

**ENVIRONMENTAL ASSESSMENT  
CITY OF RIDGELAND, MS  
PROPOSED HORIZONTAL DIRECTIONAL DRILL OF NATCHEZ TRACE PARKWAY  
MADISON COUNTY, MISSISSIPPI**

**NATIONAL PARK SERVICE**  
2680 Natchez Trace Parkway  
Tupelo, MS 38804

Submitted by:  
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## **1.0 PROJECT PURPOSE AND NEED**

### **1.1 PURPOSE AND NEED FOR THE PROPOSED ACTION**

Currently the White Oak Creek drainage basin in the City of Ridgeland is served by a series of lift stations and force mains that pump wastewater into the adjacent Purple Creek Interceptor. This mode of operation cannot be sustained indefinitely because growth in both the White Oak Creek and Purple Creek drainage basins will soon exceed the design capacity of the Purple Creek Sewer Interceptor. This project will provide a gravity sewer interceptor to the White Oak Creek drainage basin that will transport the wastewater into the City of Jackson wastewater system for treatment.

The National Park Service (NPS) is considering a proposal by the City of Ridgeland, MS to install a 16-inch O.D. high-density polyethylene (HDPE) gravity sewer main using horizontal directional drilling (HDD) technology under the Natchez Trace Parkway at mile marker 99.8 in Madison County, Mississippi. By using this method of installation a minimal impact will be made to the land surface resources of the park. The purpose of this gravity sewer is to pick up two lift stations north of the Parkway that will be taken out of service. The wastewater will then be transported south by gravity and connected to the city of Jackson's 30-inch interceptor just outside the southern corporate limit of Ridgeland.

The lift stations that serve the area are operated on 110 volt power because three phase power is not available in the area. These lift stations experience frequent failure due to the small 110 volt motors that must be used to operate the pumps. These failures if unnoticed could cause raw sewage to overflow from the lift stations and spill out on to private property or into White Oak Creek.

This environmental assessment has been prepared to analyze the impacts on the Natchez Trace Parkway of the two potential alternatives for completing the proposed project: the preferred alternative and the no build alternative. The environmental assessment has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and regulations of the Council on Environmental Quality (40 CFR 1508.9), and the National Park

Service Director's Order (DO)-12 (Conservation Planning, Environmental Impact Analysis, and Decision Making), and the National Historic Preservation Act of 1966 (as amended).

## **1.2 PURPOSE AND SIGNIFICANCE OF THE PARK**

The Natchez Trace Parkway is a 444-mile scenic byway that was established by Congress on May 18, 1938. The parkway follows the approximate path of the original Natchez Trace and runs between Nashville, Tennessee and Natchez, Mississippi. The parkway project was completed over a 67 year period and the last section of roadway was completed in May of 2005.

The Natchez Trace Parkway commemorates the original Natchez Trace (Old Trace) and its historical importance with a scenic and valuable parkway. The Old Trace was a series of primitive walking trails used by animals, Native American Indians, and early Europeans in the late 1700's and early 1800's. Studies indicate that early origins of the Old Trace were animal trails that followed a geologic ridge from grazing land and salt licks in central Tennessee southward to the Mississippi River. Native American Indians began using these paths cleared by larger animals and further developed the trails as they inhabited the area. The early European explorers traveled the Old Trace with guidance from the local Native American tribes. Later traders would travel the Old Trace after floating their goods down the Mississippi River from the Ohio River Valley to southern ports. After selling their goods and disassembling their boats and selling them for lumber, the traders would travel the Old Trace either by foot or on horseback back to Nashville, TN and then to their homes.

In 1800 the Old Trace was designated a national postal road and treaties were signed with the Choctaw and Chickasaw tribes to allow the opening of the road on tribal lands. By 1809 the road was fully navigable by wagon, and trading posts and inns, also known as stands, had been opened up along the Old Trace to cater to the traders traveling along the Trace.

The development of other roads and trade routes in the south played a part in the dwindling use of the Old Trace. However, the development of the steamboat had the biggest impact on the Old Trace. The ability to travel back up river made use of the Trace obsolete and in 1830 it was officially abandoned.

The present day Natchez Trace Parkway is designed to accommodate passenger car traffic while also placing emphasis on the enjoyment of the recreational motorist. The NPS maintains a wide insulating zone to preserve the overall rustic feel of the parkway. Along the parkway visitors can stop and learn about the development of the Trace as well as the history of many of the early users of the Trace.

### **1.2.1 Project Background and Scoping**

Parkway Mile Post 99.6 is located in Ridgeland, Mississippi where the parkway runs parallel to Old Agency Parkway and Old Agency Road. The area north of the parkway has been developed as part of the Bridgewater subdivision. The City of Ridgeland owns and operates several pump stations in the area, and this particular crossing is meant to connect two of the existing pump stations to the proposed gravity main.

The City of Ridgeland proposes to install the new gravity sewer line under the parkway property by utilizing the horizontal directional drilling (HDD) technology. Using HDD to place a gravity sewer is similar to the method used to place waterlines, force mains, and gas lines, but also is unique because special equipment is needed in order to ensure the pipe is installed with the required slope. A pilot hole is drilled according to a set profile from an entry point to an exit point with remote sensors used to ensure that pilot hole is drilled on grade. The hole is then back reamed to a larger diameter to accommodate the size of the pipe, and the pipe is pulled through from the opposite end of the bore back towards the drilling pit. This technology has been successfully used to place gravity sewers in areas in which it was imperative to keep surface disturbances to a minimum.

At the proposed crossing site the Natchez Trace Parkway property is approximately 840 feet wide. The entry and exit points for the HDD and will be approximately 940 feet apart allowing for a buffer between the construction operations and the parkway property. The maximum length of this type of bore is limited to around 400-500 feet because the flexibility of the pipe will not allow the drilling rig to push the accumulated drilling mud forward. For this reason two “weep holes” will be constructed within the limits of the parkway in order to periodically collect the drilling mud and prevent an accumulation that would hinder the drilling rig from being able to move forward. These weep holes will be constructed in such a manner that the surface disturbance will be minimal. The depth of the crossing is a minimum of six (6) feet below the

existing surface elevation. Figure 3 provides an engineered plan view and cross section of the parkway and intended HDD gravity line (See Appendix).

With these plans in place the Waggoner Engineering, Inc. (WEI), on behalf of the City of Ridgeland, MS, proposes that the action will have minimal direct impact to the surface features of the parkway, and any effects would be temporary.

#### **1.2.1.1 Scoping**

Scoping is the effort to involve agencies, organizations, and the public in determining the issues to be addressed in the environmental assessment. Among other tasks, scoping determines important issues and eliminates issues determined not to be important; identifies other permits, surveys and consultations required with other agencies; and creates a schedule that allows adequate time to prepare and distribute the environmental assessment for public review and comment before a final decision is made. Scoping is a process that seeks opinions and consultation from the interested public, affected parties, and any agency with interests or legal jurisdiction.

#### **1.2.1.2 Internal Scoping**

Parkway staff members of various specialties have been consulted regarding the purpose and need, issues, and impact topics appropriate for consideration for the proposal.

#### **1.2.1.3 External Scoping**

WEI, on behalf of the City of Ridgeland, MS and the NPS, sent a formal letter to the U.S. Fish and Wildlife Service (USFWS), the Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP), and the Mississippi Department of Archives and History (MDAH) concerning the potential to affect federal and state species of concern and cultural resources.

### **1.3 ISSUES**

Issues and concerns affecting this proposal were identified through analysis of the proposed work in terms of potential direct and indirect impacts to the park's resources, including the viewscape and user experience. Concerns include potential impacts to:

- Natural Resources. The proposed project's potential to have direct or indirect impacts to the park's soils, vegetation, and wildlife;
- Visitor Experience. The proposed project's potential to directly or indirectly affect visitors' experience because of impacts to the parkway viewscape and road conditions; and
- Parkway Operations. The proposed project's potential to directly or indirectly impact parkway staff commitments and maintenance operations.
- Cultural Resources. The proposed project's potential to directly impact archeological sites, cultural landscape, etc.

The NPS manages park resources to maintain them in an unimpaired condition for future generations in accordance with NPS specific statutes, including the Organic Act of 1916 and the National Parks Omnibus Management Act of 1998; and general environmental laws such as the Clean Air Act, the Clean Water Act, the Endangered Species Act of 1973, the National Environmental Policy Act of 1969, as amended, and the National Historic Preservation Act of 1966.

## **1.4 IMPACT TOPICS**

### **1.4.1 Derivation of Impact Topics**

Specific impact topics were developed to focus the analysis and to allow comparison of the environmental consequences of each alternative. These impact topics were identified through the process of scoping. A brief description along with a rationale for including the impact topic in the study is given for each topic, along with any rationale used for dismissing the topic from further analysis.

### **1.4.2 Impact Topics Analyzed in Detail**

#### **1.4.2.1 Soils**

The 2006 publication of *NPS Management Policies* requires protection of park resources, including soils, to protect parks' scenery, natural and historic objects, and the processes and conditions that sustain them. The National Environmental Policy Act of 1969 calls for an

examination of impacts on all components of affected ecosystems. Because the proposed action would have an impact to the subterranean soil parent material, soil is an impact topic that is analyzed in further detail in this environmental assessment.

#### **1.4.2.2 Vegetation and Viewshed**

The 2006 publication *NPS Management Policies* requires protection of park resources, including vegetation, to protect parks' scenery, natural and historic objects, and the processes and conditions that sustain them. The National Environmental Policy Act of 1969 calls for an examination of impacts on all components of affected ecosystems. The proposed action will have a minimal effect on vegetation resources due to the required weep-holes. Therefore vegetation and viewshed is an impact topic that is analyzed in further detail in this environmental assessment.

#### **1.4.2.3 Water Quality**

The 1972 Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (33 U.S.C. 1251 et seq.), is a national policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters; to enhance the quality of water resources; and to prevent, control, and abate water pollution. Section 401 of the Clean Water Act requires a permit for any activity which may result in any discharge into the navigable waters of the United States. Section 404 of the Clean Water Act requires a permit for any activity which may result in the discharge of dredged or fill material into navigable waters, including wetlands. NPS 2006 Management Policies provides direction for the preservation, use, and quality of water in national park units.

While no direct impact to parkway water quality resources would result from the proposed activity, the no build alternative could have an effect on the water quality of the White Oak drainage basin. Because of this, water quality is an impact topic that will be analyzed in further detail in this environmental assessment.

#### **1.4.2.4 Wildlife**

The NPS Organic Act, which directs parks 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 park's natural ecosystem. Natural processes are relied on to control populations of native species to the greatest extent possible; otherwise they are protected from harvest, harassment, or harm by human activities. According to the 2006 publication *NPS Management Policies*, the restoration of native species is a high priority (sec 4.1). Management goals for wildlife include maintaining components and processes of naturally evolving park ecosystems, including natural abundance, diversity, and the ecological integrity of plants and animals.

Minor impacts to parkway resources would result from the proposed weep holes. Related activities will have temporary impacts to wildlife by possibly disturbing and displacing them during the construction period, but no permanent impacts and no long-term displacement of wildlife will result from post-construction operations of the related facilities. Wildlife will be an impact topic analyzed further in this environmental assessment.

#### **1.4.2.5 Soundscapes/Noise**

In accordance with NPS Management Policies 2006 and Director's Order – 47: Sound Preservation and Noise Management, an important part of the NPS mission is preservation of natural soundscapes associated with national park units. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in park 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 thorough air, water, or solid materials. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among NPS units, as well as potentially throughout each park unit, being generally greater in developed areas and less in underdeveloped areas.

A temporary impact to the soundscape of the parkway will occur at mile marker 99.8 for the duration of the construction activities; Therefore, soundscape is a topic that will be analyzed futher.

#### **1.4.2.6 Air Quality**

Air quality became a national concern in the mid-1960s, leading to the passage of the Air Quality Act in 1967. The Act (now referred to as the Clean Air Act) and subsequent amendments have established procedures for improving conditions, including a set of National Ambient Air Quality Standards. The U.S. Environmental Protection Agency is directed to set levels for pollutants in order to protect the public health. The National Ambient Air Quality Standards are adopted for six pollutants: carbon monoxide, nitrogen dioxide, ozone, particulate matter, sulfur dioxide, and lead. A system of monitoring stations is established across the country to measure progress in meeting these goals. If an area is found to exceed the allowable levels, local officials are required to develop a plan for achieving air quality that meets the standards.

The proposed gravity sewer line does not include the installation of any equipment that would require new source permitting by the Air Quality Division of the Mississippi Department of Environmental Quality and the project will not have any long term effects on the air quality of the surrounding area. However, temporary impacts may occur from adjacent construction equipment; therefore, air quality is a topic that will be analyzed further.

#### **1.4.2.7 Socioeconomic Environment, including Land Use**

An internal zoning system (as described in the 1987 Natchez Trace Parkway *General Management Plan*) identifies land management requirements within the parkway. Parkway land management zoning is not related to zoning in the surrounding lands. While no impact to parkway lands will result from the proposed crossing or alternatives, the proposed crossing will be used to take two lift stations out of service and replace them with gravity sewer flow. This conversion to a gravity transmission system will save tax-payers the annual operation and maintenance costs for running these stations, as well as qualify the project for ARRA “Green Project Reserve” funding; therefore impacts on the socioeconomic environment, including land use, will be analyzed in detail in this environmental assessment.

### **1.4.3 Impact Topics Dismissed from Further Analysis**

#### **1.4.3.1 Wetlands**

Executive Order 11990 (*Protection of Wetlands*) requires an examination of impacts to wetlands. The 1972 Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, is a national policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters; to enhance the quality of water resources; and to prevent, control, and abate water pollution. *NPS Management Policies* provides direction for the preservation, use, and quality of water in national parks. Director's Order 77-1 *Wetland Protection* establishes NPS policies, requirements, and standards for implementing Executive Order (E.O.) 11990: *Protection of Wetlands*.

Minor impacts to surface resources of the parkway will result from the proposed action (weep holes). However, a preliminary wetlands delineation performed by Ecosystems, Inc, dated 9/5/06 does not identify any wetlands within the proposed project area; therefore no affect to resources meeting the criteria for wetlands inside the parkway would result. See Figure 2 in attached Appendix. Wetlands are an impact topic that will not be analyzed in further detail in this environmental assessment.

#### **1.4.3.2 Visitor Use and Experience**

Providing for visitor enjoyment is one of the fundamental purposes of the NPS according to the Organic Act. The 1999 Natchez Trace Parkway *Statement for Management* and other park management documents reaffirm the importance and significance of recreational values and establish provisions for recreational uses by providing quality facilities for a more meaningful visitor experience.

Neither the proposed crossing installation nor the no-build alternative has any potential to affect the visitor experience at the Natchez Trace Parkway due to the lack of direct impact to parkway resources. No direct or indirect impact to visitor use is anticipated due to the visual screening of adjacent activities by natural vegetation buffers. Therefore, visitor experience is an impact topic that is not analyzed in further detail in this environmental assessment.

#### **1.4.3.3 Safety**

The proposed crossing is for the placement of a 16-inch O.D. high-density polyethylene (HDPE) gravity sewer main to service the City of Ridgeland. The proposed sewer main would be placed using horizontal directional drilling (HDD) technology with entry and exit points for the HDD approximately 940 feet apart, allowing for a buffer between the construction operations and the parkway property, and a depth of a minimum of six (6) feet below the existing surface elevation. Using this drilling technique, and allowing a buffer between construction and parkway property, there does not appear to be a safety concern for users of the parkway; therefore, this topic is not analyzed in further detail in this environmental assessment.

#### **1.4.3.4 Parkway Operations**

Activities associated with installation and operation of the pipeline crossing would not present a demand for staff supervision, nor pose an impediment to land use management after installation. Therefore, parkway operation is an impact topic not analyzed in further detail in this environmental assessment.

#### **1.4.3.5 Unique or Important Wildlife Habitat**

The proposed crossing installation has no direct impact to habitats of unique quality within the parkway area. Wetland impacts are discussed in the environmental assessment but as a habitat are not considered unique, scarce to the area, or of exceptional value for certain species. Therefore, unique or important wildlife habitat will not be analyzed in detail in this environmental assessment.

#### **1.4.3.6 Threatened and Endangered Species**

The Endangered Species Act of 1973, as amended, requires an examination of impacts on all federally listed threatened or endangered species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species.

There will be minimal impact to surface resources within the park boundary as a result of the proposed sewer line installation; thus no impact to federally listed or state species of concern

would result from the action. Information provided by Waggoner Engineering, as well as review and authorization of the related construction action by the U.S. Army Corps of Engineers, has concluded that no impact to federal or state species of concern would result from the related construction activities. Therefore, threatened and endangered species is not a topic analyzed in detail in this environmental assessment. Written concurrence of no affect to species of concern within the parkway area has been solicited from the USFWS and MDWFP. Copies of the agency communications and responses are included in Appendix A.

#### **1.4.3.7 Paleontology and Geology**

Most of Mississippi, including the Jackson Area, was under water during the early geologic periods of the Earth and surface materials do not provide evidence of land development until the Cretaceous Period where evidence may be found in the northeast corner of the state. Central Mississippi, including the Jackson area, exhibits development during the Tertiary Period when it is believed that large rivers, swamps, and forests dominated the landscape.

This area of the parkway is within the North Central Hills physiographic belt underlain by Cockfield and Yazoo Formations altered by the Jackson Dome uplift that causes all formations to dip away from its crest at a general trend to the west and southwest. Topography is gently sloping to undulating. The Jackson group consists of the Moody's Branch Formation, Yazoo Clay Formation, and the Crystal River Formation. Yazoo Clay is a green and calcareous clay containing sand and marl. The Yazoo Formation is Eocene in age and consists of blue-green limey clay. The Forest Hill formation consists of sands, cross-bedded fine gray sand, laminated fine sand and clay, and a little lignite. Elevations vary from a high of 475 ft above mean sea level (msl) to 140 ft (msl) throughout the formation. Elevations at the proposed Trace crossing vary from 356 ft (msl) to 342 ft (msl). Neither of these formations is considered geologically active.

The fossil record from the Tertiary period is very low and only 128 fossils have been collected across the state. Considering the paucity of the fossil record, the proposed project is unlikely to affect any paleontological resources. Since the project area is not geologically active, paleontology and geology will not be analyzed in detail in this environmental assessment.

#### **1.4.3.8 Floodplains**

Executive Order 11988 (*Floodplain Management*) requires an examination of impacts to floodplains and potential risk involved in placing facilities within floodplains. *NPS Management Policies*, Director's Order 77-2: *Floodplain Management*, and Directors' Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making* provide guidelines for proposals in floodplains. NPS Management Policies provide direction for the preservation, use, and quality of floodplains in national parks.

The proposed crossing location is within the White Oak Creek tributary floodplain, but the associated construction activities and final project scope would not result in the placement of structures or changes of elevations within the open regulatory floodplain. Therefore, floodplain impact is an impact topic that is not analyzed in further detail in this environmental assessment.

#### **1.4.3.9 Indian Trust Resources**

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of Interior agencies be explicitly addressed in environmental documents. The deferral 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, and it represents a duty to carry out mandates of federal law with respect to American Indian and Alaska Native tribes. The lands comprising the parkway are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Therefore, Indian trust resources will not be analyzed in detail in this environmental assessment.

#### **1.4.3.10 Prime or Unique Farmland**

In 1980, the Council on Environmental Quality directed federal agencies to assess the impacts of their actions on farmland soils classified as prime or unique by the United States Department of Agriculture, National Resources Conservation Service. 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.

The parkway lands, as well as lands crossed by the indirect actions associated with this project, are incorporated by the City of Ridgeland and are considered “urbanized area”. As such these lands are not considered to be prime farmlands per the Farmland Protection Policy Act (7 CFR Part 658). Since the study reveals that no soil series potentially affected by any action or alternative is listed as prime or unique, prime or unique farmland will not be analyzed in detail in this environmental assessment.

#### **1.4.3.11 Environmental Justice**

Executive Order 12898 (*General Actions to Address Environmental Justice in Minority Populations*) requires all agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low –income populations or communities.

None of the directly or indirectly related activities will impact individuals’ residences or populations of individuals; therefore, impacts along the proposed segment would not have adverse health or environmental effects on minorities or low-income populations or communities as defined in the Environmental Protection Agency’s Draft Environmental Justice Guidance (July 1996). Therefore, environmental justice will not be analyzed in detail in this environmental assessment.

#### **1.4.3.12 Cultural Resources**

National Park Service policy and Section 106 of the National Historic Preservation Act requires that the effects of NPS actions on cultural resources be considered, and that appropriate steps be taken to avoid, minimize, or mitigate these effects. The NPS distinguishes five types of cultural resources: archeological resources, historic structures, ethnographic resources, cultural landscapes, and museum collections.

No direct impact to the land surface and near surface resources of the parkway will result from the proposed crossing installation of the gravity sewer line using the HDD method of installation, and after consultation with the NPS it was determined that “the project will have no adverse effect on historic properties on or eligible for the National Register based on criteria in 36 Code

of Federal Regulations 800.5". The Mississippi Department of Archives and History was also sent a "Request for Cultural Resource Assessment". Jim Woodrick, Review Compliance Coordinator, with the MDAH responded by telephone and deferred a ruling on the cultural resources to the Resource Management Division of the Natchez Trace Parkway. MDAH's view was that this land is managed by the NPS and they would agree with whatever ruling the cultural resource personal for the NPS made on the project impacts. Since the project is considered a "no effect" project, cultural resources will not be a topic analyzed in detail in the EA.

## **2.0 ALTERNATIVES CONSIDERED**

### **2.1 INTRODUCTION**

The alternatives chapter describes and analyzes the alternative pathways for achieving a desired result. The two alternatives examined are: The No Build Alternative and the Preferred Alternative.

The purpose of the No Build Alternative is to provide a basis for comparing the actions and environmental consequences of not building the proposed gravity sewer main. There is no alternative route option and if the National Park Service were to decide not to grant a permit to complete the work at this location then this portion of the gravity main could not be constructed and the two pumping stations north of the Trace adjacent to the proposed bore could not be taken out of service.

### **2.2 NO BUILD ALTERNATIVE**

The no build alternative would cease any further commitment of the Park Service staff to review the potential processing of the City of Ridgeland's right-of-way request and would result in no potential for any occurrence of near-term direct affects to parkway resources. No realistic alternative route to the proposed crossing of the parkway exists by which the existing sewer runoff could be transported, by gravity, and tied into the proposed gravity main associated with this project; therefore the NPS must consider the environmental impact consequences resulting fro the "no build" decision.

The no build decision would require that the current system of lift stations immediately north of the Trace remain in operation and the wastewater would have to be pumped into the proposed gravity system through a force main. These lift stations have several possible adverse effects both to the National Park Service property and to adjacent properties and residents. The current pumping stations operate using small 110 volt motors because there is no three phase power available in the area. These motors are less reliable than three phase motors and have a history of past failures. The failure of the pumps leads to eventual sewer overflow if undetected, and the raw sewage overflowing from the pump station is discharged onto the surrounding property. These pump stations are in naturally occurring low lying areas that are often adjacent to waterways, and any discharge of raw sewage could end up effecting the quality of water within these waterways and drainage courses. Also, the Oakhurst pumping station, which serves part of the Bridgewater subdivision, is located immediately adjacent to the NPS property, and failure of this pump could lead to raw sewage overflowing onto the NPS properties.

These spills are both unpleasant and costly for the city and taxpayers to clean up. Annual maintenance and operation costs could also effectively be eliminated by taking these pumping stations offline and using a gravity system to collect and transport the sewer runoff.

Based on these facts it can be concluded that the no build option could have direct negative effects on the water quality of the NPS property and the areas surrounding the two pumping stations in question. Also, the long term savings in operations and maintenance costs saved by the city could be used to provide other improvements for residents and taxpayers.

## **2.3 BUILD ALTERNATIVE**

The build alternative would require the City of Ridgeland's construction permit application to be approved by the NPS. The build alternative would result in the City of Ridgeland placing the gravity sewer main under the NPS property by way of horizontal directional drilling. The construction of this gravity main would take offline two lift stations in the surrounding area. This branch of the gravity main would tie into a large gravity main further south. These gravity sewer lines are all a part of the White Oak Creek Sewer Interceptor project the city is building in order to service the growing area of western Ridgeland while reducing dependence on high-maintenance and energy-dependent pumping stations.

The potential impacts of the proposed sewer under the NPS property are outlined within this document.

## **2.4 ENVIRONMENTALLY PREFERRED ALTERNATIVE**

In accordance with DO-12, the NPS is required to identify the “environmentally preferred alternative” in all environmental documents, including EAs. The environmentally preferred alternative is determined by applying the criteria identified in Section 101 of NEPA, which includes:

- Fulfilling the responsibilities of each generation as a trustee of the environment for succeeding generations;
- Assuring for all generations safe, healthful, productive, aesthetic, and culturally pleasing surroundings;
- Attaining the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable or unintended consequences;
- Preserving important historic, cultural, and natural aspects of our national heritage and maintaining wherever possible an environment that supports diversity and variety of individual choice;
- Achieving a balance between populations and resource use that will permit high standards of living and a wide sharing of life’s amenities; and
- Enhancing the quality of renewable resources and approaching the maximum attainable recycling of depletable resources.

The “no build” alternative is not the environmentally preferred alternative for several reasons:

1. The lack of other feasible routes for the gravity system would render it impossible to take two of the existing pump stations out of the sewer collection system. To continue operation of the pumping stations with the less than reliable 110 volt motors would open up the possibility of continued failures and future spills of raw sewage onto the ground and could possibly affect the water quality of the drainage basin.
2. The small 110 volt motors are also inefficient and consume more power than newer three phase motors. This inefficiency along with the frequency of pump failures makes the operating and maintenance costs very high. Decreased annual maintenance cost

frees up taxpayer dollars to be spent on other improvements throughout the city. Much of the initial construction costs can be obtained through government funding, thus reducing the overall upfront costs to the city's tax base. In addition, studies by Waggoner Engineering, Inc. have show that approximately 5% of the overall construction costs can be realized in energy savings alone over the service life of the gravity system.

3. The cumulative effects of the alternate route greatly exceed those impacts of the proposed route; and
4. The crossing of the parkway will have no noticeable effects upon surface resources or visitor use and experience of the parkway.

Based upon the analysis of effects to environmental resources resulting from the proposed project and the alternatives, it is reasonable to conclude that the proposed project is the Environmentally Preferred Alternative.

## **2.5 ALTERNATIVE CONSIDERED BUT DISMISSED**

During the initial design phases it was believed that the proposed crossing could be constructed within an existing right-of-way across the NPS property that was set aside for future utility crossings (ROW Permit 5570-R-037), and this permit was renewed through the Construction Permit Application process with the National Park Service (Construction Permit SER-NATR-5700-2008-04 Section 3P, Mile Post 99.8). However, during the data collection stage of design, topographic survey data showed that building bore pits on the property adjacent to the existing right-of-way would be extremely difficult as well as inadvisable.

There are two main obstacles that prevent the construction of bore pits outside of the Natchez Trace property limits: 1. Along the north side of the Natchez Trace property the continued development of the Bridgewater subdivision, to include a lake dam, has crowded the area to the point that there is not sufficient room to accommodate a boring pit, operate machinery, dispose of the displaced materials from the bore pit, and store construction materials within the available area, and; 2. There is a rather large hill along the area south of the Natchez Trace property where the proposed bore pit would have been constructed. This hill is of sufficient size that the construction of a bore pit would require the use of sheet piling and would not be cost effective to construct.

With these limitations in mind the City of Ridgeland submitted a Construction Permit Application to build the bore pits within the limits of the right-of-way across Natchez Trace property. This option would have required the disturbance of the surface resources (vegetation, soil, etc.) within the NPS property, and the permit application was denied based on this fact. With the limitations of space and constructability of bore pits outside of the NPS property, and the inability to construct the bore pits within the NPS property, more suitable locations for the crossing were explored.

The proposed location described in this EA is less than a quarter mile from the original right-of-way for which a construction permit was granted, but it has much more favorable construction characteristics.

### **3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

#### **3.1 SOILS**

The HDD underneath the parkway would impact subsurface soils (>= 8 feet below the surface) in a cylindrical pathway following the pathway of the drill bit and drill stem for the entire length of the crossing. The soil survey for Madison County prepared by the National Resource Conservation Service does not provide an analysis of soils to this depth to include in this discussion.

The no build alternative would require no construction and would not have any impacts on the soils of park property.

##### **3.1.1 INTENSITY**

The impact to the soils from implementation of the HDD would be the direct transport loss of cut materials and loss of soil porosity by blockage for a two (2) or four (4) inch extent surrounding the drill pathway affecting an area approximately 20-inches in diameter for the entire distance under parkway lands ( ~940 linear feet). During the HDD a pump mixes water with the bentonite clay forming a slick “mud” that is pumped through the hollow core of the drilling pipe and out discharge ports in the drill bit. Because of the extreme length of the bore two collection points, or “weep holes”, approximately two to three feet in diameter will need to be constructed

at the approximate third lengths of the crossing. These weep holes will be points where the contractor will collect the drilling mud so that it does not accumulate and prevent the drilling head from moving forward. These collections points will be constructed in such a way that any disruption to the surface vegetation will be minimal and will be shielded from the view of park users.

As with any HDD operation there is a chance of frac-out, or inadvertent return of drilling lubricant, and this is a potential concern when boring under sensitive habitats, around waterways, and areas of cultural resources. The fine clays used as drilling lubricant are non-toxic and commonly used in farming practices, but some invertebrates, aquatic plants and fish can be affected if a frac-out releases clays into a surrounding waterway. Construction specifications require that a contingency plan shall be in place to address any frac-out incidents. The purpose of this plan will be to minimize the potential for frac-outs, provide timely detection of such events, protect environmentally sensitive areas, and ensure timely and “minimum impact” response in case a frac-out occurs.

Saturation and blockage of the surrounding soil porosity occurs from the discharge of the drilling mud at the drill head under pressure. Typically the mud is pumped at pressures between 30 – 60 psi to ensure the pathway is cleaned of cut materials and flow back to the drill entry point is maintained. A small portion of the drilling mud saturates the soil profile surrounding the drill path resulting in loss of porosity.

### **3.1.2 DURATION**

Placing the gravity line would have the permanent impact of removing the cylindrical pathway of soil, and the temporary effects from surface disturbance associated with construction of the weep holes that would last through the duration of project construction.

### **3.1.3 CUMULATIVE EFFECTS & CONCLUSION**

Although the proposed crossing placement would have long-term impact, a long annular soil mass at a minimum of six feet below the soil surface (ten feet under paved roadway areas), evidence provided by numerous installations of this type and extent do not indicate any resulting change to the apparent surface soil aspects and functions. The bentonite clay lattices will not

migrate through soil pores or flocculate into a mass that would form a blockage to groundwater movement through the profile. Overall, no impairments to soil resources would result from implementing this project.

### **3.2 VEGETATION & VIEWSHED**

With the construction of the drilling mud collection points a minimal amount of surface vegetation may have to be disturbed in order to collect excess drilling mud and carry it offsite. However, these collection points will be constructed in naturally occurring clearings within wooded areas of the NPS property as to minimize the effects to the surface vegetation. Construction crews will avoid any large trees while traveling to and from and while constructing the necessary weep holes. The collection points and disturbed soils will be seeded and mulched to restore park-approved, native vegetation to the area. Any drilling mud extracted at these collection points will be carried offsite by the contractor.

The no build alternative would require no construction or clearing of vegetation and would therefore have no impact on the vegetative resources of the NPS.

#### **3.2.1 INTENSITY**

A minimal amount, an area large enough to allow construction equipment to access and dig the weep hole, of clearing within or immediately adjacent to the parkway will occur during the proposed construction. Nothing larger than heavy shrubbery shall be removed and the vegetative screen between the parkway and the surrounding property will not be altered. There will be no overall impact to exhibited vegetation characteristics or the aesthetic quality of these habitats to users of the parkway.

#### **3.2.2 DURATION**

Any disruption that would occur would be short-term in nature lasting less than one growing season. The area in which the collection points are to be constructed would be back-filled and reseeded, allowing natural vegetation to again take hold in the disturbed area. There would be no long-term effects on the vegetation from the proposed construction. After construction is

complete only periodic access by foot will be needed for the city to perform maintenance inspections.

### **3.2.3 CUMULATIVE EFFECTS & CONCLUSION**

The cumulative impacts from constructing the proposed crossing would have no lasting effects on the parkway lands or its visitors and their experience. There would be no permanent impairment to park vegetation resources. In addition there is no cumulative impact to habitats planned for or resulting from the proposed crossing that would be considered out of normal character for private lands adjacent to the parkway.

### **3.3 WATER QUALITY**

During construction of the proposed crossing a Department of Environmental Quality – approved Storm Water Pollution Prevention Plan (SWPPP) will be implemented to ensure that erosion does not allow sedimentation to enter the adjacent water bodies and impair the water quality of the drainage area. Overall the proposed project will have a beneficial effect on the water quality of the adjacent lands by removing the potential for lift station overflow and pollution of the drainage area with raw sewage.

The no build alternative leaves the existing lift stations and their inefficient motors in service. These inefficient and unreliable motors carry a significant risk of failure. If the failure goes unnoticed then it could lead to raw sewage overflowing the wet well and being carried into adjacent waterways.

#### **3.3.1 INTENSITY**

With the properly implemented SWPPP and frac-out contingency plan there will be no immediate negative impact to the water quality of the adjacent drainage course caused by the construction of the proposed project, and any long-term effects would benefit the water quality in the drainage course.

### **3.3.2 DURATION**

There are no short term effects on water quality due to construction, and any long term effects are beneficial because of the removed threat of pump failure and lift station overflow.

### **3.3.3 CUMULATIVE EFFECTS & CONCLUSION**

The cumulative effects of the proposed crossing would reduce the overall risk of storm water runoff being polluted with raw wastewater. In reducing the risk of storm water pollution, the proposed project would also reduce the risk that any users of the Trace or homeowners of the adjacent properties would be affected by storm water pollution. As stated above a contingency plan will be in place for any frac-out occurrences, and the SWPPP will also be in place so that there will be no impairment to park water quality.

### **3.4 WILDLIFE**

During construction and use of the drilling fluid collection points any local wildlife may be temporarily disturbed by the presence of construction workers and equipment. However, no permanent damage will occur to wildlife or wildlife habitat during the construction of the proposed project. After construction is complete the wildlife habitat will be reverted back to its original condition.

The no build option would not disturb park wildlife resources because there would be no construction activities.

#### **3.4.1 INTENSITY**

The area of disturbance will be limited to the areas used to gain access to and from the weep holes as well as the area immediately surrounding the weep holes.

#### **3.4.2 DURATION**

The potential disturbance to wildlife would only last through the construction period. As soon as construction was complete any disturbed areas would be returned to their natural state.

### **3.4.3 CUMULATIVE EFFECTS AND CONCLUSION**

While there would be temporary effects to the surrounding wildlife during construction, as a whole there would be no impairment to the wildlife or wildlife habitat on park property.

### **3.5 SOUNDSCAPE/NOISE**

During construction of the gravity sewer construction machinery will be present and operating in the area. During this time the soundscape of the parkway will be temporarily affected. The noise from the temporary presence of the construction machinery and associated work will not be out of the ordinary for construction work and will not be in excess. The presence of the vegetative buffer will also help to reduce the noise along the parkway. A passenger in an enclosed vehicle traveling along the parkway is unlikely to notice the added noise during construction, and there will be no permanent equipment installed that would emit noise after construction.

The no build project would not require the presence of construction equipment and therefore would not have any impacts on the soundscape or noise level of the parkway.

#### **3.5.1 INTENSITY**

The construction equipment used will be equipped with proper mufflers and the distance and vegetative buffer between the equipment and the parkway should ensure that the noise levels are not significant enough to interfere with parkway users or any other park operations.

#### **3.5.2 DURATION**

The noise associated with the construction crews and equipment from the project will immediately cease upon completion of the project. There will be no new equipment installed that would affect the soundscape of the parkway on a permanent basis.

#### **3.5.3 CUMULATIVE EFFECTS AND CONCLUSION**

Overall the effects on the soundscape and noise level for the parkway would be minimal and only temporary in nature. Once the project is completed the noise level of the surrounding

parkway property would return to its pre-construction levels and there would be no impairment to the soundscape of the parkway.

### **3.6 AIR QUALITY**

The presence of the construction equipment could have a minor impact on the air quality of the surrounding area on a temporary basis during construction of the gravity sewer main. However, there will be no permanent equipment installed that will require any new source permitting.

The air quality of the surrounding park areas would not be affected by the no build option.

#### **3.6.1 INTENSITY**

All construction equipment present at the job site will meet the EPA's standards for Non-road Diesel Equipment and will therefore not exceed any standards or emission controls set forth by this agency. The added emissions will be no greater than those of maintenance and mowing equipment used by the NPS to maintain the NPS property.

#### **3.6.2 DURATION**

Once construction has been completed and construction equipment has been removed from the site the minor impact to the air quality to the surrounding areas will no longer exist. There are no permanent effects to the air quality of the park property.

#### **3.6.3 CUMULATIVE EFFECTS AND CONCLUSION**

The temporary nature and controlled emissions of the construction equipment make the potential impact due to the construction activity very minute. Overall there will be no impairment to the air quality of the surrounding park property from the construction activities associated with the proposed project.

### **3.7 SOCIOECONOMIC ENVIRONMENT, INCLUDING LAND USE**

The construction of the proposed crossing would not have any effect on the surrounding land or its uses. However, the construction will reduce the annual operation and maintenance costs for the city and its taxpayers, and the elimination of the inefficient motors and lift stations makes the project eligible for American Recovery and Reinvestment (ARRA) “Green Projects Reserve” funding.

#### **3.7.1 INTENSITY**

A study has shown that approximately five percent of the overall constructions costs can be realized in energy savings alone over the expected lifetime of the gravity system (see Appendix). This fact qualifies the project for ARRA funding which will have a significant impact on the City of Ridgeland and their financial capability to pay for this project. There are also maintenance costs associated with the operation of the lift stations that will be saved by implementing the proposed project.

This is a much needed project in order to continue to allow the city to provide its citizens with sewer service. As stated before, this project is necessary because the current mode of operation, pumping wastewater runoff from White Oak Creek drainage basin into the Purple Creek sewer interceptor, cannot be sustained because the Purple Creek sewer interceptor is nearing its capacity, and the city continues to grow in both the White Oak Creek and Purple Creek drainage basins.

#### **3.7.2 DURATION**

The effects of the ARRA funding would be an immediate impact on the city’s ability to complete this project for its citizens, and as stated the savings in energy and maintenance would be continuous for the expected life of the gravity system.

#### **3.7.3 CUMULATIVE EFFECTS & CONCLUSION**

The overall socioeconomic effects of the proposed project are beneficial for both the City of Ridgeland and its citizens. Constructing the proposed project will reduce annual energy and

maintenance costs, and this “greener” method of operations qualifies this project for the recently released ARRA funds. There would be no impairment to the socioeconomic environment associated with this project

## **4.0 CONSULTATION AND COORDINATION**

### **4.1 FEDERAL AGENCIES**

U.S. Department of the Interior – National Park Service

U.S. Fish and Wildlife Service

### **4.2 MISSISSIPPI STATE AGENCIES**

Mississippi Department of Wildlife, Fisheries, and Parks

Mississippi Department of Archives and History

## **5.0 BIBLIOGRAPHY**

Natural Heritage Program, Mississippi Department of Wildlife Fisheries and Parks; Species of Concern Database, 2009

Natural Resource Conservation Service, U.S. Department of Agricultural; Web Soil Survey; 2009

National Park Service, U.S. Department of the Interior; Natchez Trace Parkway website

## **APPENDIX AND ILLUSTRATIONS**

**1. Figure 1A Proposed Project w/ Topographic Map**

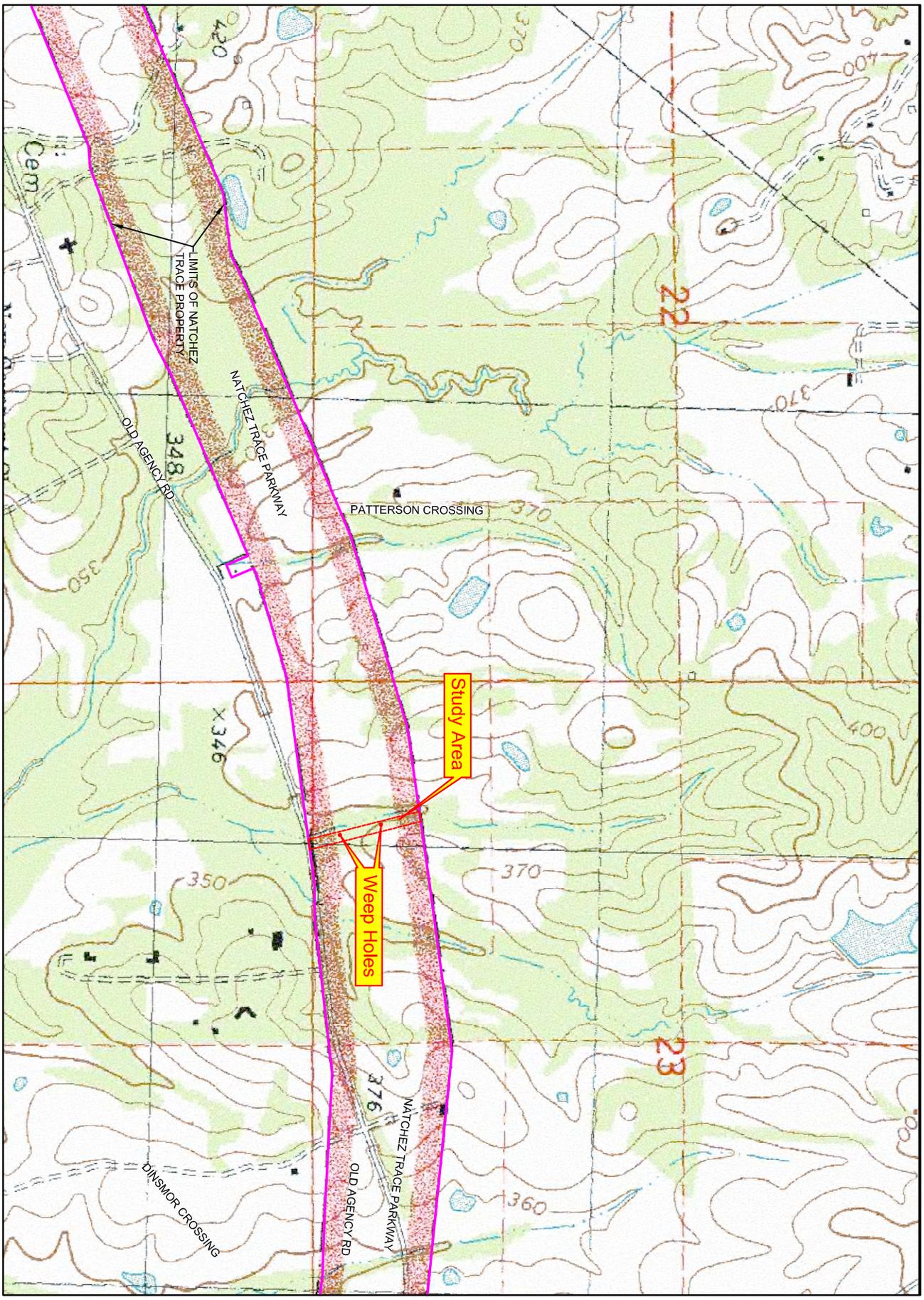


FIGURE 1A  
 SITE LOCATION MAP FOR: WHITE OAK CREEK, NATCHEZ TRACE PARKWAY CROSSING  
 CITY OF RIDGELAND, MS



## **2. Figure 1B Proposed Project w/ Arial Imagery**

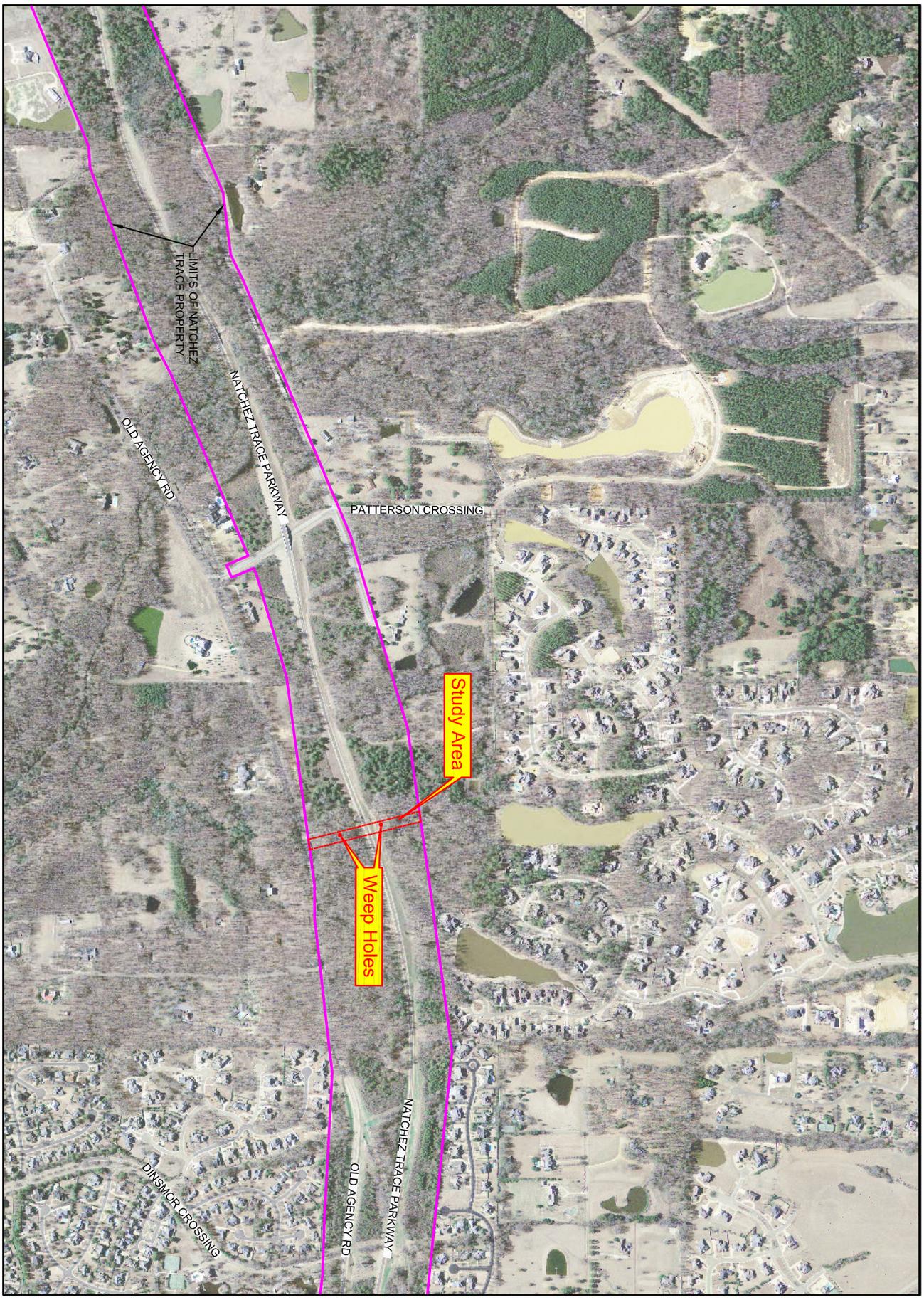
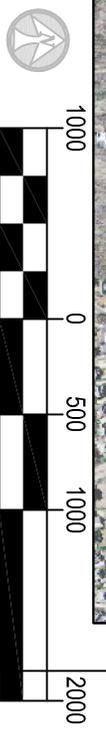
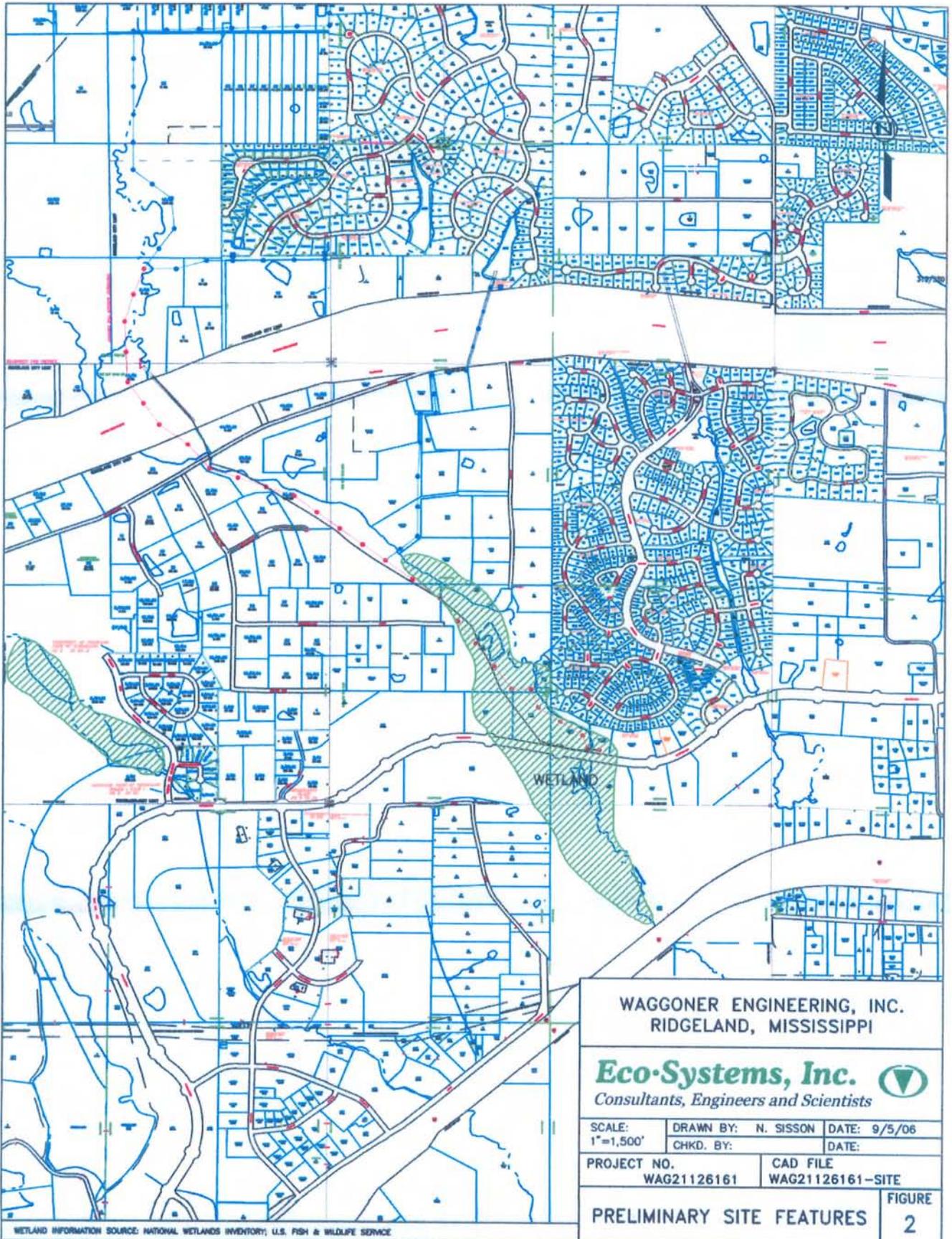


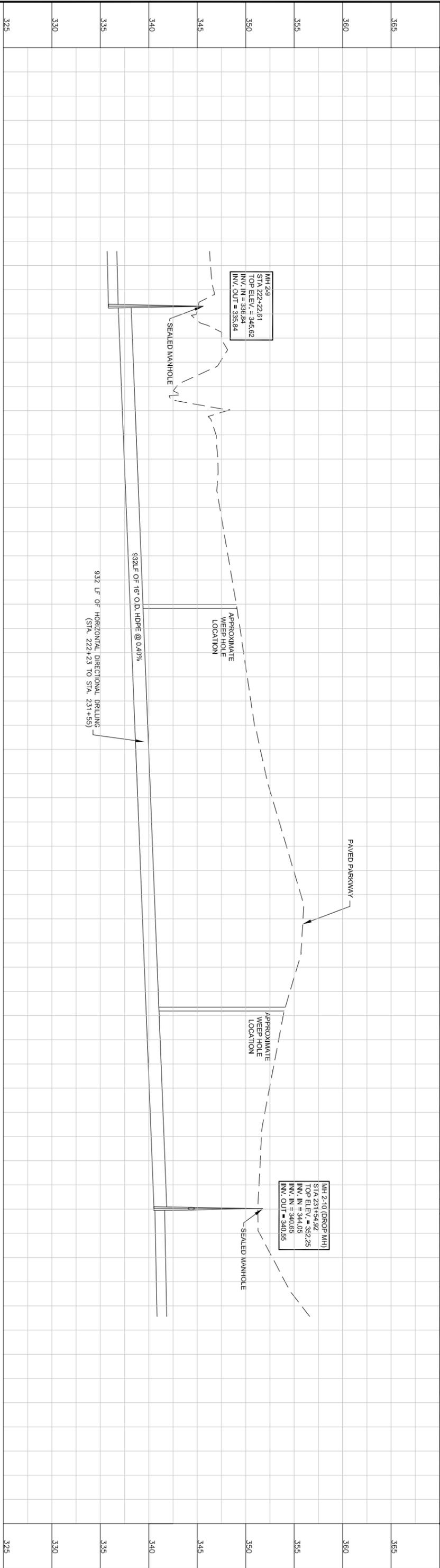
FIGURE 1B  
 SITE LOCATION MAP FOR: WHITE OAK CREEK, NATCHEZ TRACE PARKWAY CROSSING  
 CITY OF RIDGELAND, MS



### **3. Figure 2 Preliminary Wetland Findings**



**4. Figure 3 Engineered Drawing of Trace Crossing**



MH 2-9  
 STA 222+22.81  
 TOP ELEV. = 345.62  
 INV. IN = 338.84  
 INV. OUT = 336.84

MH 2-10 (DROP MH)  
 STA 231+59.87  
 TOP ELEV. = 352.25  
 INV. IN = 344.05  
 INV. IN = 340.85  
 INV. OUT = 340.55

NO.	DATE	REVISIONS	BY	DATE

DESIGNED BY	DHP	CHECKED BY	JRW
DATE	06/20/09	SCALE	1:50
PROJECT	143-A LeFleurs Square JACKSON, MS 39211 601-555-9526 FAX 601-552-3945		

WAGGONER	NATCHEZ TRACE CROSSING ENGINEERED DRAWING
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SHEET NUMBER	FIGURE 3
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## **5. NRCS Web Soil Survey Findings**

Soil Map—Madison County, Mississippi  
(White Oak Sewer Interceptor: Natchez Trace Crossing)



## MAP LEGEND

 Area of Interest (AOI)	 Very Stony Spot
 Soils	 Wet Spot
 Soil Map Units	 Other
<b>Special Point Features</b>	<b>Special Line Features</b>
 Blowout	 Gully
 Borrow Pit	 Short Steep Slope
 Clay Spot	 Other
 Closed Depression	<b>Political Features</b>
 Gravel Pit	 Cities
 Gravelly Spot	<b>Water Features</b>
 Landfill	 Oceans
 Lava Flow	 Streams and Canals
 Marsh or swamp	<b>Transportation</b>
 Mine or Quarry	 Rails
 Miscellaneous Water	 Interstate Highways
 Perennial Water	 US Routes
 Rock Outcrop	 Major Roads
 Saline Spot	 Local Roads
 Sandy Spot	
 Severely Eroded Spot	
 Sinkhole	
 Slide or Slip	
 Sodic Spot	
 Spoil Area	
 Stony Spot	

## MAP INFORMATION

Map Scale: 1:1,680 if printed on A size (8.5" x 11") sheet.  
 The soil surveys that comprise your AOI were mapped at 1:20,000.  
 Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
 Coordinate System: UTM Zone 15N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

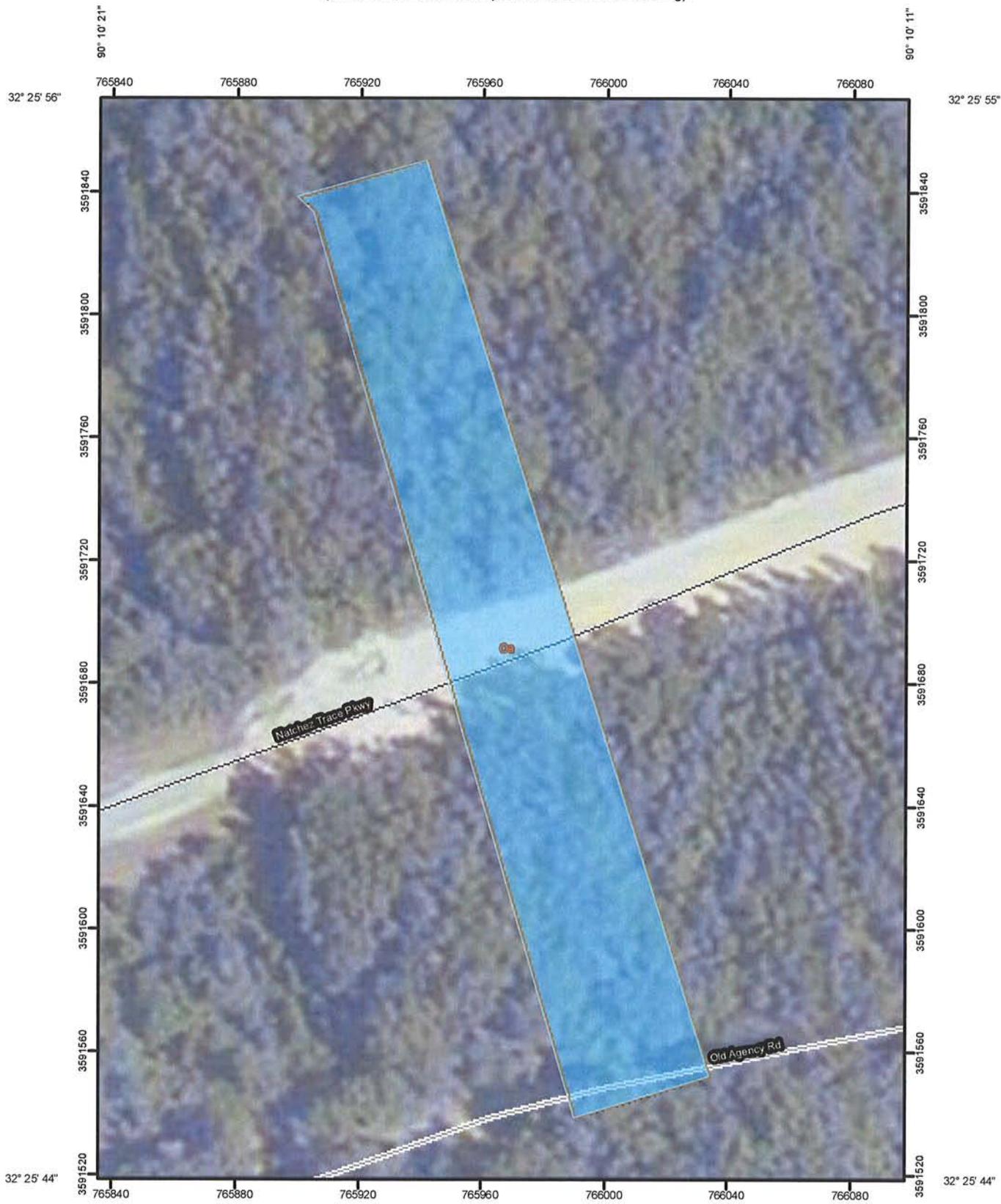
Soil Survey Area: Madison County, Mississippi  
 Survey Area Data: Version 6, Dec 16, 2008  
 Date(s) aerial images were photographed: 9/19/2004

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

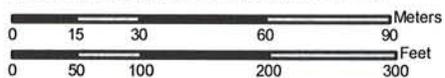
## Map Unit Legend

Madison County, Mississippi (MS089)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Oa	Oaklimeter silt loam	3.3	100.0%
<b>Totals for Area of Interest</b>		<b>3.3</b>	<b>100.0%</b>

K Factor, Whole Soil—Madison County, Mississippi  
(White Oak Sewer Interceptor: Natchez Trace Crossing)



Map Scale: 1:1,680 if printed on A size (8.5" x 11") sheet.

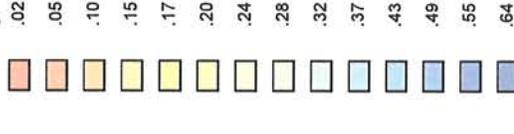


## MAP LEGEND

Area of Interest (AOI)  
 Area of Interest (AOI)

Soils  
 Soil Map Units

### Soil Ratings



Not rated or not available

### Political Features

Cities

### Water Features

Oceans

Streams and Canals

### Transportation



## MAP INFORMATION

Map Scale: 1:1,680 if printed on A size (8.5" x 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000. Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
 Coordinate System: UTM Zone 15N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Madison County, Mississippi  
 Survey Area Data: Version 6, Dec 16, 2008

Date(s) aerial images were photographed: 9/19/2004

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## K Factor, Whole Soil

K Factor, Whole Soil— Summary by Map Unit — Madison County, Mississippi				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Oa	Oaklimeter silt loam	.43	3.3	100.0%
<b>Totals for Area of Interest</b>			<b>3.3</b>	<b>100.0%</b>

### Description

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

### Rating Options

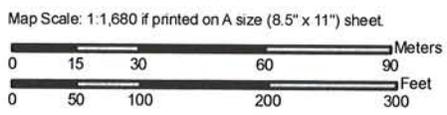
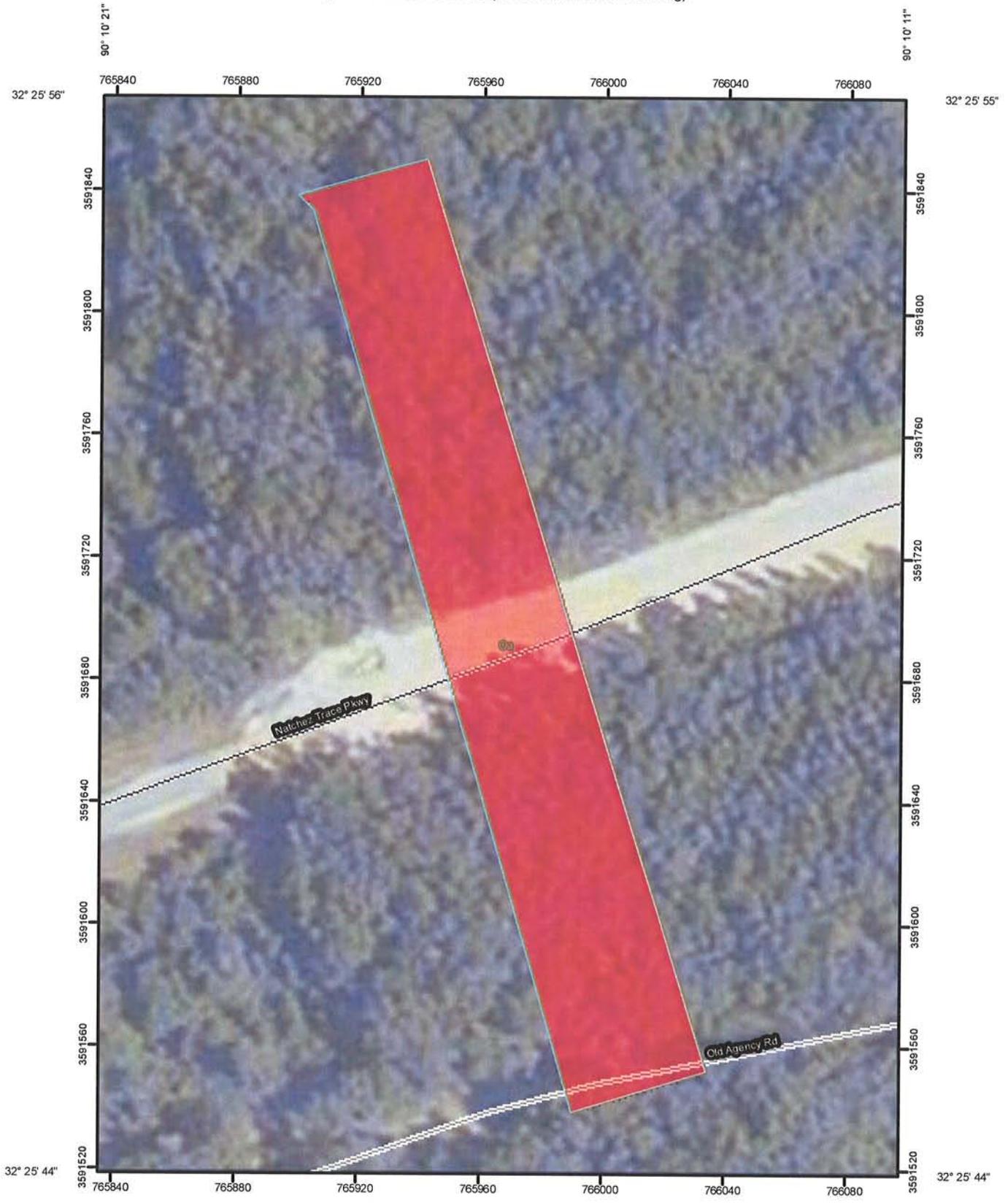
*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher

*Layer Options:* Surface Layer

Shallow Excavations—Madison County, Mississippi  
(White Oak Sewer Interceptor: Natchez Trace Crossing)



## MAP LEGEND

- Area of Interest (AOI)**
  -  Area of Interest (AOI)
- Soils**
  -  Soil Map Units
- Soil Ratings**
  -  Very limited
  -  Somewhat limited
  -  Not limited
  - Not rated or not available
- Political Features**
  -  Cities
- Water Features**
  -  Oceans
  -  Streams and Canals
- Transportation**
  -  Rails
  -  Interstate Highways
  -  US Routes
  -  Major Roads
  -  Local Roads

## MAP INFORMATION

Map Scale: 1:1,680 if printed on A size (8.5" x 11") sheet.  
 The soil surveys that comprise your AOI were mapped at 1:20,000.  
 Please rely on the bar scale on each map sheet for accurate map measurements.

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 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
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Soil Survey Area: Madison County, Mississippi  
 Survey Area Data: Version 6, Dec 16, 2008

Date(s) aerial images were photographed: 9/19/2004

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Shallow Excavations

Shallow Excavations— Summary by Map Unit — Madison County, Mississippi						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
Oa	Oaklimeter silt loam	Very limited	Oaklimeter (90%)	Depth to saturated zone (1.00)	3.3	100.0%
				Flooding (0.60)		
				Cutbanks cave (0.10)		
			Unnamed hydric soils (134de) (5%)	Depth to saturated zone (1.00)		
				Cutbanks cave (0.10)		
<b>Totals for Area of Interest</b>					<b>3.3</b>	<b>100.0%</b>

Shallow Excavations— Summary by Rating Value		
Rating	Acres in AOI	Percent of AOI
Very limited	3.3	100.0%
<b>Totals for Area of Interest</b>		<b>3.3</b> <b>100.0%</b>

## Description

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher

**6. Letter of No Effect from National Park Service**



IN REPLY REFER TO:

## United States Department of the Interior

## NATIONAL PARK SERVICE

Natchez Trace Parkway  
2680 Natchez Trace Parkway  
Tupelo, Mississippi 38804

MAR 30 2009

H30, H32 (NAPR) xLB027-5570-R-037  
xLB051 5570-08-004, L30-3P, D30-3PMr. Dustin Pittman  
Project Engineer, Waggoner Engineering  
P.O. Box 12227  
Jackson, MS 39236

Dear Mr. Pittman:

In response to your February 19, 2009, correspondence regarding the White Oak Sewer Interceptor, we have determined that the project will have no adverse effect on historic properties on or eligible for the National Register based on criteria in 36 Code of Federal Regulations 800.5.

If you have any further questions, you may contact Dr. Christina E. Miller Smith at [Christina.smith@nps.gov](mailto:Christina.smith@nps.gov) or (662) 840-7560.

Sincerely,

/s/

  
for Gordon J. Wilson  
Acting Superintendent

## **7. Letter of No Effect from U.S. Fish and Wildlife**

143-A LeFleurs Square  
Jackson, MS 39211-5525

P.O. Box 12227  
Jackson, MS 39236-2227

601-355-9526 Voice  
800-661-3733 Toll-Free  
601-352-3945 Fax

www.waggonereng.com



RECEIVED  
MAR 03 2009  
By MS Field Office

February 19, 2009

Ms. Kathy W. Lunceford  
Fish and Wildlife Biologist  
U.S. Fish and Wildlife Service  
6578 Dogwood View Parkway, Suite A  
Jackson, MS 39213

RE: *Threatened and Endangered Species Evaluation on a Proposed Wastewater Project, Ridgeland, MS  
Natchez Trace Crossing  
White Oak Creek Sewer Interceptor*

Dear Ms. Lunceford:

On behalf of the City of Ridgeland, MS and Waggoner Engineering, Inc. (WEI) a determination is requested from your office to complete an Environmental Assessment for the National Park Service as required for the City of Ridgeland's application for a permit to place a sewer line underneath the Natchez Trace Parkway as part of above referenced project.

The area of Ridgeland west of Interstate 55 is a growing community, and the current wastewater collection system for the White Oak Creek drainage basin consists of a number of lift stations and force mains that pump wastewater into the adjacent Purple Creek Interceptor. This mode of operation cannot be sustained indefinitely because growth in the White Oak Creek and Purple Creek drainage basins will soon exceed the design capacity of the Purple Creek Sewer Interceptor. This project will provide a gravity sewer interceptor to the White Oak Creek drainage basin that connects to the City of Jackson's 30" interceptor just outside the southern corporate limit of Ridgeland. The project will also eliminate the need of seven (7) lift stations that have a history of failure.

The specific area of interest is the land owned and maintained by the National Park Service for the Natchez Trace Parkway. This specific branch of the sewer interceptor will be used to eliminate two (2) lift stations that serve portions of the Bridgewater community. The gravity sewer will be placed under the National Park Service utilizing horizontal directional drilling with bore pits being constructed outside of the National Park Service boundaries. Two drilling fluid collection points, or "weep holes" approximately 2-3' in diameter will be dug within the National Park Service boundaries to collect drilling mud during the process. All efforts will be made to construct these holes and disturb as little surface vegetation as possible.

The proposed construction site for the Natchez Trace crossing lies in Sections 23 and 26 of Township 7 North, Range 1 East, Madison County, Mississippi. Enclosed is a USGS 7.5-minute quadrangle as well as a 2007 aerial photo with the approximate boundary of the project area outlined for your convenience.

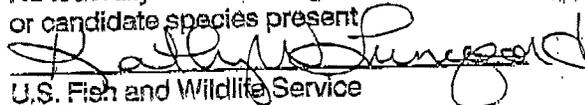
If you need any additional information or have any questions, please do not hesitate to call me at (601) 355-9526. We look forward to receiving your response on this important matter. If no response is received from your office within 30 days, Ridgeland/WEI will make the determination that the proposed activities will not affect this area of statutory-regulatory compliance.

Sincerely,

  
Dustin Pittman  
Project Engineer

Enclosures - Quadrangle  
Aerial Photo

No federally listed endangered, threatened,  
or candidate species present

  
Kathy W. Lunceford  
U.S. Fish and Wildlife Service  
Mississippi Field Office  
6578 Dogwood View Pkwy  
Jackson, MS 39213

Log # 09-410 Date 03/03/09

## **8. Business Case for ARRA Green Project Reserve Funds**

**City of Ridgeland, Mississippi**  
**White Oak Creek Basin Sewer Interceptor System**

**Business Case for ARRA Green Project Reserve**

**Project Summary:**

The City of Ridgeland, Mississippi has provided its citizens with centralized collection and disposal of wastewater for over four decades. In the late 1970's, with the enactment of the Federal Clean Water Act, Ridgeland converted from lagoon treatment with discharges to area streams, to contracting with the City of Jackson (via the East Madison County Sewage Disposal System - EMCSDS) to receive and dispose of Ridgeland's wastewater through a regional sewage system. This regional system consists of gravity interceptors serving areas of the City of Madison, Pearl River Valley Water Supply District, and the City of Ridgeland. The service area of the EMCSDS was not however envisioned to extend any further west than generally the Interstate 55, and generally being confined to the Pearl River tributary drainage basins of Culley Creek, Brashears Creek, Beaver Creek, School Creek, and Purple Creek. For the past 15 years, Ridgeland has been serving new development west of and outside of the EMCSDS Service Area by a system of pump stations and force mains that ultimately transfer those wastewater flows into the EMCSDS Service Area. As the growth of Ridgeland now extends westward well beyond the limits of the EMCSDS service area, the City is faced with the necessity of establishing the infrastructure necessary for collection and transportation of the wastewaters from those areas. As a first step the City has recently established a new agreement with the City of Jackson for wastewater from this proposed infrastructure to enter into the City of Jackson's system for delivery to the wastewater treatment facility.

Ridgeland's most crucial need for wastewater infrastructure is in the White Oak Creek drainage basin, which is an expansive land area that blankets the entire western growth frontier of the City. The White Oak Creek Basin is just west of and outside of the EMCSDS service area. This basin includes such established and growing developments as Dinsmor, Bridgewater, Windrush, Carlton Park, Hillview, Fox Hollow, and others. The White Oak Creek basin represents approximately 2,480 acres of land area inside the City's current corporate limits. Another 1,762 acres of the White Oak Creek basin is outside the corporate limits and considered to be in the City's near-term growth path.

Lacking the basic sewer infrastructure, the White Oak Creek (WOC) basin has been served in a patchwork method with the use of pump stations and force mains that ultimately transport the wastewaters into the adjacent Purple Creek Interceptor (PCI). These inter-basin transfers of flows into the PCI effectively “borrow” capacity that will soon be needed for growth occurring in the Purple Creek basin. Active growth in the Purple Creek basin, which will soon need sewer capacity, includes such developments as the recently announced Old Agency Square development and the Township development, which is now under construction.

A wastewater facilities plan for the White Oak Creek drainage basin was completed in January 2007 and updated in March 2009. The recommendation of the plan is the construction of White Oak Interceptor, Phase 1. This includes construction of approximately 25,000 LF of 8”-30” diameter gravity main, and the abandonment of 8 existing pump stations within the White Oak Creek basin. Elimination of the existing lift stations not only will save energy, it will prevent overflows and bypasses from the system due to power outages or mechanical pump failures.

**Energy Savings Considerations:**

The guidance document for developing Energy Efficient Business Case recommends that the primary goal of the project insure that energy efficient design and operational considerations and practices are being followed, and that that the project will provide justifiable energy savings. The primary goal of this project is the elimination of the 8 existing lift stations and the associated energy and maintenance savings. The secondary goal is to eliminate overflows and bypasses of raw and untreated sewage from the system due to power outages or mechanical pump failures.

The typical electrical costs and pump data for the 8 lift stations is as follows:

<b>Pump Station Name</b>	<b>Number of Pumps</b>	<b>Horsepower (Ea)</b>	<b>Electrical Cost / Mo.</b>
Cherry Laurel PS	2	7.5	\$16
Chicot (Bridgewater PS #1)	2	5	\$34
Club House (Bridgewater PS #2)	2	5	\$67
Red Leaf (Bridgewater PS #3)	2	10	\$186
Nancy PS	2	2	\$44
Summer Lake PS	2	3	\$98
Oakhurst PS	2	7.5	\$227
Firestation PS	2	15	\$158

The estimated construction cost of the White Oak Creek Sewer system as presented in the Facility Plan Update is \$4,372,606.

The life expectancy of the gravity sewer system is estimated at 50 years. The present worth cost of the electrical savings over this period of time at 4% is \$215,189.25.

The energy savings alone therefore represent approximately 5% of the construction cost and this reduction in operating costs obviously will have a significant impact on the City of Ridgeland and their financial capability to pay for this project.

The above Business Case effectively demonstrates that construction of the White Oak Creek Basin gravity sewer system to eliminate the 8 existing lift stations achieves a significant energy savings and that energy efficient design and operational practices are being followed.