804

Subject: Natchez Trace Parkway - Little Swan Creek Bridge Replacement
Lewis County, Tennessee
Rare Species Database Review

Dear Dr. McInnis:

Thank you for your correspondence requesting a rare species database review for the Little Swan Creek bridge replacement project, located in Lewis County, Tennessee. We have reviewed the state's natural heritage database with regard to the project boundaries, and found the same federal and state listed species that were included in your letter.

The Xyris occurrence at the bridge is no longer there and no plants are within the bridge right-of-way. The other plant species are all along the creek upstream and downstream, therefore based on the project location and description, our office does not anticipate any impacts to rare, threatened, or endangered plant species. Should suitable habitat exist on or immediately downstream of the site, we ask that project plans provide for the protection of these species. We ask that you coordinate this project with the Tennessee Wildlife Resources Agency (Rob Todd, rob.todd@tn.gov, 615-781-6577) to ensure that legal requirements for protection of state listed rare animals are addressed. Additionally, we ask that you contact the U.S. Fish and Wildlife Service Field Office, Cookeville, Tennessee (931-525-4970) for comments regarding federally listed species. Please keep in mind that not all of Tennessee has been surveyed and that a lack of records for any particular area should not be construed to mean that rare species necessarily are absent. For information regarding species protection status and ranks, please visit <http://www.tn.gov/environment/na/pdf/Status&Ranks.pdf>.

Thank you for considering Tennessee's rare species throughout the planning of this project. Should you have any questions, please do not hesitate to contact Stephanie at (615) 532-4799 or stephanie.whitaker@tn.gov.

Sincerely,

Handwritten signature of Chelsea L. Broach in cursive.

Chelsea L. Broach
Environmental Review Assistant

Handwritten signature of Stephanie A. Whitaker in cursive.

Stephanie A. Whitaker
Natural Heritage Data Manager



TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
P. O. BOX 40747
NASHVILLE, TENNESSEE 37204

August 13, 2013

Dr. Lisa McInnis
Chief of Resource Management
United State Department of the Interior
National Park Service
Natchez Trace Parkway
2680 Natchez Trace Parkway
Tupelo, MS 38804

Re: Environmental Review for Little Swan Creek Bridge on Natchez Trace Parkway

Dear Dr. McInnis:

The Tennessee Wildlife Resources Agency has reviewed the information that you provided regarding the proposed replacement of the Little Swan Creek Bridge on the Natchez Trace Parkway and provides the following comments. The state threatened saddled madtom (*Noturus fasciatus*) has been documented less than 0.25 miles upstream from the project location. It is likely that this state listed species could be impacted by this proposed project. We request that a survey be conducted to determine the presence or absence of this state listed species. We request that the survey area include 100 feet of stream upstream of the project footprint, the project footprint, and 200 feet downstream of the project footprint. If it is determined that the saddled madtom inhabits the surveyed area, we request that coordination with the Tennessee Wildlife Resources Agency occur on measures to be implemented to minimize potential adverse impacts to this state listed species. If possible, we request that in-stream construction not occur during the spawning period for this species, May 15th through July 31st to minimize potential adverse impacts to this state listed species.

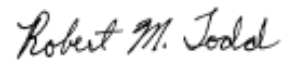
We also request that your office consult with the U.S. Fish and Wildlife Service Ecological Services Field Office in Cookeville, Tennessee and ourselves regarding potential impacts to the state and federally endangered gray bat (*Myotis grisescens*) and Indiana bat (*Myotis sodalists*) due to the proposed project once plans are developed indicating the area where trees are to be cleared for bridge construction.

Thank you for the opportunity to review and comment on this proposed project. If you have further questions regarding this matter, please contact me at 615-781-6572.

The State of Tennessee

IS AN EQUAL OPPORTUNITY, EQUAL ACCESS, AFFIRMATIVE ACTION EMPLOYER

Sincerely,

A handwritten signature in cursive script that reads "Robert M. Todd".

Robert M. Todd
Fish and Wildlife Environmentalist

cc: David Sims, Region II Habitat Biologist
Tim Cleveland, Region II Manager
Mary Jennings, USFWS
Stephanie Whitaker, TDEC Division of Natural Areas



IN REPLY REFER TO:
D301E
xL3027, L301E

United States Department of the Interior

NATIONAL PARK SERVICE

Natchez Trace Parkway
2680 Natchez Trace Parkway
Tupelo, Mississippi 38804



JUL 16 2013

Mr. Toks Omishakin
Chief of Environment and Planning
Tennessee Department of Transportation
James K. Polk Building
505 Deaderick Street, Suite 700
Nashville, TN 37243

Dear Mr. Omishakin:

The Natchez Trace Parkway is conducting an environmental assessment to identify the potential effects of replacing all or portions of the Little Swan Creek Bridge on National Park Service land. The bridge is in poor condition and the purpose of the project is to restore the original structural capacity of the bridge and make the Natchez Trace Parkway safer for visitors. The site is located near Parkway milepost 386.9, in Lewis County, Tennessee (see enclosed map).

Depending on the results of the environmental assessment, the proposed project would replace the bridge with a two span continuous concrete girder bridge. The project would include temporary, localized impacts to soils and vegetation along Little Swan Creek during construction. In addition, a detour would be put in place for approximately 18 months, routing traffic to Highway 20, Big Swan Creek Road, and Highway 412/99 (see enclosed detour plan).

We are initiating formal consultation and extending to you this opportunity to help identify potential issues to be considered for this planned project. You may submit your written comments online at the NPS Planning, Environment, and Public Comment website at <http://parkplanning.nps.gov/>. The Environmental Assessment document for this project, anticipated to be available in the fall of 2013, will be available for comment at this website. Comments will also be accepted by mail to the address on this letterhead. Please submit any comments or inquiries that you may have within 30 days of receiving this notice.

If you have any questions or concerns regarding the proposed projects, please contact Chief of Resource Management, Dr. Lisa McInnis, at 662-680-4055 or Lisa_McInnis@nps.gov.

Sincerely,

Dale C. Wilkerson
Acting Superintendent

Enclosures.





IN REPLY REFER TO:

D301E

xL3027, L301E

United States Department of the Interior

NATIONAL PARK SERVICE

Natchez Trace Parkway
2680 Natchez Trace Parkway
Tupelo, Mississippi 38804



JUL 16 2013

Mr. Ronnie Darnell
Highway Commissioner
Lewis County Highway Department
327 Buffalo Road
Hohenwald, TN 38462

Dear Mr. Darnell:

The Natchez Trace Parkway is conducting an environmental assessment to identify the potential effects of replacing all or portions of the Little Swan Creek Bridge on National Park Service land. The bridge is in poor condition and the purpose of the project is to restore the original structural capacity of the bridge and make the Natchez Trace Parkway safer for visitors. The site is located near Parkway milepost 386.9, in Lewis County, Tennessee (see enclosed map).

Depending on the results of the environmental assessment, the proposed project would replace the bridge with a two span continuous concrete girder bridge. The project would include temporary, localized impacts to soils and vegetation along Little Swan Creek during construction. In addition, a detour would be put in place for approximately 18 months, routing traffic to Highway 20, Big Swan Creek Road, and Highway 412/99 (see enclosed detour plan).

We are initiating formal consultation and extending to you this opportunity to help identify potential issues to be considered for this planned project. You may submit your written comments online at the NPS Planning, Environment, and Public Comment website at <http://parkplanning.nps.gov/>. The Environmental Assessment document for this project, anticipated to be available in the fall of 2013, will be available for comment at this website. Comments will also be accepted by mail to the address on this letterhead. Please submit any comments or inquiries that you may have within 30 days of receiving this notice.

If you have any questions or concerns regarding the proposed projects, please contact Chief of Resource Management, Dr. Lisa McInnis, at 662-680-4055 or Lisa_McInnis@nps.gov.

Sincerely,

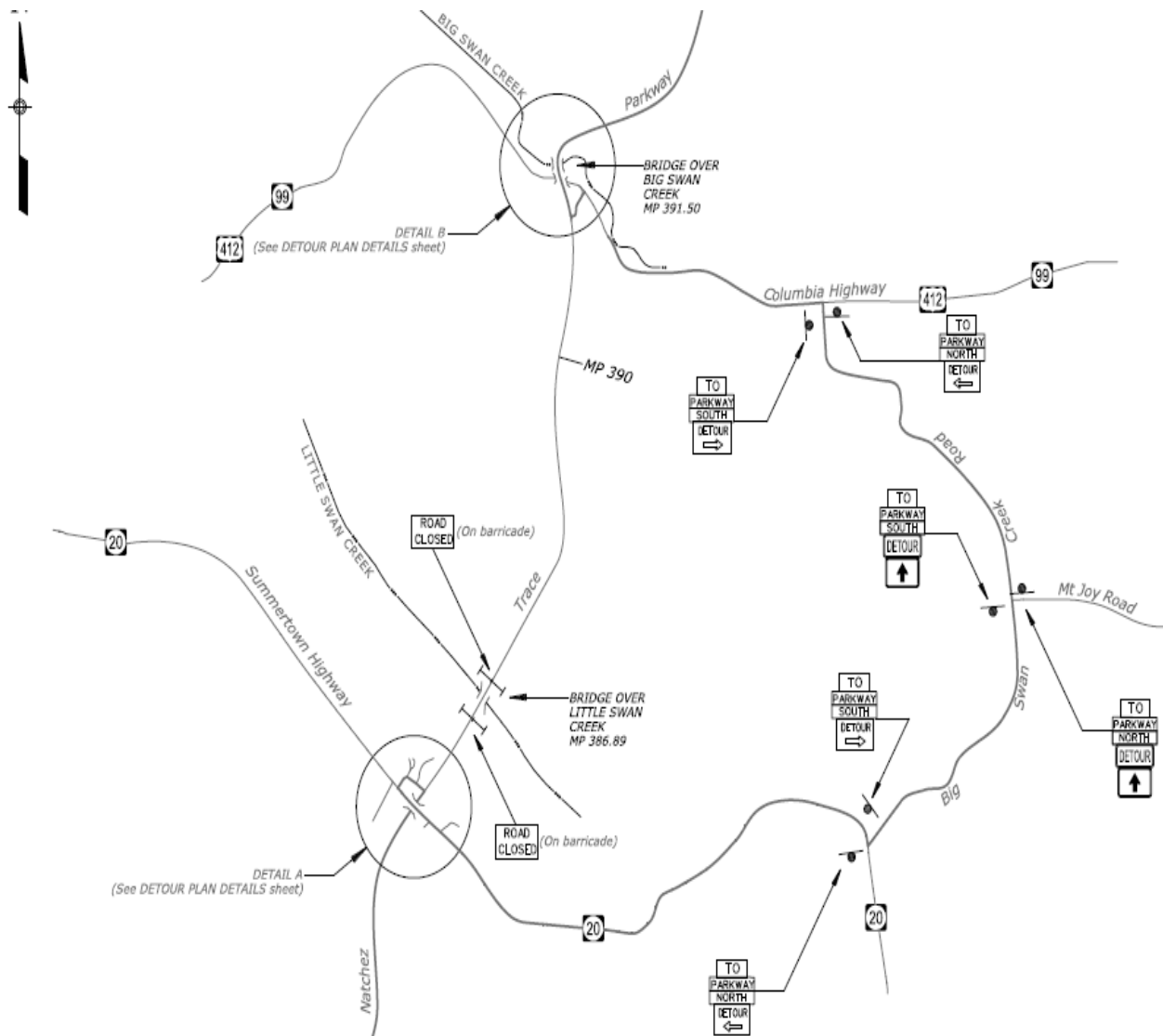
Dale C. Wilkerson
Acting Superintendent

Enclosures.

APPENDIX B

Detour Plan

All three action alternatives would require a bridge closure detour plan. The detour plan for the action alternatives is shown below:



Appendix C

SHPO/NPS Section 106 MOA

MEMORANDUM OF AGREEMENT
BETWEEN THE NATIONAL PARK SERVICE
AND THE TENNESSEE STATE HISTORIC PRESERVATION OFFICER
PERSUANT TO 36 CFR SECTION 800.6(c)
REGARDING THE LITTLE SWAN CREEK BRIDGE REPLACEMENT PROJECT
LEWIS COUNTY, TENNESSEE

WHEREAS, the Natchez Trace Parkway, National Park Service (NPS), in cooperation with the Federal Highway Administration (FHWA), proposes to replace the Parkway Bridge over Little Swan Creek in Lewis County, Tennessee; and

WHEREAS, the NPS, pursuant to 36 CFR 800.4(c), has determined that the Little Swan Creek Bridge is eligible for inclusion in the National Register of Historic Places; and

WHEREAS, the NPS has determined that the Little Swan Creek Bridge Replacement Project will have an adverse effect on the Little Swan Creek Bridge; and

WHEREAS, the NPS has determined that no archeological sites are within the area of potential effect; and

WHEREAS, the NPS has consulted with the Tennessee State Historic Preservation Officer (SHPO) in accordance with Section 106 of the National Historic Preservation Act (16 U.S.C. Section 470f) and its implementing regulations (36 CFR Part 800); and

WHEREAS, the NPS has consulted with the Absentee-Shawnee Tribe of Oklahoma, the Cherokee Nation, Chickasaw Nation, Eastern Shawnee Tribe of Oklahoma, Shawnee tribe, and the United Keetoowah Band of Cherokee Indians of Oklahoma; and

WHEREAS, the NPS has notified the Advisory Council on Historic Preservation (ACHP) of the adverse effects on historic properties; and

WHEREAS, the NPS has involved, and will continue to involve, the public, interest groups, and persons as stipulated under the National Environmental Policy Act (NEPA) of 1969, as amended.

NOW, THEREFORE, the NPS and the SHPO, agree that, upon the NPS's decision to proceed with the Little Swan Creek Bridge Replacement Project, the NPS shall ensure that the following stipulations are implemented in order to take into account the effects of the undertaking on historic properties.

Prior to such time, the NPS may consult with the other signatory to reconsider the terms of the MOA and amend it. The NPS shall notify the signatory as to the course of action it will pursue.

10. Each article stipulated will be provided to the SHPO for his review and comments. Should the SHPO object within thirty (30) days to any plans or specifications provided pursuant to this Agreement, NPS will consult with the SHPO to resolve the objection. If the NPS determines that the objections cannot be resolved, NPS will forward all documentation relevant to the dispute to the Advisory Council on Historic Preservation (ACHP), and request the further comments of the ACHP pursuant to 36 CFR 800.6(b).
11. This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.
12. If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment. If within thirty (30) days (or another time period agreed to by all signatories) if an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.
13. Once the MOA is terminated, and prior to work continuing on the undertaking, NPS must either (a) execute an MOA pursuant to 36 CFR § 800.6, or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. The NPS shall notify the signatories as to the course of action it will pursue.
14. The Agency Official shall provide each signatory and consulting party with a copy of any Memorandum of Agreement executed for this project.

EXECUTION of this MOA by the NPS and Tennessee State Historic Preservation Officer and implementation of its terms evidence that NPS has taken into account the effects of this undertaking on historic properties and afforded the ACHP an opportunity to comment.

SIGNATORIES:
NATIONAL PARK SERVICE

By: Mary Risser Date: January 27, 2014
Mary Risser, Superintendent

TENNESSEE STATE HISTORIC PRESERVATION OFFICER

By: E. Patrick McIntyre Jr. Date: February 4, 2014
E. Patrick McIntyre Jr., Executive Director



As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. Administration.

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