

**Sweetwater Branch Bridge Replacement
Environmental Assessment**

NATCHEZ TRACE

Parkway • Tennessee



**US Army Corps
of Engineers**
Nashville District



J. Percy Priest Lake Directions to Major Day Use Areas



J. Percy Priest - Dam Site, Visitor Center and Overlook

Take I-40 East from Nashville and take Exit 219 - Stewarts Ferry Pike. Take a right on Stewarts Ferry Pike and travel approximately 1/2 mile to Bell Road. Turn left on Bell Road and facilities are approximately 1/2 mile ahead.



Elm Hill Recreation Area

Take I-40 East from Nashville and take Exit 219 - Stewarts Ferry Pike. Take a right on Stewarts Ferry Pike and travel approximately 2 miles on Stewarts Ferry/Bell Road. Turn left at entrance sign along Bell Road.



Anderson Road Recreation Area

Take I-40 East from Nashville and take Exit 219 - Stewarts Ferry Pike. Take a right on Stewarts Ferry Pike and travel approximately 5 miles on Stewarts Ferry/Bell Road to Smith Springs Road. Turn left on Smith Springs Road and travel approximately 2 miles to four way stop. Turn left on Anderson Lane and travel approximately 2 miles to campground/day use area.



Smith Springs Recreation Area

Take I-40 East from Nashville and take Exit 219 - Stewarts Ferry Pike. Turn right on Stewarts Ferry Pike and travel approximately 5 miles on Stewarts Ferry/Bell Road to Smith Springs Road. Turn left on Smith Springs Road and travel approximately 2 miles to four way stop. Travel through four way stop for approximately 1/2 mile. Turn left at entrance sign.



Cook Recreation Area

Take I-40 East from Nashville and take Exit 221B - Old Hickory Boulevard. Turn right on Old Hickory Boulevard and travel approximately 1 mile to stop sign at Bell Road. Turn left on Bell Road and travel approximately 1 mile to stop sign. Turn right on New Hope Road and travel approximately 2 miles to Stewarts



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June 1998

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PURPOSE AND NEED

The National Park Service (NPS) proposes to replace the Sweetwater Branch bridge at Milepost 363.8 along the Natchez Trace Parkway, Wayne County, Tennessee (see regional map). The existing two-lane bridge, constructed in 1950, has sustained irreparable deterioration and cracking of the concrete decks, curbs, guardrails, and abutments as a consequence of reactive aggregate used in the concrete mixture. Continuing deterioration of the structural material would eventually result in weakening of the bridge structure, requiring the NPS to impose vehicle weight restrictions on traffic using the bridge, and eventually force bridge closure. Bridge engineers from the Federal Highway Administration (FHWA) inspected the bridge in 1993 and determined it should be replaced in the near future. Bridge replacement is required to maintain safe conditions for motor vehicle travel along the Parkway.

BACKGROUND AND PREVIOUS PLANNING

The Natchez Trace Parkway currently operates under the direction of the approved 1987 General Management Plan/Environmental Assessment for Natchez Trace Parkway (GMP/EA). Management objectives identified within the GMP direct the maintenance and upgrading of roadways and associated bridges in order to provide for a positive visitor experience and to ensure effective parkway operations. However, construction and maintenance must be compatible with and sensitive to the resources for which the parkway was set aside.

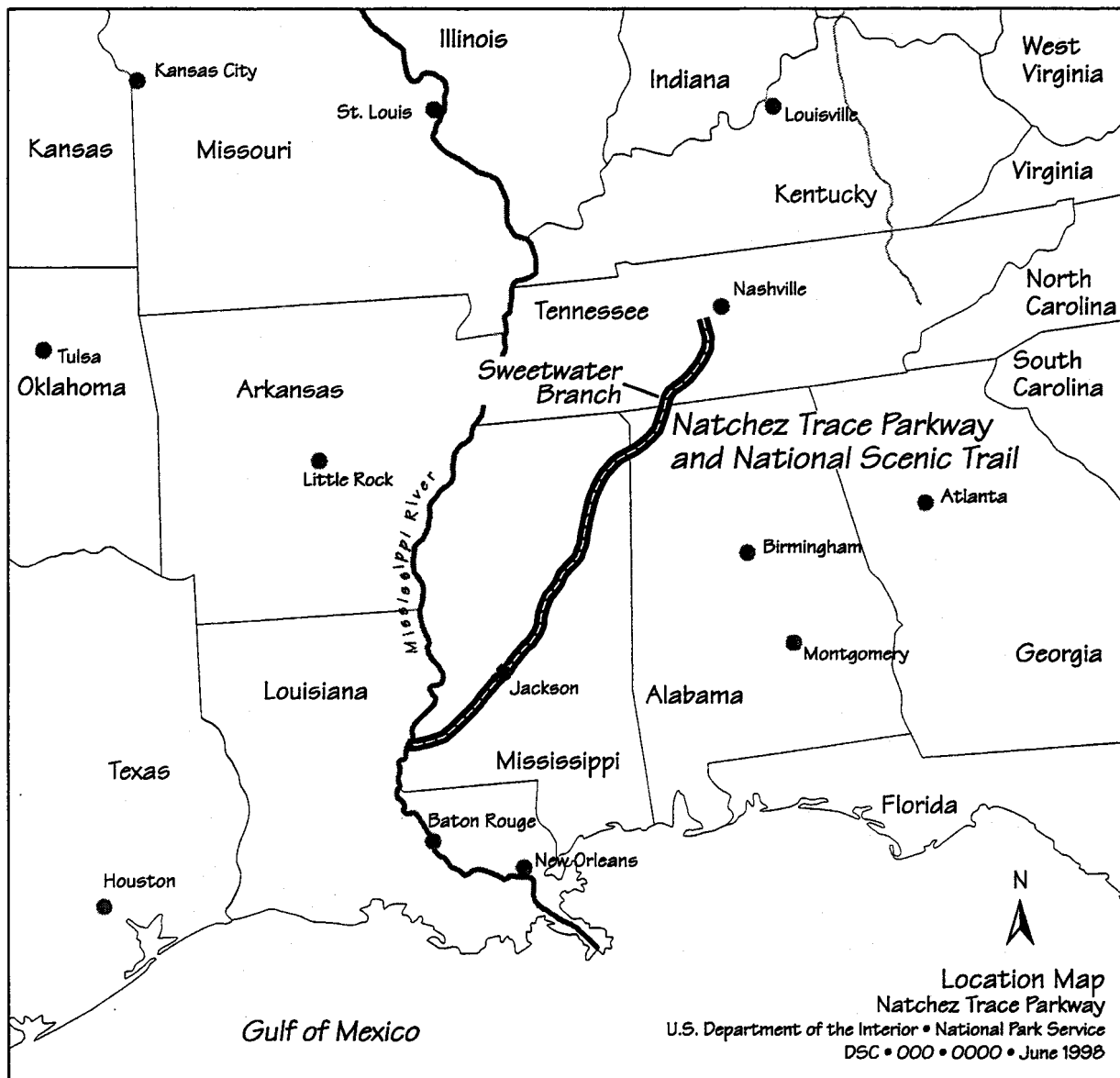
The Federal Lands Highways Program (FLHP) distributes funds from the federal motor fuel tax revenues for the construction and rehabilitation of federal roads, including roads in units of the National Park System. The NPS has developed a plan for a long-term program of road improvement and maintenance with the intent to preserve and extend the surface life of principal park roads, and improve their safety. The FHWA coordinates the design, construction, and maintenance of these roads in cooperation with the NPS. As intended by the act, the FHWA is designing the proposed Sweetwater Branch bridge and bridge construction would occur using 1998 FLHP funds.

Planning is also underway to replace the Cypress Creek, Cypress Creek Relief, and Cooper Branch bridges (also referred to as the Dulen Branch bridge) along the Natchez Trace Parkway. A separate planning document is being prepared for these bridges that will be released for public review during the summer of 1998.

The proposed action to replace the Sweetwater Branch bridge is consistent with Natchez Trace Parkway management documents.

ISSUES AND IMPACT TOPICS

Issues and concerns related to reconstructing the bridge were identified by the park, state, and other federal agencies and through similar NPS road projects. Issues specific to reconstruction of the Sweetwater Branch bridge relate to the removal and replacement of a contributing structure to the historic designed parkway landscape and to proposed bridge reconstruction methods and temporary detour roads that could potentially affect area natural resources such as wetlands, soils, and special status species. The effects of bridge replacement on the integrity of the parkway, parkway use, and park operations are also of concern.



Specific impact topics were developed to address potential natural, cultural, and social impacts that might result from the bridge reconstruction. These topics are derived from the issues identified above and address federal laws, regulations and orders, Natchez Trace Parkway management documents, and NPS knowledge of limited or easily impacted resources. They are used to focus the information presented and discussed in the affected environment and environmental consequences sections. A brief rationale for the selection of each impact topic is given below.

Biotic Communities: The 1969 National Environmental Policy Act (NEPA) calls for an examination of impacts on the components of affected ecosystems. NPS policy requires the protection of the natural abundance and diversity of all the parkway's naturally occurring communities. Impacts to resources such as soils, vegetation, and general wildlife are included in this topic because the proposed reconstruction could potentially disturb stream, riparian and upland habitat.

Special Status Species: The Endangered Species Act of 1973 (as amended) requires all federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or designated critical habitats. NPS policy also requires examination of the impacts to state-listed threatened or endangered species.

Consultations with the US Fish and Wildlife Service (USFWS) revealed no federally-listed species in the project area. The state of Tennessee lists two plant and one fish species: Goldenseal (*Hydrastis canadensis*), a species of concern that is commercially exploited; the Michigan lily (*Lilium michiganense*) is threatened; and, the blotchside darter (*Percina burtoni*) is deemed in need of management. The proposed bridge reconstruction must be assessed to determine whether construction activities could affect any of these species.

Water Quality: NPS Management Policies (1988) require protection of water quality consistent with the Clean Water Act. Water quality in Sweetwater Branch could be temporarily affected by increased sedimentation and turbidity during removal of the existing bridge framework and construction of the new bridge. Although mitigation would be in place to prevent any potential impacts (see mitigation section), water quality will be evaluated as an impact topic because of occurrence of a state-listed fish species in Sweetwater Branch.

If the proposed action is implemented, permits from the Army Corps of Engineers and the state of Tennessee would be required for the proposed bridge replacement project. These water-related permits are discussed in the compliance section at the end of the document.

Wetlands: Executive Order 11990 (Protection of Wetlands) requires an examination of impacts to wetlands. Field delineation of wetlands and open waters at the project site was performed during the spring of 1998. Vegetation, soils, and hydrology were examined for evidence of wetland characteristics using the Cowardin Classification System for Classification of Wetlands and Deepwater Habitats (USFWS, 1979) and the methodology outlined in the Corps of Engineers Wetlands Delineation Manual (US Army Corps of Engineers, 1987). The study results indicated temporary and minor permanent impacts could occur to wetlands in the vicinity of the Sweetwater bridge. Although some permanent wetland impacts would occur, a Statement of Findings would not be prepared because the impacts are minor and a result of safety-related design changes. These are considered an excepted action as described in the NPS Interim Wetland Guidelines (1998). More

detail on this exception is presented in the wetlands impact analysis.

Cultural Resources: The National Historic Preservation Act of 1966, the National Environmental Policy Act of 1969 (NEPA), the 1916 NPS Organic Act, NPS Management Policies, and NPS-28 require federal agencies to consider the effects of their proposed actions on cultural resources.

The NPS, in consultation with the Tennessee State Historic Preservation Officer, has determined that the Sweetwater Branch bridge meets the criteria of eligibility for the National Register of Historic Places. In addition, the designed landscape of the Natchez Trace Parkway is managed to ensure that park visitors are afforded a continuous, serene and recreational travel experience, highlighted by the traditional rural landscapes along its route. Perpetuation of these aesthetic characteristics of the Parkway's cultural landscape is an important design consideration of the current project. Therefore, in accordance with 36 CFR 800, an assessment is required of the effect that bridge replacement would have on this historic structure and other potential cultural resources in the project area.

Parkway Operations: Daily park operations could be impacted by closure of the bridge, temporary detours, or traffic delays during construction.

Visitor Use: The Sweetwater Branch bridge is a critical link that allows for visitor use and enjoyment of the parkway. The bridges are inadequate to meet the needs of present and predicted future use because it is in poor condition and deteriorating rapidly. Failure to take action in the foreseeable future could result in load restrictions and the eventual closing of the bridge. Bridge closures could affect visitor use because portions of the parkway would be closed.

The following impact topics mandated by law or executive order, or that are of public interest, have been dismissed from further consideration because impacts may be nonexistent or minor.

Air Quality: The 1963 Clean Air Act, as amended, requires federal land managers to protect park air quality, while the NPS Management Policies address the need to analyze air quality during park planning. As designated under the Clean Air Act, the air quality in Natchez Trace Parkway is Class II, which allows moderate increments of air quality degradation. Air pollutants originate primarily from populated areas outside the parkway boundary, but some local emissions do occur from vehicular traffic on the parkway. Vehicle emissions by themselves generally do not cause major parkwide air pollution problems, but they are of concern along the parkway because of their incremental additions to other sources of pollution.

Should the proposed alternative be selected, there would be temporary increases in air pollution (vehicle exhaust and emissions, i.e., hydrocarbons, NO_x, and SO₂ emissions) during bridge replacement from operation of the construction equipment. Although local air quality may be temporarily affected by vehicle emissions, such emissions would be rapidly dissipated by air drainage since air stagnation is rare at the project site.

Local air quality would also be temporarily affected by dust. Fugitive dust plumes from construction equipment would intermittently increase airborne particulates in the area near the project sites, but loading rates are not expected to be significant. To partially mitigate these effects, such activity would be coupled with water sprinkling to reduce dust.

A slight and temporary degradation of local air quality would result due to construction equipment and dust generated from construction activities. However, because these effects would last only as long as construction activities occurred and because the parkway's air quality would not be appreciably affected, air quality was dismissed as an impact topic.

Environmental Justice: Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires all federal agencies to address disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. Because none of the alternatives would affect minorities or low-income populations or communities as defined in the Environmental Protection Agency's Draft Environmental Justice Guidance (July 1996), environmental justice was not addressed.

Floodplains: Although the project site is within the 100-year floodplain, compliance with Executive Order 11988 is not required because bridges are excepted actions (NPS Floodplain Management Guidelines, 1993, V. B. 1. Excepted Actions). Additionally, the bridges are in place now and have been for some time. To abandon the existing sites and alignments and propose new sites and alignments would be environmentally infeasible and cost prohibitive.

Prime and Unique Farmland: Federal agencies must assess the effects of their actions on farmland soils classified by the US Department of Agriculture's Natural Resource Conservation Service (NCRS) as prime or unique. Prime or unique farmland is defined as soil which particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. According to the NCRS, no prime farmlands are associated with the project area.

Local and Regional Economy: The approved 1987 GMP discussed the socioeconomic environment and impacts associated with the parkway development. The economies of communities surrounding the parkway are comprised of businesses related to professional services, construction, tourist sales and services, and educational research. The regional economy is strongly influenced by tourist activity.

Should the proposed alternative be implemented, minor economic benefits could result locally or regionally from construction related expenditures and employment. However, these would be short-term benefits only and would end with completion of the bridge. Some minor impacts to traffic flow would occur on the parkway throughout construction; however, any impacts to tourist-related expenditures would be negligible. Because benefits are minimal and impacts to tourism expenditures are negligible, this topic will not be analyzed.

ALTERNATIVES

Two alternatives are presented as management actions for the Sweetwater Branch bridge. Alternative A - the no action alternative - proposes leaving the bridge in its current condition and assumes a reasonable amount of ongoing maintenance. The no action alternative provides a baseline for analyzing and comparing the effects of the proposed action.. Alternative B - bridge replacement - presents a detailed scenario for removing and replacing the deteriorating bridge at Sweetwater Branch. Alternative B is the proposed action and is consistent with the approved 1987 GMP and related parkway management documents.

A summary table comparing the environmental consequences of each alternative is presented at the end of the alternatives section.

ALTERNATIVE A - NO ACTION

Sweetwater Branch bridge and associated piers would be retained in their current configuration. The reactive aggregate in the concrete and continued vehicular use of the bridges would cause ongoing bridge deterioration. The load limits of the bridge could eventually decrease, resulting in load limit restrictions. Frequent and costly repair would be required as the structure deteriorates. Eventual bridge closure for all vehicles would be a possibility if adequate repairs were not completed. The NPS would continue to retain liability for the safety of motorists traveling along the parkway and crossing this bridge.

ALTERNATIVE B - BRIDGE REPLACEMENTS (PROPOSED ACTION)

Bridge Description

The existing bridge at Sweetwater Branch would be removed and replaced with a new bridge in the same location. The bridge would be replaced with a reinforced, cast-in-place concrete bridge with two travel lanes (each 11 feet wide) and 6 foot-wide shoulders. The overall length of the bridge would remain approximately the same at 104 feet, however the width of the bridge would increased by 6 feet to improve traffic safety. Total curb-to-curb width (inside the bridge curbs) would be 34 feet. The existing piers would remain in the same locations.

In an effort to improve the aesthetics of the replacement bridge, an experimental coloring technique would be applied to the bridge and evaluated to determine the effectiveness of concrete coloring on future parkway bridge replacements. At the Sweetwater Branch bridge, the concrete would be finished using brown sand in the Class 2 Rubbed Finish.

Construction for the Sweetwater Branch bridge would be expected to last approximately eight months, starting about early 1999.

Bypass Routes

During bridge removal and construction the bridge would be closed to traffic. Vehicles traveling the parkway would be routed around the bridge via a temporary bypass route that would cross the creek on the north side of the bridge (see project site map). The creek would be diverted under the bypass route through culverts and approved fill material placed under, around, and on top of the culverts. A paved, two-lane road would then be constructed on top of the culverts. The bypass road would have two travel lanes, each 10-feet in width, and would be approximately 671 feet long and 20 feet wide with an additional 3-foot gravel shoulder on each side. The posted speed limit would be 20 miles per hour (mph).

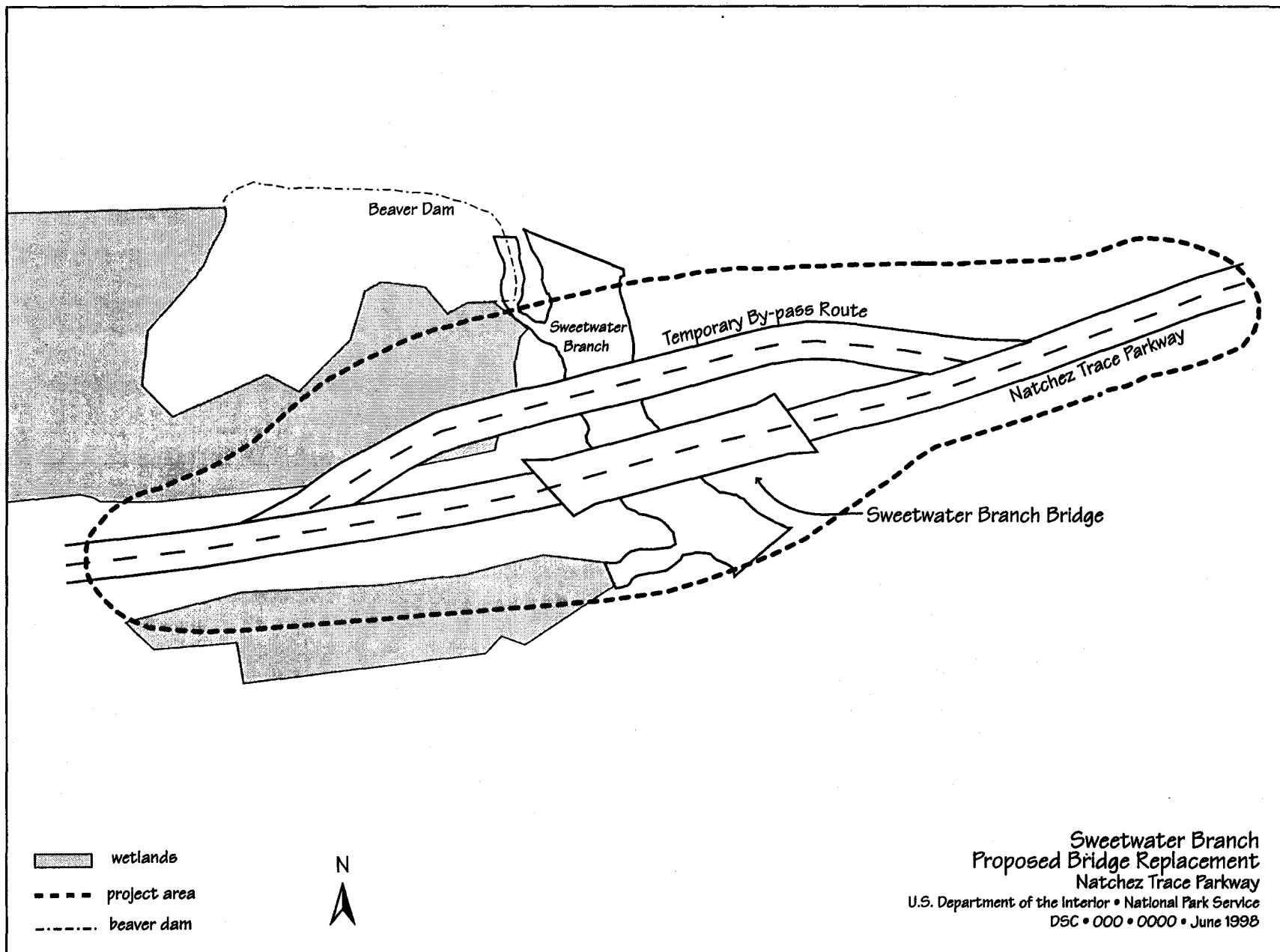
Staging Areas

The staging area for equipment and material storage would be at closed parkway sections, open field areas, or closed parking areas located adjacent to the bridge.

Construction Methods

Following is a sequential general description of how the Sweetwater Branch bridge would be removed and the replacement bridge constructed. Some mitigation measures are identified and described in the construction process. Other general mitigation measures for the blotchside darter and other natural resources are identified in the section following the construction process.

1. Outside the stream banks, silt fences or similar material would be installed around the work areas to identify and define the construction zone prior to any construction activity. The fencing would 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 as defined by the construction zone fencing. Silt fencing fabric would be inspected weekly or after every major storm. Accumulated sediments would be removed when the fabric is estimated to be approximately 75% full. Silt removal would be accomplished in such a way as to avoid introduction into any wetlands or flowing water bodies.
2. The temporary detour roads would be constructed first. To protect the sensitive streambed, a geotextile separation fabric would be placed on the streambed. Next several 48-inch culverts (capable of accommodating high flow events) would be placed on the fabric with sandbag headwalls at both ends of the culverts. Washed #57 stone that is free of deleterious material would be placed around the culverts as fill material. On top of the fill, another layer of the separation fabric would be placed and then covered with crushed aggregate base and asphalt to accommodate vehicular traffic.
3. Culverts would then be installed through the work area under the bridge. Geotextile fabric would again be laid to protect the sensitive streambed. The culverts would be approximately 24 inches in diameter and would be installed under the existing bridge spans and adjacent work area, and continue downstream beyond the construction zone. As with the bypass road, sandbag headwalls would be constructed at the inlet end of the culverts, and the outlet culverts would be securely anchored. Washed #57 stone would be back-filled around the culverts. Since the culverts are plastic, they would be easily moved to facilitate the phases of the bridge removal and construction.



The stream would be diverted through the culverts during removal of the existing bridge and construction of the new bridge. No excavation in and next to the stream would be performed until these bypass culverts are installed thus preventing any sediment or construction residue from entering the stream.

4. The existing bridge deck would then be broken up from above using a hoe-ram or a similar piece of equipment. The broken concrete would fall to the material protecting the streambed beneath the bridge and then be removed.

5. Next the bridge piers would be replaced in their current locations.

6. Once the piers are in place, falsework (i.e., framing/scaffolding beneath the bridge for construction) would be constructed from the protected streambed and ground area under the bridge. The new concrete bridge would then be cast in place.

7. Following completion of bridge construction activities, all culverts, sub-base, fill, sandbags, and the geotextile fabric would be removed from the natural streambeds by a small bobcat or similar piece of equipment. Topsoil would be placed on all disturbed areas outside of the stream and seeded. Rip rap would be placed along the stream bank at the bridge abutments to prevent bank erosion and scour.

Mitigation

The Tennessee Department of Environment and Conservation recommended a number of publications that identify best management practices and other measures to protect water quality and stream habitat. These publications were consulted to develop additional mitigation measures for this project to ensure the protection of sensitive species identified by the state. The publications are listed in the "Selected References" section of this document. Mitigation measures specific to the protection of the endangered slackwater darter, a federally endangered fish found in nearby Cypress Creek, were included here to ensure similar protection of the blotchside darter.

Natural Resources. No instream work would occur from May 1 through July 1 to protect the blotchside darter during spawning season. Instream work includes the removal of existing structures, fill or excavation, or any construction activity.

The culverts of the temporary crossing would not impede either upstream or downstream movement of fish.

Design criteria for dewatering devices (i.e., settling ponds for water from cofferdams) as specified in FHWA design guidelines STD & SPEC 3.26 (1992) would be required for this project. Settling ponds would be identified prior to development of the cofferdams. The potential sites of the settling ponds would be surveyed for cultural resources, special status species, and any other sensitive resources prior to installation of the pond. If any sensitive resources would be discovered, consultation and development of mitigation measures with appropriate agencies would take place, or another site would be investigated.

To prevent degradation of water quality, visual water quality monitoring would be undertaken at the outlet of sediment and erosion control measures (such as settling basins) on a routine basis and during and after storm events. Should the designed and installed sediment and erosion control measures allow excessive sediment to enter the stream and adjacent floodplain areas, supplemental measures would be considered. All

sediment and erosion control measures would be maintained in accordance with contract standards. If problems are noted, discharge would cease and remedial action taken.

Construction activities and staging would utilize previously disturbed areas wherever possible. However where previously undisturbed soils and vegetation are susceptible to compaction and trampling by equipment and workers, topsoil would be stockpiled to help preserve micro-organisms and seeds of native plants. The topsoil would be re-spread in as near to the original location as possible, and supplemented with scarification, mulching, seeding, and/or planting with native species. Standard erosion control measures such as silt fences and/or sand bags would also be used to minimize any potential soil erosion. Although soil side-cast during construction would be susceptible to some erosion, such erosion would be minimized by placing silt fencing around the excavated soil.

All disturbed areas would be restored to preconstruction conditions shortly after construction activities are completed. Vigorous turf grasses would be used to provide immediate erosion control following restoration of topsoil. Native grasses and other species would re-establish themselves naturally within several growing seasons.

Excess excavated material would be used as fill if needed or disposed of at approved locations outside parkway boundaries. All excess fill material would be taken from sources outside the parkway. No borrow sources exist within the parkway.

Cleaning would occur in the equipment staging area or in a previously approved upland area away from the stream. If necessary, diversion ditches should be constructed around these areas to divert water from the area. Similarly, fueling of all machinery would be conducted only in the equipment staging areas away from the creek. Any spills of hazardous materials, fuel, or other hazardous substances would be cleaned up immediately and not allowed to wash into the stream. Equipment would be checked frequently to identify and repair any leaks.

No wet concrete would come in contact with any flowing water under any circumstances.

Cultural Resources. Measures are proposed to mitigate the adverse effects resulting from the replacement of the bridge. In general, and in most visual respects, the new bridge would retain the historic feeling, association and continuity of the Parkway's designed cultural landscape. For example, curbs and guardrails would be constructed of formed concrete in a fashion compatible with typical Natchez Trace Parkway design details.

The original bridge was constructed of concrete pigmented with carbon black, a treatment not currently recommended in part because of its tendency to fade over time. However, to provide coloration compatible with the Parkway's historic concrete structures, the replacement bridge would be surface-rubbed with brown sand.

The NPS would consult with the Tennessee State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation. A Memorandum of Agreement (MOA) stipulating measures that would be undertaken to mitigate removal of the bridge would be finalized and signed by the consulting parties prior to replacement of the bridge. As part of the mitigation, the NPS would prepare photographic documentation of the bridge prior to removal, according to standards mutually agreed upon with the SHPO.

Although no known archeological resources have been recorded within the proposed area of project effects, archeological investigations of this area was not conducted when the existing bridge was constructed.

Consistent with parkway operations, a qualified NPS archeologist would conduct reconnaissance-level surveys of the project area to determine whether previously unidentified archeological resources may be present. Based on the results and recommendations of the survey, archeological monitoring of construction excavations could also occur.

Should archeological resources be discovered during construction, work in that location would stop until the resources are properly recorded by the NPS and evaluated under the eligibility criteria of the National Register of Historic Places. If (in consultation with the SHPO) the resources are determined eligible, appropriate measures would be implemented either to avoid further impacts or to mitigate their loss or disturbance. In compliance with the Native American Graves Protection and Repatriation Act of 1990, the NPS would also notify and consult concerned tribal representatives for the proper treatment of human remains, funerary and sacred objects should these be discovered.

All workers would be informed of the penalties for illegally collecting artifacts or intentionally damaging any archeological or historic property. Workers would also be informed of the correct procedures in case previously unknown resources are uncovered during construction activities.

TABLE 1. SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Impact Topic	Alternative A No Action	Alternative B Bridge Replacement (Proposed Action)
Biotic Communities (vegetation, soil, and wildlife)	Negligible effects to biotic communities.	Short-term, temporary impacts would occur to vegetation and soils during construction in the project area. Soils would be impacted by construction equipment and personnel and some soil erosion would occur until revegetation efforts could be completed. Approximately 0.5 acres of agricultural land and palustrine wetlands would be removed. Revegetation would be encouraged following construction. No long-term effects on wildlife populations or their habitat would be anticipated.
Special Status Species	No immediate impacts to federally and state listed species.	With implementation of required mitigation, construction would not adversely impact the blotchside darter. Mitigation measures would maintain existing habitat quality by preventing detrimental changes in water quality and streambed characteristics. Any discovered populations of Goldenseal or Michigan lily would be protected throughout construction resulting in no long term impact.
Wetlands	No new impacts to any wetlands.	Short-term, minor impacts would occur to approximately 0.18 total acres of palustrine and riverine wetlands that would be impacted by the temporary stream diversions and bypass road at Sweetwater Branch. Impacts would be minor because wetland restoration would occur following construction. Permanent, but negligible, impacts of 0.02 acres would occur for safety-related reasons.
Stream Processes and Water Quality	No new impacts to streamflows or water quality.	Water quality would be maintained at or above levels required by the state. Some infrequent events of short duration could temporarily degrade quality, but no permanent or long term adverse impacts would occur. Mitigation measures would be conducted concurrent with construction activities to protect water resources.
Cultural Resources	Ongoing deterioration of the National Register-eligible bridge would constitute an adverse effect in accordance with 36 CFR 800.9 (regulations of the Advisory Council on Historic Preservation addressing the criteria of effect and adverse effect). The setting of the Parkway's cultural landscape in this area and the visitor experience would also be negatively affected.	Although replacement of the bridge would have an adverse effect on this National Register-eligible structure, the NPS would implement appropriate mitigation measures in consultation with the State Historic Preservation Office. The setting of the cultural landscape and other aesthetic values contributing to the visitor experience would be temporarily disrupted during project construction.

TABLE 1. SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Impact Topic	Alternative A No Action	Alternative B Bridge Replacement (Proposed Action)
Visitor Use	Routine bridge maintenance would continue, causing traffic delays and detours. Temporary or permanent bridge closure would be a possibility.	Over the short term, visitors would experience additional noise, dust, fumes, possible delays, visual intrusion, the bypass routes, and construction vehicle traffic. In the long term, visitors would benefit from a reconstructed bridge that would provide long term, reliable driving conditions.
Parkway Operations	Operations would be disrupted while conducting ongoing and emergency bridge repairs and managing traffic. Cost of maintenance would increase.	Over the short term, operations would be disrupted by bridge construction. In the long term, operations would benefit by an improved and reliable bridge.
Cumulative Effects	No cumulative effects anticipated.	The other bridge replacements currently being constructed and planned for construction each represent an incremental loss of structural elements that contribute to the historical significance and integrity of the parkway, but also provide an incremental gain in positive visitor experience and efficient park operations.

AFFECTED ENVIRONMENT

Detailed information on Natchez Trace Parkway natural and cultural resources may be found in the 1987 GMP, 1990 Statement For Management, and the 1997 Resource Management Plan. A summary of the resources associated with this project follows.

BRIDGE LOCATION AND DESCRIPTION

Natchez Trace Parkway is an elongated park of 45,300 acres stretching an airline distance of 400 miles across Tennessee, Alabama, and Mississippi. From north to south, it reaches from just south of Nashville, Tennessee to Natchez, Mississippi. Vehicular access to the parkway is provided by numerous public and private roads and vehicle uses are many and varied, including recreational and commuter traffic. An average of about 8.5 million vehicles use the parkway each year.

The Sweetwater Branch bridge is located in southern Wayne County, Tennessee at Milepost 363.8. The Natchez Trace Parkway in vicinity of the Sweetwater Branch bridge runs east-west for a distance rather than the north-south direction of much of the parkway. Traffic in the northbound lane would be traveling toward the east in this location.

The bridge crosses a stream known as Sweetwater Branch and is surrounded by an agricultural field to the northeast, pasture to the southwest, and forest. Beaver activity to the northwest of the bridge has been ongoing and has flooded a large area. The shoulders of the road are mowed grasses.

PARKWAY SIGNIFICANCE

The Natchez Trace Parkway traverses a region rich in natural, historical, cultural and recreational resources. The story of the Natchez Trace is one of human endeavor, and through the interpretive process this story is waiting to be told to the unhurried traveler. Along the way the parkway visitor is presented with a multitude of opportunities to stop, reflect and enjoy all the region has to offer and to reflect on his predecessors who, many years ago, pounded the Natchez Trace into the southern landscape one step at a time.

The old Natchez Trace was, at first, a series of animal trails; then a trail for foot travelers, and pack animals; later it was widened for wagons. When surface conditions became impassable, the Trace was often moved a short distance to an improved site. From Middle Tennessee to Natchez, the Trace ran like a stream seeking the easiest passages fitted to its current of traffic.

The story of the Natchez Trace is basically the story of the people who used it: the Indians who traded and hunted along it; the "Kaintuck" boatmen who pounded it into a rough wilderness road on their way back from trading expeditions to Spanish Natchez and New Orleans; and the post riders, government officials, soldiers, General Andrew Jackson and the Tennessee Militia, and others who, from 1800 to 1830, made it a vital link between the Mississippi Territory and the fledgling United States.

In planning the commemorative parkway, it was determined that the road should parallel the route of the old Trace wherever possible, passing near remaining Trace segments and other historic sites. Other factors influencing its location included topography, population densities, natural features and existing land use patterns.

Over the years, many sections of the old Trace were improved and assimilated into the local road systems and came under the jurisdiction of the counties as part of the county road system. In other areas, segments of the old Trace were left virtually undisturbed and appear today as they did decades ago, as narrow wooded lanes meandering through the southern forest.

CULTURAL RESOURCES

The U.S. Congress established the Natchez Trace Parkway in 1938 to commemorate the Old Natchez Trace overland route between Natchez, Mississippi, and Nashville, Tennessee. The Parkway motor road, with its appurtenant structures and facilities, has evolved to now represent a historic designed landscape comprised of both natural and human-made features.

The Sweetwater Branch bridge (constructed in 1950) is identified as a structure contributing to the Parkway's historical significance. It was constructed in accordance with the design principles and overarching philosophy for the Parkway first articulated by NPS designers and landscape architects in the 1930s. The 105 ft.-long 3-span bridge is characterized by pigmented concrete, chamfered and pierced concrete railings visible from the motor road, and splayed termini.

Although two previously-identified prehistoric sites have been recorded in the general vicinity, there are no known archeological resources in the immediate project area. Archeological investigations, however, were not conducted when the bridge was first constructed. Consequently, archeological reconnaissance surveys will be conducted of all project areas prior to project construction.

The cultural landscape of the Parkway in the vicinity of the bridge is representative of that typically found along rural byways throughout this area of southern Tennessee. It is characterized by gently rolling topography with interspersed wooded and open areas bordering the riparian stream courses. Throughout the entire length of the Parkway, the defining characteristics of the cultural landscape are managed by the NPS to ensure that park visitors are afforded a continuous, serene and recreational travel experience. In partial fulfillment of this objective, Parkway designers have instituted measures to avoid traffic congestion, eliminate at-grade road crossings, and provide for the distant spacing of entrance and exit points.

VEGETATION AND SOILS

Both wetland and upland (non-wetland) vegetation is found in the project area. Vegetation in the upland or non-wetland areas are mainly forest and mowed lawns along the road shoulders. The forested upland is dominated by sugar maple (*Acer saccharum*) in the canopy layer; Eastern hop-hornbeam (*Ostrya virginiana*), black cherry (*Prunus serotina*), and sugar maple in the woody understory; and Japanese honeysuckle (*Lonicera japonica*), smooth Solomon's seal (*Polygonatum biflorum*), and spring beauty (*Claytonia virginica*) in the herbaceous layer. The mowed areas include Kentucky bluegrass (*Poa pratensis*), red clover (*Trifolium pratense*), white clover (*Trifolium repens*), and a variety of other species (AESGCI, 1998).

Vegetation found in the the palustrine wetland areas is classified as hydrophytic (i.e., plant life growing in water that is at least periodically deficient in oxygen as a result of excessive water content). The palustrine areas include both emergent and forested wetlands. Emergent wetlands are dominated by soft rush (*Juncus effusus*), stalk-grain sedge (*Carex x stipata*), Virginia bugleweed (*Lycopus virginicus*), beggartick (*Bidens frondosa*), and lady's thumb (*Polygonum persicaria*). The forested wetland inundated from the beaver activity contains many dead sweet gum (*Liquidambar styraciflua*) trees, but is dominated by speckled alder (*Alnus rugosa*) and soft rush growing on hummocks. The forested wetland that is not inundated is dominated by trident red maple (*Acer rubrum* var. *trilobum*) and sweet gum (*Liquidambar styraciflua*) in the canopy layer; trident red maple in the woody understory; and trident red maple seedlings, spotted jewelweed (*Impatiens capensis*), and marsh fern (*Thelypteris thelypteroides*) in the herbaceous layer.

Hydric soils characterized by low chroma matrix and mottling in the subsurface layers are in the wetland areas. The wetlands exhibited saturated conditions at or within 12 inches of the soil surface and, in some cases, exhibited oxidized root channels or manganese concretions. Most of the soils at the road shoulder are fill material.

Natural Resource Conservation Service (NCRS) maps indicated four soil types within the project area. The soils are found in the following locations:

- Riverby gravelly sandy loam, frequently flooded - eastern portion of the project area;
- Lee cherty silt loam, occasionally flooded - western portion of the project area;
- Lobelville cherty silt loam, occasionally flooded - along stream to north of the bridge; and
- Humphreys cherty silt loam, 2-5% slopes - small area southwest of the bridge.

Only Lee cherty silt loam is identified as a hydric soil.

WILDLIFE

A variety of wildlife occurs in and around the project area. Native mammals include whitetailed deer, black bear, red and gray foxes, raccoons, gray and fox squirrels, cottontails, opossum, and woodchucks. The habitat also supports almost a hundred species of birds, including wild turkey. The region is good snake country, with more than two dozen species occupying uplands and lowlands.

Beavers are resident in the area and have created a dam that is impounding water between the dam and the road. Based on regional mapping, it appears that beaver activity has been prevalent in the area for at least 17 years.

SPECIAL STATUS SPECIES

No federally listed species are found in the project area. The state of Tennessee lists two plant and one fish species: Goldenseal (*Hydrastis canadensis*) that is a species of concern and considered commercially exploited; the Michigan lily (*Lilium michiganense*) that is threatened; and the blotchside darter (*Percina burtoni*) that is deemed in need of management. Table 2 presents the status, habitat needs, and occurrence of these listed species in the vicinity of Sweetwater Branch.

WETLANDS

Both palustrine and riverine wetlands were identified in the vicinity of the Sweetwater Bridge (as noted by vegetation description). Palustrine wetlands are non-tidal wetlands dominated by trees, shrubs, and persistent emergents that include areas such as bogs, marshes, swamps, and ponds. Palustrine wetlands were both emergent and forested. Riverine wetlands at Sweetwater Branch are those contained within the stream channel but not dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens. These wetlands are bounded on the landward side by upland, by the channel bank (including natural and man-made levees), or by wetland dominated by vegetation (mentioned above). The boundary between wetland and deepwater habitat in the riverine system lies at a depth of about 6 feet below low water. No deepwater habitat is found in the creek.

Palustrine wetlands exhibited ponding in some portions, saturated soils at the ground surface, and a depth to standing water of 18 inches or less. Indicators of long-term hydrology within the wetlands included water-stained leaves, hummocking, inundation, and saturation. All of the palustrine wetlands drain directly to Sweetwater Branch via short open water drainages. The wetland north of the parkway appears to be created primarily by overflow from the beaver pond. The beaver dam is located on a stream a few hundred feet north of the parkway.

These palustrine wetlands provide flood storage and habitat for a variety of wildlife species. They help to filter sediment, pollutants, and excess nutrients from road and agricultural field runoff as it travels to Sweetwater Branch. The beaver-impounded wetland area provides an unusual and aesthetic break in the visual landscape along the Parkway.

WATER QUALITY

Sweetwater Branch is a headwaters stream that rises in hilly terrain west of the bridge. The stream merges with Scab Branch to form Factory Creek in the Shoal Creek drainage of the Tennessee River.

The water quality in Sweetwater Branch is generally good. No point source discharge is known to occur along the stream, although runoff into the stream from adjacent agricultural lands in the stream's floodplain could contain pesticides or fertilizers from farming and grazing operations.

TABLE 2: SPECIAL STATUS SPECIES - SWEETWATER BRANCH

Species	Federal Status	State Status	Habitat type/Occurrences
Blotchside darter <i>Percina burtoni</i>		D	Blotchside darters are typically found in medium-sized to large creeks and small to medium rivers with warm, usually clear water, and moderate gradient. Young occur in slow runs and pools; adults and larger juveniles occupy riffles and runs and occasionally pools. Substrates vary, but usually consist of gravel and boulders or rubble lacking siltation. The darter is intolerant of water impoundments. According to a recent environmental assessment on the Scab Branch bridge replacement, the darter is known to occur in the Sweetwater Branch State Natural Area, located upstream from the Sweetwater bridge.
Goldenseal <i>Hydrastis canadensis</i>		S-CE	Goldenseal is a small perennial herb with medicinal qualities that is native to the northern and eastern forested regions of North America. It is often found in moist forest soils and damp meadows similar to those found in the project area. Occurrences of the plant have been noted upstream from the bridge along Sweetwater Branch. Goldenseal has been commercially exploited, meaning that large numbers of plants have been taken from the wild due to propagation or cultivation that has been insufficient to meet market demand.
Michigan lily <i>Lilium michiganense</i>		T	Habitat requirements appear to be similar to that of the goldenseal. Occurrences of the lily have been noted upstream from the bridge along Sweetwater Branch.

T: threatened

S-CE: species of concern that is commercially exploited.

D: deemed in need of management

ENVIRONMENTAL CONSEQUENCES

The natural, cultural, and social effects of implementing the no action and bridge replacement alternative for Sweetwater Branch bridge are presented by alternative and impact topic. The discussion by topic allows for comparison of impacts between alternatives. Cumulative effects (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) are presented at the end of each alternative discussion if they occur.

ALTERNATIVE A - NO ACTION

Vegetation, Soil, and Wildlife

Analysis. There would be no immediate impacts to biotic communities at Sweetwater Branch, but the remote possibility exists that the bridges could eventually fail and collapse into the creeks. This would create immediate, unplanned, and unmitigated impacts to the creek.

Conclusion. Negligible effects on biotic communities would occur.

Special Status Species

Analysis. No immediate impacts to the blotchside darter, Michigan lily, or Goldenseal would occur. If the bridge ever failed, debris could fall into the stream and affect fish.

Conclusion. No new impacts to federally or state-listed species would occur.

Wetlands

Analysis. There would be no new impacts to any wetlands at the project site.

Conclusion. No new impacts to wetlands would occur.

Stream Processes and Water Quality

Analysis. No new water impacts to Sweetwater Branch would occur. Although a very remote possibility, if the bridge ever failed, streamflow could be disrupted and water quality diminished by concrete debris in the streams.

Conclusion. No new water quality or stream flow impacts would occur.

Cultural Resources

Analysis. Deterioration of the Sweetwater Branch Bridge is an irreversible process resulting from its structural composition; costly repairs can only slow this process but cannot ultimately check or prevent its occurrence. Were the NPS to take no action to arrest the ongoing deterioration of this National Register-eligible structure, this would constitute an adverse effect under regulations of the Advisory Council on Historic Preservation addressing the criteria of effect and adverse effect. Neglect of a historic property resulting in its deterioration or destruction represents one of several adverse effect conditions [36 CFR 800.9(b)(4)].

The cultural landscape in the vicinity of the bridge would not be directly affected other than the eventual loss of the bridge itself. However, the decision to not replace the bridge would negatively impact the continuous, serene and recreational travel experience and setting afforded park visitors. This would occur as a result of traffic limitations, and rerouting of Parkway traffic around the affected segment

Conclusion. Ongoing deterioration of the National Register-eligible bridge would constitute an adverse effect in accordance with 36 CFR 800.9 (regulations of the Advisory Council on Historic Preservation addressing the criteria of effect and adverse effect). The setting of the Parkway's cultural landscape in this area and the visitor experience would also be negatively affected.

Visitor Use

Analysis. If the bridge was left in its current condition, routine bridge maintenance would continue and repair work would cause traffic delays and detours. Delays experienced by visitors using the bridge would be expected to increase in duration and frequency over time as the bridge aged and required more intensive maintenance. Some visitors would be frustrated because of these delays.

Eventually, the bridge would deteriorate beyond the capabilities of parkway maintenance staff to repair. Structural problems would continue to a point where major corrective action would be necessary and temporary or permanent bridge closure would be a possibility. Closure of the bridge would force parkway traffic to detour on to local and state roads. These detours could cause additional travel time and mileage for visitors, local residents and business traffic using the Natchez Trace Parkway, diminishing visitor experience and irritating commuters.

Conclusion. This alternative would not appreciably extend the life of the bridge. Routine bridge maintenance would continue, causing traffic delays and detours; temporary or permanent bridge closure would be a possibility.

Parkway Operations

Analysis. Parkway operations would be disrupted over time by ongoing bridge maintenance and emergency bridge repairs and resulting traffic backups or delays. Administrative and emergency access through the bridge could be restricted by traffic congestion caused by bridge repairs. Bridge closures because of safety concerns could require parkway staff to help manage or direct detour traffic. Emergency response time for parkway staff would be increased by any detours around the closed bridge and by traveling on other roads potentially congested with detoured traffic.

Federal funds could be saved by not replacing the existing bridge; however, this potential cost savings would eventually be negated by increased maintenance costs as the bridge continues to deteriorate.

Conclusion. Parkway operations would be temporarily disrupted while conducting ongoing and emergency bridge repairs. Funds would be saved with no bridge reconstruction; however, savings would be eventually negated by increased maintenance costs.

ALTERNATIVE B - PROPOSED ACTION

Vegetation and Soils

Analysis. Vegetation and soils within the project construction limits would be compacted and trampled by the presence of construction equipment and workers. With loss of vegetation, some soil erosion could be expected. To minimize such losses, previously disturbed areas would be used for construction staging or other activities where possible. Vegetation and soils removed or damaged within the construction zone, including streambanks, would be restored following construction as described in the mitigation section. Topsoil would be re-spread and native plant species or grasses planted in areas where vegetation was removed.

Vegetation within the project site that would be removed includes upland and wetland species as identified in the affected environment. Approximately 0.5 acres would be impacted by the bypass road: approximately 0.3 acres of agricultural field on the east side of the bridge and 0.2 acres of forest, road shoulder, and emergent and palustrine wetlands on the west side. Vegetation impacted is comprised of species common throughout the region and the loss of these few individuals would not be expected to be an appreciable loss to the biotic community.

Additionally, trees adjacent to project areas, although not removed, may be at risk for damage by construction equipment. The construction zone would be identified with silt fencing (or a similar material) and the contractor would be instructed to stay within the construction zone to prevent such damage.

Conclusion. Short-term, temporary impacts would occur to vegetation and soils during construction in the project area. Soils would be impacted by construction equipment and personnel and some soil erosion would occur until revegetation efforts could be completed. Approximately 0.5 acres of agricultural land and palustrine wetlands would be removed. Revegetation would be encouraged following construction.

Wildlife

Analysis. A slight temporary decrease in habitat quality for all wildlife within or near the project areas would occur due to noise and activity during construction. Wildlife intolerant of such activities would move out of the area during construction and recolonize it following construction. The beavers would not be disturbed. However, some burrowing and soil-dwelling organisms would be destroyed by earth-moving activities.

The vegetation temporarily lost during construction would result in some loss of habitat for resident birds and rodents. However, overall habitat loss from a regional standpoint would be negligible. If possible, vegetation removal would be timed to minimize any impacts to wildlife, particularly during the spring nesting season for birds.

No permanent impacts on aquatic wildlife are anticipated because geotextile fabric would be placed on the stream bottom for its protection and culverts would maintain streamflows through the work areas and under the bypass roads. The habitat within the 0.08 acre construction zone in Sweetwater Branch would be unsuitable for aquatic life during the eight month construction period because they would be dry. However, with careful construction practices and enforced mitigation measures, the affected creek portions would be expected to quickly recover and experience no long term impacts.

Conclusion. Bridge replacement would have no long term effects on wildlife populations or their habitat. Only temporary decreases in the quality of terrestrial and aquatic wildlife habitat would occur during construction.

Special Status Species

Analysis. The blotchside darter is known to occur in Sweetwater Branch. It is not likely that any adverse impacts would occur to the darter because mitigation measures applied throughout the construction process would minimize any anticipated impacts, as outlined below.

1) The 48 inch diameter culverts proposed under the temporary bypass road and the temporary 24 inch culverts proposed through the work area under the existing bridge decks would be adequate in diameter to allow fish passage in Sweetwater Branch. Culverts would be installed with the invert directly on the temporary geotextile fabric that would lie directly on the existing channel bottom. The culvert outlet ends would be monitored for displacement of channel material during the blotchside darter spawning season. Material would be adjusted at the outlet ends to avoid creating any impediment to fish passage.

2) The measures for erosion and sediment control, streambed, and water quality protection proposed in the mitigation section would prevent any change in habitat from excessive sedimentation, increases in water temperature, turbidity, increased particulate matter, or similar factors that would adversely impact these fish. Such measures include installation of silt fences to minimize siltation, diversion of streamflow through temporary culverts to protect water quality, installation of geotextile fabric to avoid damage to the stream bottom, and placement of geotextile fabric on disturbed areas prior to revegetation along the stream banks. These and other measures outlined in the construction and mitigation sections would be implemented during the construction and post construction phases to help assure habitat availability in perpetuity.

Even with the creek diversion culverts in place and functioning properly, work in and near the Sweetwater Branch project site could occasionally cause some short term increases in suspended sediment concentrations and turbidity downstream. However, these would be infrequent events of short duration and such pulses of material would quickly flush from the system and present no long term effects. Since the blotchside darter are occasionally exposed to high sediment levels caused by erosion during storm events and spring runoff, they would be expected to tolerate minor increases in sediment for short periods.

3) Construction activity in the stream or on floodplain or seepage areas adjacent to the stream would not occur during the blotchside darter spawning season of May 1 to July 1 to prevent any disturbance to spawning individuals. Areas within the construction zone would not be available for spawning activities. As noted earlier, the culverts would allow fish passage throughout the spawning season.

The project area surrounding the bridge may provide habitat for the two state-listed plants: Goldenseal and the Michigan lily. Although no plants have been reported in the vicinity of the bridge, surveys would be conducted for these species within the project area prior to construction. If plants are discovered, mitigation would be applied to ensure that no existing populations are damaged during construction.

Conclusion. The proposed action with implementation of required mitigation would not adversely impact the blotchside darter. Construction mitigation measures would maintain existing habitat quality by preventing detrimental changes in water quality and streambed characteristics. Any discovered populations of Goldenseal or Michigan Lily would be protected throughout construction resulting in no long term impact.

Wetlands

Analysis. Approximately 0.18 acres of riverine and palustrine wetlands would be temporarily disturbed by construction. Approximately 0.08 acres are riverine wetlands and 0.10 acres are palustrine forested and emergent wetlands. An additional 0.02 acres of palustrine wetland would be permanently impacted by minor fill placement related to widening of the bridge approach for safety reasons.

More specifically, temporary wetland impacts would result from several construction activities: the placement of fill for the stream diversion and bypass route (the bypass route would be developed on top of the stream diversions); disturbance of wetlands both within and outside the stream channel within approximately 20 feet of the existing bridge for construction vehicle movement; and the placement of silt fences. Geotextile fabric and washed stone that would be placed under the bridge and approximately 8 to 10 feet beyond the bridge for construction equipment access would help protect the stream bottom and minimize potential erosion and compaction. Additionally, fabric and stone would be placed on the stream bed beneath the temporary road to further protect the streambed. Both the streambed area under the bridge (plus the 8 to 10 feet) and the streambed area under the temporary road were computed to determine the total temporary impact to riverine wetlands at the bridge.

Restoration. All wetlands temporarily impacted by the bypass road would be simply restored. At the end of project construction, all temporary fill, culverts, sand bags, and geotextile fabric would be removed. Disturbed areas outside of the stream channel would be restored back to the original contours. Because the local hydrology would remain the same, water would naturally return to those palustrine wetland areas impacted by the bypass road. Vegetation would also naturally reoccur in these areas.

Interim Wetland Guidelines. A statement of findings (SOF) would not be required to implement the proposed action because the primary wetland impacts would be temporary, and those impacts that are permanent would be less than 0.10 acres. The NPS Interim Wetland Guidelines (1998), Directors Order 77.1 Wetlands Protection, 4.2 Excepted Actions, identifies certain types of activities that require modified approaches to achieving objectives of E.O. 11900 while reducing delay and paperwork. "Excepted Actions" are those actions that may be excepted from certain SOF requirements and certain compensation requirements. National Park Service Interim Wetland Guidelines, 4.2.A.1.f (last paragraph), allows for

minor (a total of 0.1 acre or less) deviations in a structure's configuration or fill footprint due to subsequent changes in construction codes or safety standards.

The widening of the bridge approaches that would permanently impact 0.02 acres of wetlands at Sweetwater Branch has been determined to be a safety-related action as described above. Because less than 0.1 acre of jurisdictional wetlands would be permanently impacted, no SOF is required for this proposal (Leslie Krueger, Natural Resource Specialist, Water Resources Division, NPS Washington Office, June 4, 1998).

Conclusion. Short-term, minor impacts would occur to approximately 0.18 total acres of palustrine and riverine wetlands that would be impacted by the temporary stream diversions and bypass road at Sweetwater Branch. Impacts would be minor because wetland restoration would occur following construction. Permanent, but negligible, impacts of 0.02 acres would occur for safety-related reasons.

Stream Processes and Water Quality

Analysis. Water quality would be adequately protected through numerous mitigation measures such as silt fencing, geotextile fabric, and diversion culverts (see special status species discussion). In addition, water from any cofferdams inside the construction zone would be pumped from the cofferdams to settling ponds constructed in upland areas away from the creek rather than being discharged directly into Sweetwater Branch. The settling ponds would filter sediment-laden water prior to the water being discharged off-site. Throughout all aspects of the project, water quality of Sweetwater Branch would be maintained at or above minimum levels required by the State of Tennessee Water Quality Control Board.

Some minor impacts would occur. During bridge demolition and construction, slight amounts of soil, gravel, and debris (dust, mortar, and similar small sized material) could periodically wash into the creeks. These would be infrequent events of short duration and such pulses of material would quickly flush from the systems and present no long term effects. Mitigation measures should include best management practices, possible netting to prevent blocks of material from falling into the stream, falsework and other construction material to catch any spilled material, erosion control during bridge removal and construction, and revegetative actions during the post-construction period.

Conclusion. Water quality would be maintained at or above levels required by the state. Some infrequent events of short duration could temporarily degrade quality, but no permanent or long term adverse impacts would occur. Mitigation measures would be conducted concurrent with construction activities to protect water resources.

Cultural Resources

Analysis. Because the Sweetwater Branch bridge has been determined eligible for the National Register of Historic Places, its replacement would have an adverse effect in accordance with 36 CFR 800.9, regulations of the Advisory Council on Historic Preservation addressing the criteria of effect and adverse effect. There is no suitable alternative to replacement of the bridge; the "no action" alternative would similarly result in an adverse effect as a consequence of ongoing deterioration. In consideration of the nature of the bridge's structural deterioration and the need to provide safe, continuing use of the Natchez Trace Parkway, its replacement has been determined the only prudent alternative.

The replacement bridge would retain to the extent possible the distinguishing features, scale, and materials contributing to the Parkway's designed cultural landscape. Designs for the replacement bridge would continue the more than fifty year effort by the NPS to ensure that engineered structures along the Parkway harmonize with the surrounding landscape.

The NPS would mitigate the adverse effects of bridge replacement by following the stipulations agreed to in a memorandum of agreement with the Tennessee State Historic Preservation Officer, and with the concurrence of the Advisory Council on Historic Preservation (see discussion under cultural resources mitigation). There are no known archeological resources within the areas of potential project effects. However, all areas of proposed ground-disturbance would be assessed by a qualified NPS archeologist, and archeological monitoring of construction would be implemented if necessary.

Besides the replacement of the bridge, the cultural landscape in proximity to the project area would remain largely unaffected under this alternative. Replacement of the bridge would ultimately permit the NPS to perpetuate the continuous, serene, and recreational travel setting and experience afforded park visitors. No increases in recreational or non-recreational vehicle use levels on the Parkway motor road would result from the proposed action.

Conclusion. Although replacement of the bridge would have an adverse effect on the National Register-eligible structure, the NPS would implement appropriate mitigation measures in consultation with the State Historic Preservation Office. The setting of the cultural landscape and other aesthetic values contributing to the visitor experience would be temporarily disrupted during project construction.

Visitor Use

Analysis. Bridge construction would be expected to occur over an approximate eight month period starting in early 1999. The Tennessee Department of Transportation would receive notice of the construction and the general public would be notified through public media and roadside signing. Construction signing would be installed to reduce traffic hazards due to road work. No construction activities would occur on weekends or legal holidays except for emergencies.

At the construction site, the posted speed limit on the bypass route would be 20 mph to encourage drivers to slow before entering the bypass route and maintain a safe speed while on the route. Since the bypass route and construction site are along the parkway, the delays could cause some congestion during periods of heavy visitation. Signing and traffic control would continue to be maintained on both sides of the bridge during construction.

In the short term, construction vehicles associated with the project would contribute to already heavy traffic using the parkway and associated feeder roads. Because of frequent use by heavy vehicles, some potential for road and bridge damage may occur. However, enforcement of weight limits and other federal, state, and local regulations and contractual stipulations would minimize the potential for conflicts and damage. During construction activities, visitors using the parkway would be subject to truck traffic hauling construction material, noise, dust, and visual intrusion. At times, visitors could experience minor traffic delays due to congestion. In the long term, reconstructed bridge would enhance visitor experience by requiring less maintenance and providing a safe and undisrupted drive.

Conclusion. Over the short term, visitors would experience additional noise, dust, fumes, possible delays, visual intrusion, the bypass routes, and construction vehicle traffic. In the long term, visitors would benefit from a reconstructed bridge that would provide long term, reliable driving conditions.

Parkway Operations

Analysis. Although funds would be spent on bridge construction, the replacement bridge would require few repairs or maintenance beyond normal and routine upkeep. If the proposal is implemented and the bridge replaced, increasingly frequent and costly repairs to the deteriorating bridge structure would not be required. Over the short term, parkway operations would be slightly disrupted by bridge construction. Over the long term, parkway operations would benefit by an improved and reliable bridge.

Conclusion. Over the short term, parkway operations would be disrupted by bridge construction. Over the long term, parkway operations would benefit by an improved and reliable bridge.

Cumulative Effects

Analysis. The Scab Branch bridge is currently being replaced and three other bridges, the Cypress Creek, Cypress Creek Relief, and Cooper Branch bridges, are planned for replacement as well. Replacement of each bridge would represent an incremental loss of structural elements contributing to the overall historical integrity and significance of the Parkway's designed cultural landscape.

Each bridge that is replaced provides an incremental increase in a positive visitor experience and efficient park operations for the Natchez Trace Parkway. Visitors, park staff, and residents would benefit from reconstructed bridges that would provide long term, reliable driving conditions.

Conclusion. The other bridge replacements currently being constructed and planned for construction each represent an incremental loss of structural elements that contribute to the historical significance and integrity of the parkway, but also provide an incremental gain in positive visitor experience and efficient park operations.

COMPLIANCE

If the proposed action is implemented, the NPS would comply with all applicable laws and executive orders. Laws and executive orders relevant to this proposed plan are identified below.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

The environmental analysis was prepared in accordance with the regulations of the Council on Environmental Policy Act (CEQ) (40 CFR 1500 et seq.) and in part 516 of the U.S. Department of the Interior's Departmental Manual (516 DM).

The National Environmental Policy Act (NEPA) is the basic national charter for environmental protection; among other actions it calls for an examination of the impacts on the components of affected ecosystems. The 1987 GMP, 1988 NPS Management Policies, NPS-77 (Natural Resources Management), and the 1997 Resources Management Plan, Natchez Trace Parkway, among other NPS and park policies, provides general direction for the protection of the natural abundance and diversity of all the park's naturally occurring communities.

Various agencies have been contacted and consulted as part of this planning and environmental analysis effort. Appropriate federal, state, and local agencies have been contacted for input, review, and permitting in coordination with other legislative and executive requirements.

SPECIAL STATUS SPECIES

Endangered Species Act of 1973, as amended (16 USC 1531 et seq.). Section 7 of the Endangered Species Act requires all federal agencies to consult with the U.S. Fish and Wildlife Service to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitats.

The USFWS has been consulted regarding special status species in the project areas. No federally listed species were identified.

FLOODPLAINS AND WETLANDS

Executive Orders 11988 ("Floodplain Management") and 11990 ("Protection of Wetlands") require an examination of impacts to floodplains and wetlands; of potential risk involved in placing facilities within floodplains, and protecting wetlands. The 1988 NPS Management Guidelines, NPS-2 (Planning Guidelines), NPS-12 (National Environmental Policy Act Guidelines), the 1987 GMP, and the 1997 Resource Management Plan, Natchez Trace Parkway provide guidelines on developments proposed in wetlands and floodplains.

Executive Order 11990, "Protection of Wetlands," requires federal agencies to avoid, where possible, impacts on wetlands. If required, a Statement Of Findings (SOF) would address any concerns for wetlands

and also any permitting actions required under section 401 of the Clean Water Act and any state requirements. Approximately 0.02 acres of jurisdictional wetlands would be permanently impacted should the proposal be implemented.

The NPS Interim Wetland Guidelines 98, Directors Order 77.1 Wetlands Protection, 4.2 Excepted Actions, identifies certain types of activities that require modified approaches to achieve objectives of E.O. 11900 while reducing delay and paperwork. "Excepted Actions" are those actions that may be excepted from certain SOF requirements and certain compensation requirements. National Park Service Interim Wetland Guidelines 98, 4.2.A.1.f (last paragraph), allows for minor (total of 0.1 acre or less) deviations in the structure's configuration or fill footprint due to subsequent changes in construction codes or safety standards (e.g. handicap accessibility), but does not apply to other types of reconstruction/expansion (e.g. road widening or rerouting) or conversion to other uses that would have additional adverse impacts on wetlands.

The widening of the bridge approaches have been determined to be a safety-related action as described in National Park Service Interim Wetland Guidelines 98, 4.2.A.1.f (last paragraph) (described above). Less than 0.1 acre of jurisdictional wetlands would be permanently impacted by the action. Therefore, no Statement Of Findings is required for this proposal (Leslie Krueger, Natural Resource Specialist, Water Resources Division, NPS Washington Office, June 4, 1998).

Executive Order 11988, "Floodplain Management," requires all federal agencies to avoid construction within the 100-year floodplain unless no other practical alternative exists. Certain construction within a 100-year floodplain requires that a Statement Of Findings be prepared and accompany a Finding Of No Significant Impact. Some actions, such as bridges, are excepted from Executive Order 11988. In compliance with the NPS Floodplain Management Guideline (1993, V, B Excepted Actions) development of these bridges is exempt from Executive Order 11988 (Floodplain Management). Therefore, no Statement Of Findings is required for this project.

SECTION 404 AND 401 OF THE CLEAN WATER ACT

Section 404 of the Clean Water Act (33 USC 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 USC 401 et seq.) stipulate that the U.S. Army Corps of Engineers issue permits for work affecting wetlands and navigable waters of the United States.

The U.S. Army Corps of Engineers, Nashville District, in Nashville, Tennessee was consulted via a letter dated May 29, 1998 regarding this project. A summary of the project, including potential impacts to wetlands, was provided by the FHWA. Request for a nationwide permit was made because of satisfactory consultation with USFWS. Possible nationwide permits that the proposed work could fall under include:

Nationwide Permit #3 - Maintenance: The repair or replacement of any previously authorized, currently serviceable structure or fill, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. The bridges would be replaced in the same locations and purposes of the original designs.

Nationwide Permit #18 - Minor Discharges: No more than 25 cubic yards of fill may fall below the Ordinary High Water Mark and no more than 1/10 acre of wetlands or riffle pool complexes may be impacted. All bridge work meets these criteria.

The bridge replacement also requires compliance with General Condition 9 (water quality, Section 401 of the Clean Water Act) of the COE Nationwide Permit process. Clean Water Act section 401 certification or waiver of certification would be obtained through the Tennessee Department of Environment and Conservation, Division of Water Pollution Control, in Nashville Tennessee. Application was made for a Tennessee Aquatic Resource Alteration Permit (ARAP) on May 28, 1998 by FHWA to obtain this approval.

All 404 and state permits (ARAP) would be received by FHWA prior to any bridge construction work.

TENNESSEE VALLEY AUTHORITY ACT

The Tennessee Valley Authority Act, as amended, prohibits the construction, operation, or maintenance of any structure affecting navigation, flood control, or public lands or reservations across, along, or in the Tennessee River or any of its tributaries until plans for such construction, operation, and maintenance have been submitted to and approved by the Tennessee Valley Authority (TVA). A request for approval of the proposed bridge reconstructions was forwarded to the TVA office in Muscle Shoals, AL on May 27, 1998 by FHWA. The permit for the COE and the TVA is a joint permit that has been submitted to both agencies by FHWA.

NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES)

The Storm Water Rule (40 CFR, Parts 122, 123, and 124) requires a National Pollution Discharge Elimination System (NPDES) permit on certain categories of storm water discharge. Actions associated with road construction (including bridges), such as clearing and grading activities that exceed five acres on an individual project, would require a NPDES permit. It is not anticipated that bridge construction activities would exceed five acres should the proposal be selected and implemented.

CULTURAL RESOURCES

The NPS is mandated to preserve and protect cultural resources under requirements of the NPS organic act of August 25, 1916; specific legislation such as the Antiquities Act of 1906, the National Historic Preservation Act of 1966 (as amended), the National Environmental Policy Act of 1969 (as amended); NPS Management Policies, the Cultural Resource Management Guideline (NPS 28), and the Advisory Council on Historic Preservation's regulations implementing Section 106 of the National Historic Preservation Act (36 CFR 800: Protection of Historic Properties). Other relevant policy directives and legislation are detailed in NPS 28.

Section 106 of the National Historic Preservation Act requires that federal agencies having direct or indirect jurisdiction over undertakings consider the effect of those undertakings on historic properties on or eligible for listing on the National Register of Historic Places, and afford the Advisory Council on Historic Preservation, the state historic preservation office, and other concerned parties, an opportunity to comment. Undertakings described in this environmental assessment will be reviewed in accordance with the National Historic Preservation Act, and the 1995 programmatic agreement among the NPS, the National Conference of State Historic Preservation Officers, and the Advisory Council on Historic Preservation.

As noted earlier, the NPS (Denver Service Center) would consult with the Tennessee State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation. DSC would prepare an MOA stipulating measures that would be undertaken to mitigate removal of the bridges and facilitate its signing by all consulting parties. Natchez Trace Parkway staff, in cooperation with DSC, would prepare photographic documentation of the bridges prior to removal, according to standards mutually agreed upon with the SHPO.

SELECTED REFERENCES

Amy S. Greene Environmental Consultants, Inc. 1998. Wetland and Open Water Delineation Report for Natchez Trace Parkway Bridge Replacements at Sweetwater Branch, Cypress Creek and Cypress Creek Relief, and Cooper Branch, Wayne County, TN. Prepared for the National Park Service, Denver, Co.

Federal Highway Administration. 1997 and 1998. Plans for Proposed Project PRA-NATR 1H10,J14, Replace Bridges over Dulen Branch; Cypress Creek Relief; Cypress Creek; Sweetwater Branch, Wayne County, Tennessee.

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National Park Service. Archeological site reports (NATR-158, Snowball I; and NATR-159, Snowball II), NPS Southeast Archeological Center, Tallahassee, Florida.

National Park Service. 1987. Natchez Trace Parkway, General Management Plan/Environmental Assessment.

Tennessee Department of Environment and Conservation. 1992. Tennessee Erosion Control Handbook. Nashville, Tennessee.

Tennessee Department of Environment and Conservation. 1992. Reducing Nonpoint Source Water Pollution by Preventing Soil Erosion and Controlling Sediment on Construction Sites. Nashville, Tennessee.

Tennessee Department of Environment and Conservation. 1994. Riparian Restoration and Streamside Erosion Control Handbook. Nashville, Tennessee.

US Fish and Wildlife (Cowardin, L.M., V. Carter, et al.). 1979. Classification of Wetlands and Deepwater Habitats of the United States (FWS/OBS-70/31). Washington, D.C.

US Army Corps of Engineers. 1987. Corps of Engineers Wetlands Delineation Manual (Technical Report Y-87-1). Washington, D.C.

CONSULTATION/COORDINATION

PREPARERS

National Park Service, Denver Service Center

Bob Felker, FHWA Liaison - Landscape Architect
Karen Lusby, Natural Resource Specialist
Steve Stone, Natural Resource Specialist
Steve Whissen, Cultural Resource Specialist

Consultants

National Park Service, Natchez Trace Parkway

Sara Amy Leach, Cultural Resource Specialist
Gary Mason, Natural Resource Specialist
D. Craig Stubblefield, Chief of Resources Management
Stennis Young, Chief of Maintenance

National Park Service, Denver Service Center

Dave Laux, Project Manager
Sarah Bransom, Quality Leader, Resource Planning

Federal Highway Administration, Eastern Federal Lands Highway Division

Kenneth Atkins, Project Manager
Jack Van Dop, Environmental Compliance Specialist

Appendix A

US Fish and Wildlife Service List of Special Status Species dated December 15, 1997



United States Department of the Interior

FISH AND WILDLIFE SERVICE

446 Neal Street
Cookeville, Tennessee 38501

December 15, 1997

Mr. Jack Van Dop
Federal Highway Administration
21400 Ridgetop Circle
Sterling, Virginia 20166

Dear Mr. Dop:

Thank you for your letter and enclosures of November 5, 1997, concerning the proposed replacement of the Dulen Branch, Cypress Creek and Sweetwater Creek bridges along the Natchez Trace Parkway in Wayne County, Tennessee. The Fish and Wildlife Service (Service) has reviewed the information submitted and offers the following comments.

According to our records, the endangered slackwater darter (*Etheostoma boschungii*) is known to occur within the Cypress Creek watershed. The Service has designated Cypress Creek and Dulen Branch as critical habitat for the slackwater darter. You should assess potential impacts and determine if the proposed projects may affect this species or if they would destroy or adversely modify critical habitat. A copy of your findings and any supporting data should be submitted to this office for review and concurrence. A finding of "may affect" could require initiation of formal consultation.

Information available to the Service indicates that wetlands exist in the vicinity of the Cypress Creek and Dulen Branch projects. Attached is a copy of a portion of the National Wetlands Inventory's Cypress 1m quadrangle with the referenced wetlands highlighted. This information is provided for your convenience. Our wetlands determination has been made in the absence of a field inspection and does not constitute a wetlands delineation for the purposes of Section 404 of the Clean Water Act. The Corps of Engineers should be contacted regarding the presence of regulatory wetlands and the requirements of wetlands protection statutes.

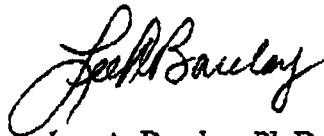
The Service is concerned that highway projects frequently accelerate erosion and sedimentation in streams, resulting in adverse effects to the aquatic environment. The use of heavy equipment to move earth and existing vegetation disrupts natural drainage patterns and exposes large areas of disturbed soil to erosion. Excessive sedimentation can clog stream channels and contribute to increased flooding. It can also increase water temperatures and cause oxygen demands which can damage or destroy fish and invertebrate populations. Deposition of sediment on the channel

bottom also degrades aquatic habitat by filling in substrate cavities, burying demersal eggs, and smothering bottom organisms. In addition, turbidity, as induced by accelerated erosion and sedimentation, results in further damage to aquatic systems. Increased particulate matter suspended in the water column may drive fish from the polluted area by irritating the gills, concealing forage, and/or destroying vegetation that may be essential for spawning and cover habitat for particular species. Turbidity also degrades water quality by reducing light penetration, pH and oxygen levels, and the buffering capacity of the water. Degraded water quality may continue far downstream from the point where the erosion occurs.

Prevention of excessive sedimentation can occur only through application of Best Management Practices during daily construction activities. Rigid application of the Kentucky Transportation Cabinet's Specific Specifications for Road and Bridge Construction and the Federal Highway Administration's Best Management Practices for Erosion and Sediment Control can alleviate most sedimentation problems; however, in some cases additional measures will need to be taken by on-site inspectors and construction representatives.

Your concern for the protection of endangered species is appreciated. If you have questions, or if we can be of further assistance, please contact Timothy Merritt of my staff at 931/528-6481.

Sincerely,

A handwritten signature in black ink, appearing to read "Lee A. Barclay". The signature is fluid and cursive, with the first name "Lee" being more prominent.

Lee A. Barclay, Ph.D.
Field Supervisor

Attachment