Environmental Assessment

for the
Proposed Dredging at Little Brown Creek
Itawamba County, Mississippi

US Army Corps
of Engineers
Mobile District

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Environmental Assessment
Proposed Dredging of Little Brown Creek

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SECTION 1.0INTRODUCTION

Pursuant to the Council on Environmental Quality's (CEQ's) regulations for implementing procedural provisions of the National Environmental Policy Act (NEPA) (40 Code of Federal Regulations [CFR] 1500-1508), 32 CFR Part 989, this Environmental Assessment (EA) was prepared for the proposed dredging of Little Brown Creek.

This EA was prepared utilizing a systematic, interdisciplinary approach integrating the natural and social sciences and the design arts with planning and decision-making. The proposed actions and its alternatives are evaluated in multiple contexts for short-term and long-term effects and for adverse and beneficial effects. This EA indicates the effects on the human environment that are well-known and do not involve unique or unknown risks. It is not anticipated that this is a precedent-setting action nor does it represent a decision in principle about future considerations.

1.1. Location

The proposed location is Little Brown Creek located in Itawamba County, Mississippi. Approximately three miles southeast of Marietta, Mississippi. Little Brown creek is a tributary of Big Brown Creek which at its confluence with Mackeys Creek forms the Tombigbee River, historically known as the East Fork until its confluence with the West Fork near Bigbee, Mississippi.

1.2. Proposed Action

The proposed action involves the dredging of Little Brown Creek to correct siltation of the channel and reopen the connection of Little Brown Creek to Big Brown Creek. Further details are described in **Section 3.0**.

1.3. Purpose and Need

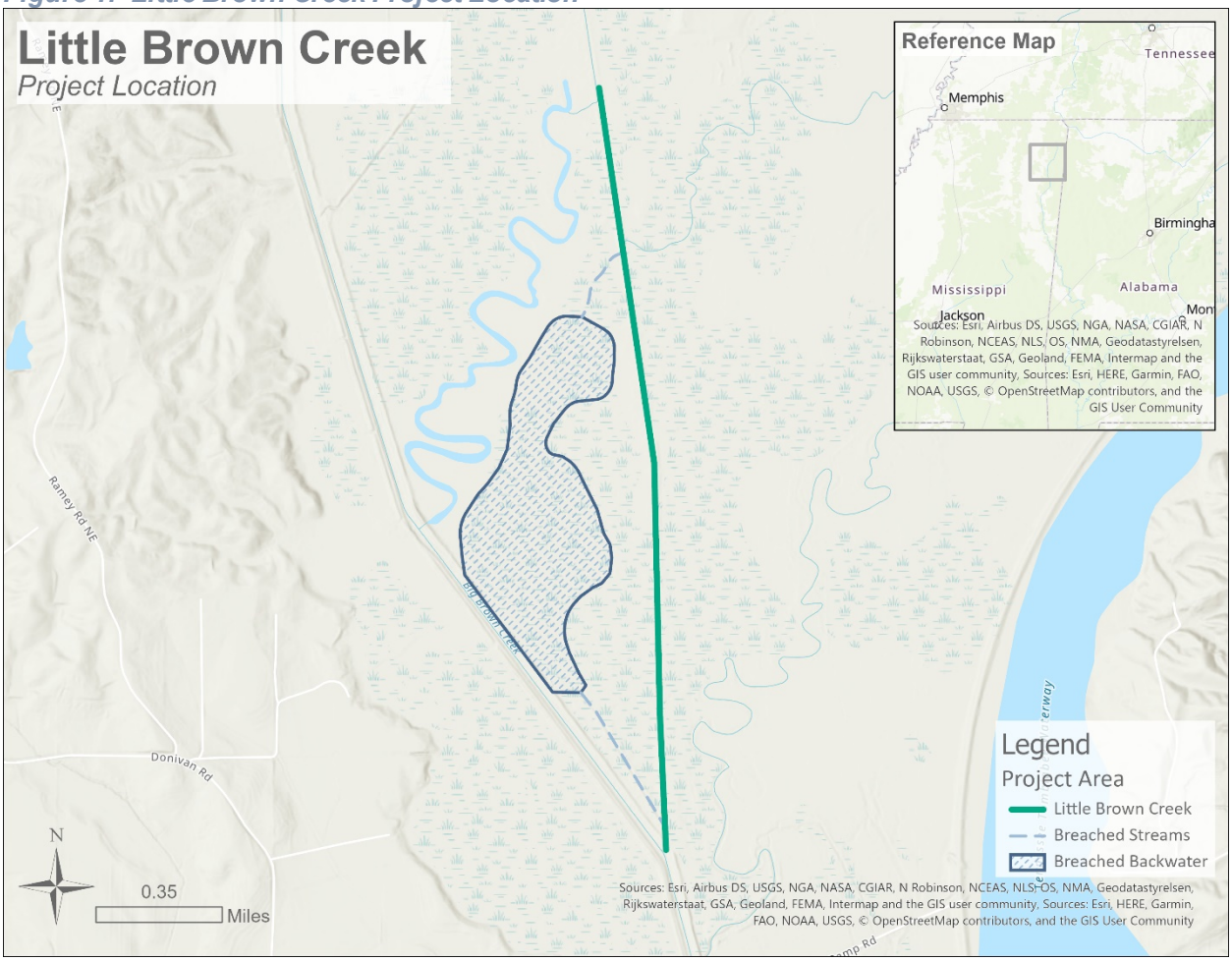
The Little Brown Creek is a channelized perennial water of the U.S. just west of the Tennessee-Tombigbee waterway and is located within a floodplain associated with the western outside bend of the river. The creek is located within a large rather undeveloped area containing a large amount of bottomland hardwood wetlands, some uplands, abandoned stream beds, oxbow lakes, and other named streams. Over the years, large amounts of sediment has deposited in the system and the creek's available storage capacity has significantly decrease. As a result of this, the creek is no longer functioning as originally designed and constructed. Due to its limited storage capacity, it is estimated that approximately 4,000 acres of bottomland hardwood on both U.S. Army Corps of Engineers (USACE) and adjacent landowner's property has been impacted. Failure to resolve this problem will result in damage to additional acres on both, USACE and private property. **Picture 1** thru **Picture 8** show the current flooding extent and damage to surrounding private property.

1.4. Authority

Historically channelized by local drainage districts to allow more bottomland acreage to be farmed, Little Brown Creek and Big Brown Creek were created between 1910 and 1930 along with several other tributaries to the East Fork of the Tombigbee River. Section 2 of the Flood Control Act dated August 28, 1937 authorized the federal government to

improve the lower reaches several previously channelized tributaries including Little Brown Creek and Big Brown Creek. These channels were again improved for flood control in the 1960s under the authority of the Flood Control Act of July 3, 1958. The work was completed in March 1971 and transferred to local interest for maintenance.

Figure 1: Little Brown Creek Project Location



Picture 1: Fooded crops in the surrounding area

Picture 2: Flooded fields in the surrounding area

Picture 3: New breech due to backwater effect

Picture 4: Flodded crops of adjacent landowner

Picture 5: Residual water following flood event

Picture 6: Residual water following flood event

Picture 7: Flooded access road during flood event

Picture 8: Rapid water during flood event

SECTION 2.0 ENVIRONMENTAL SETTING WITHOUT THE PROJECT

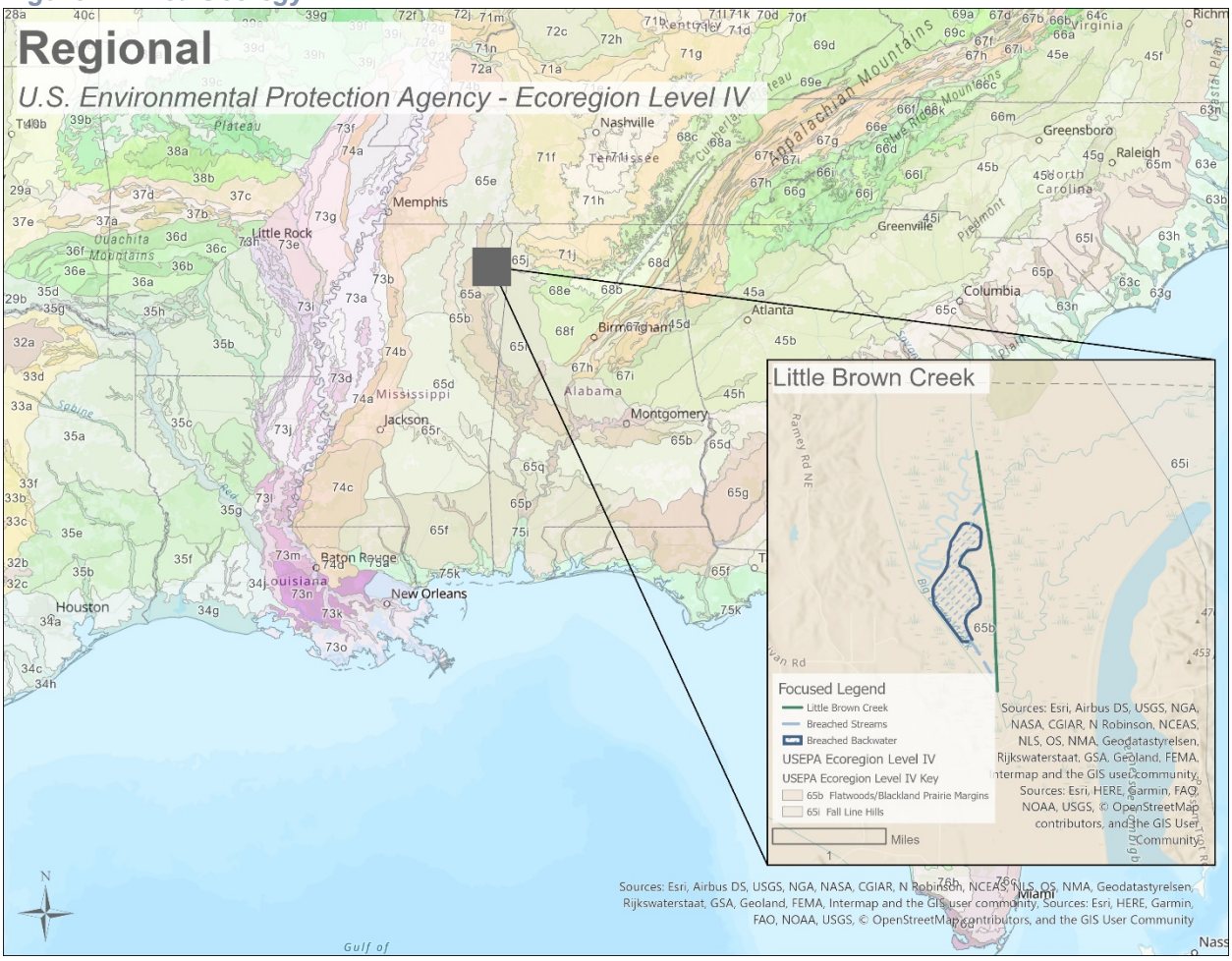
2.1. General Environmental Setting

The Brown Creek Watershed, which includes Little Brown Creek, drains approximately 150 square miles in northeast Mississippi. Approximately 37 miles of the Brown Creek Watershed has been channelized since 1900, including a significant stretch of Little Brown Creek.

2.1.1. *Geology*

Since 1987, the USEPA has defined ecoregions throughout the United States for the use of classifying habitat ecosystems based on physiological characteristics such as varying topography, geology, and soils (Omernik, et al,2001). The project location lies within the Flatwoods/Blackland Prairie Margins Ecoregion in the State of Mississippi. The Flatwoods/Blackland Prairie Margins Ecoregion is considered to be smooth lowland plains and undulating irregular plains with sluggish, low gradient, clay and sand bottomed streams. Soils of the USEPA defined Flatwoods/Blackland Prairie Margins Ecoregion are mostly Wilcox, Mayhew, Vaiden, Sumter, Kipling, Consul, Sucarnoochee, Oktibbeha, and Conecuh.

Figure 2: Area Geology



2.1.1.1. *Future Without Project Conditions*

Future Without Project Conditions would not be significantly changed from existing conditions.

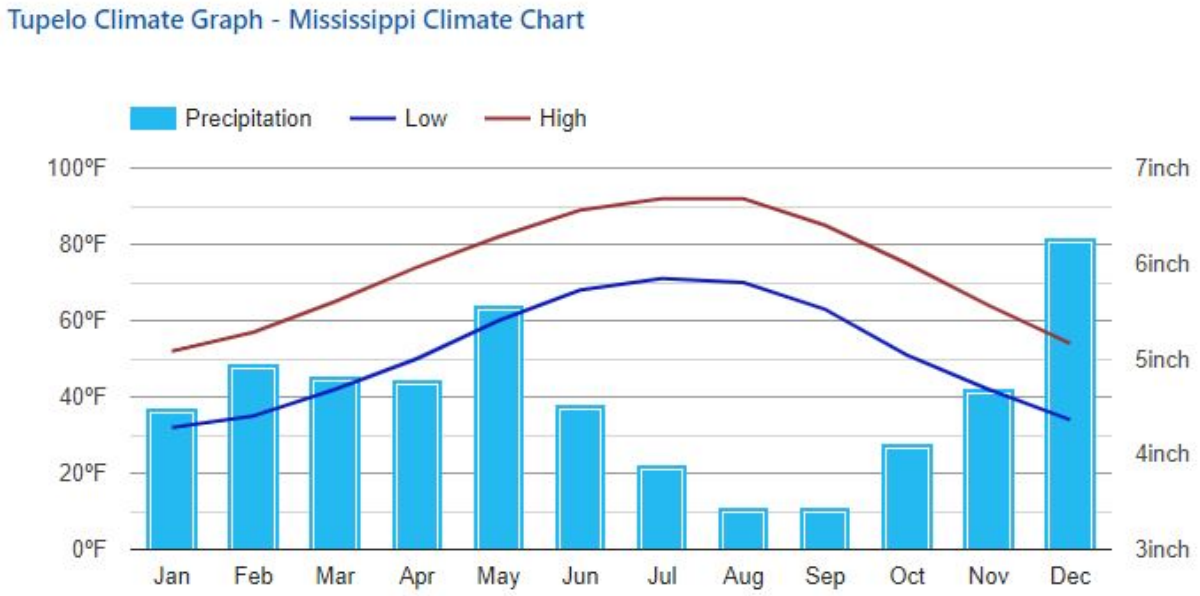
2.1.2. *Climate*

The climate in the surrounding area is generally warm with some seasonal variations. According to the U.S. climate data the hottest period of the year tends to be July/August with an average high temperature of 92°F, and average low of 71°F. The coolest month of the year is January with an average high of 52°F and low of 32°F. Precipitation is heaviest in the project location during the month of December with an average rainfall rate of 6.28 inches. Conversely, September is the driest month of the year with an average of 3.44 inches of rainfall. The average annual precipitation is 55.01 inches.

2.1.2.1. *Future Without Project Conditions*

Future Without Project Conditions would not be significantly changed from existing conditions.

Figure 3: U.S. Climate Data average monthly temperatures and precipitation



2.2. Significant Resources

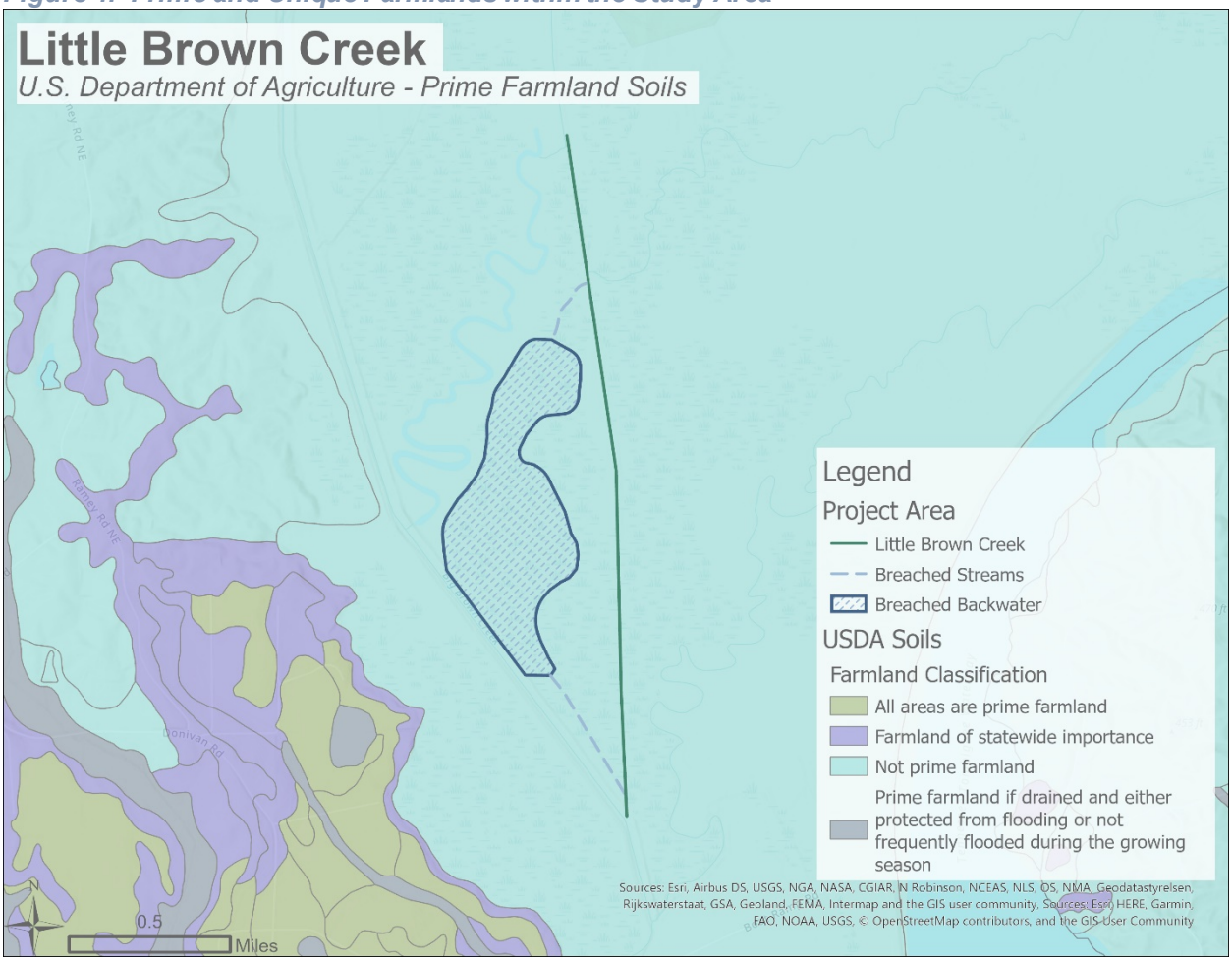
2.2.1. *Prime and Unique Farmlands*

No prime and unique farmland soils exist within the project location; however much of the surrounding terrain contains a significant portion of prime and unique farmland soils.

2.2.1.1. *Future Without Project Conditions*

Future Without Project Conditions would not be significantly changed from existing conditions. No significant urbanization is anticipated due to the depressed economy.

Figure 4: Prime and Unique Farmlands within the Study Area



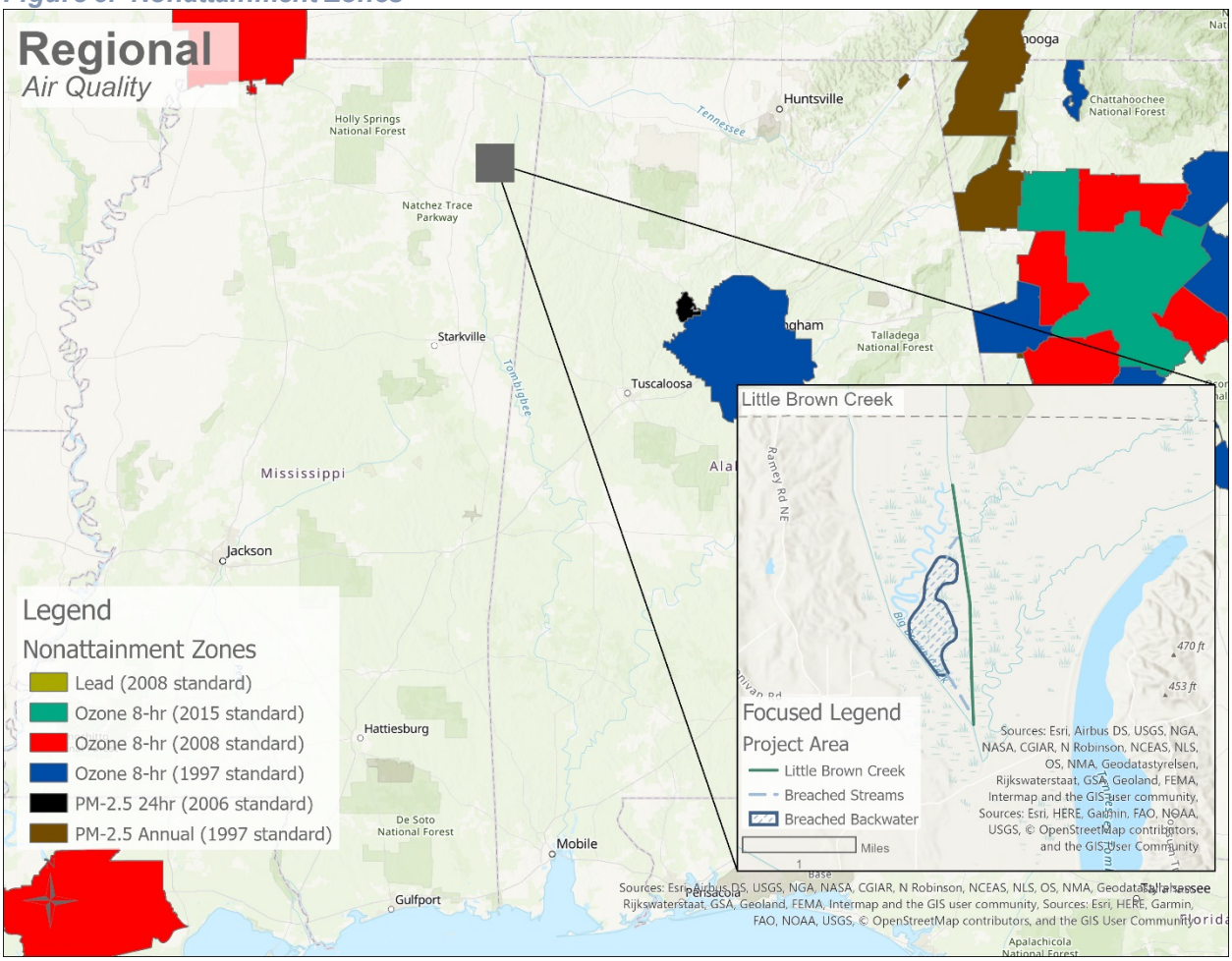
2.2.2. *Air Quality and Greenhouse Gasses*

The U.S. Environmental Protection Agency (USEPA) sets National Ambient Air Quality Standards (NAAQS) in accordance with the Clean Air Act (CAA) "for pollutants considered harmful to public health and the environment." The clean Air Act (CAA) identifies two types of NAAQS: primary and secondary. Primary standards provide public health protection and secondary standards provide public welfare protection. The USEPA has set NAAQS for six principal pollutants, which are called criteria air pollutants: carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, lead, and particulate matter (PM_{10} and $PM_{2.5}$).

The General Conformity Rule published by the USEPA on November 30, 1993 designates and implements Section 176(c) of the CAA for geographic areas in CAA non-attainment areas for criteria pollutants and in those attainment areas subject to maintenance plans required by CAA Section 175(a). The CAA General conformity Rule applies to Federal actions.

The project area is not located within or near any designated non-attainment areas for any criteria air pollutants as shown in **Figure 5**.

Figure 5: Nonattainment Zones



2.2.2.1. *Future Without Project Conditions*

Air quality and greenhouse gasses are predominantly driven by urbanized settings. No significant urbanization growth is anticipated within the surrounding area due to a depressed economy; therefore FWOP conditions would not be significantly changed from the existing setting.

2.2.3. *Water Quality*

Section 401 requires that the State issue water quality certification for any activity which requires a Federal permit and may result in a discharge to State waters. This certification must state that applicable effluent limits and water quality standards will not be violated. The USEPA delegates authority pursuant to the CWA to the states for monitoring and maintaining clean water standards.

Section 303(d) of the CWA authorizes USEPA to assist states, territories and authorized tribes in listing impaired waters and developing Total Maximum Daily Loads (TMDLs) for these water bodies. A TMDL establishes the maximum amount of a pollutant allowed in a water body and serves as the starting point or planning tool for restoring water quality. States are required to submit their list for USEPA approval every two years. For each water body on the list, the state identifies the pollutant causing the impairment, when

known. In addition, the state assigns a priority for development of TMDL based on the severity of the pollution and the sensitivity of the uses to be made of the waters, among other factors (40 C.F.R. §130.7(b)(4)). There are no 303(d) listed bodies of water within the project location. The nearest impaired waterbody is Casey Creek which has no hydrologic connectivity to Little Brown Creek. Four boring collections in Little Brown Creek were conducted to analyze sediment composition due to the neighboring Big Brown Creek TMDL (**Figure 7**). Analysis of the boring locations can be found in **Appendix A**.

Figure 6: Water Quality

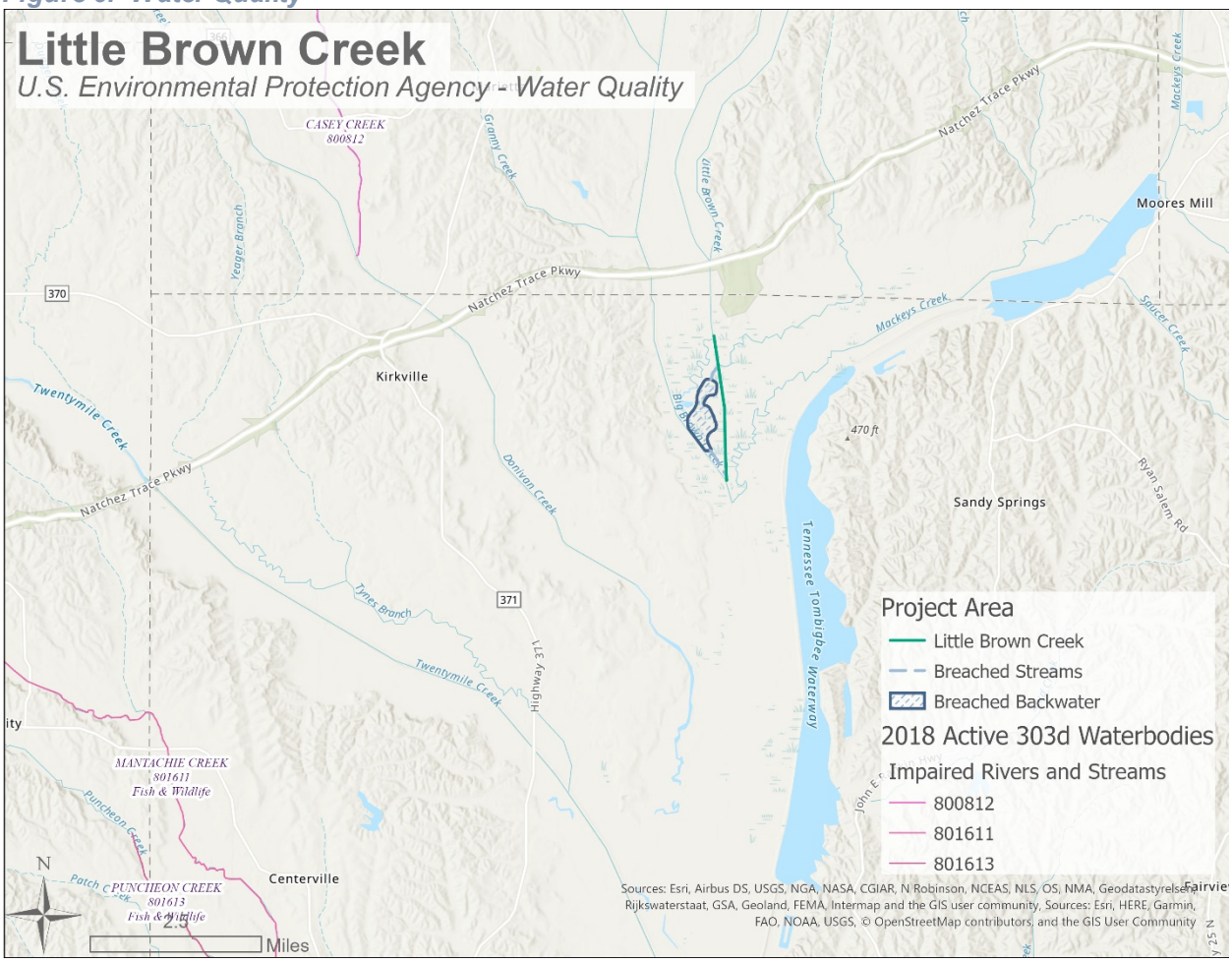
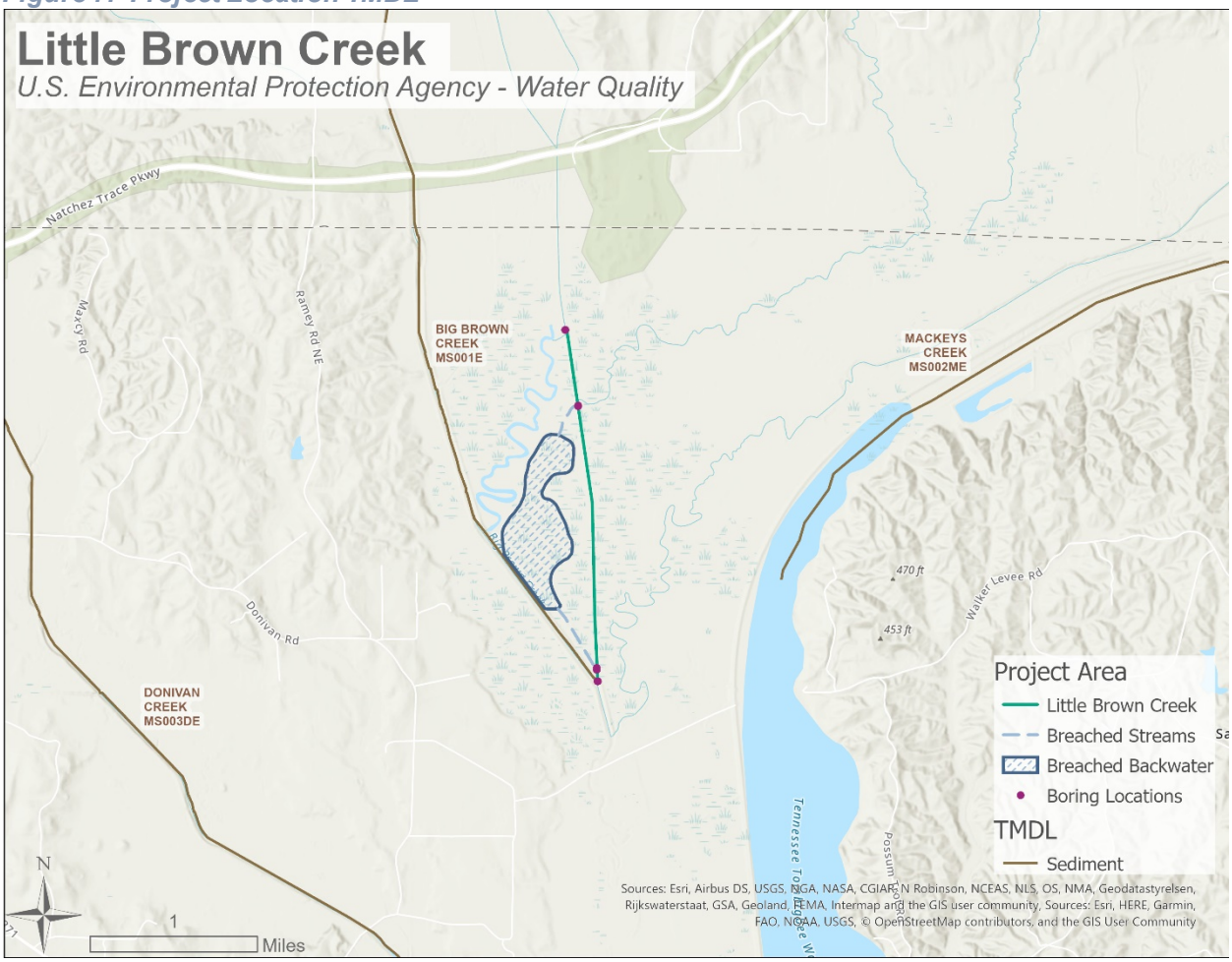


Figure 7: Project Location TMDL



2.2.3.1. *Future Without Project Conditions*

Impaired water quality is predominantly related to urbanized settings. No significant urbanization growth is anticipated within the surrounding area due to a depressed economy; therefore FWOP conditions would not be significantly changed from the existing setting.

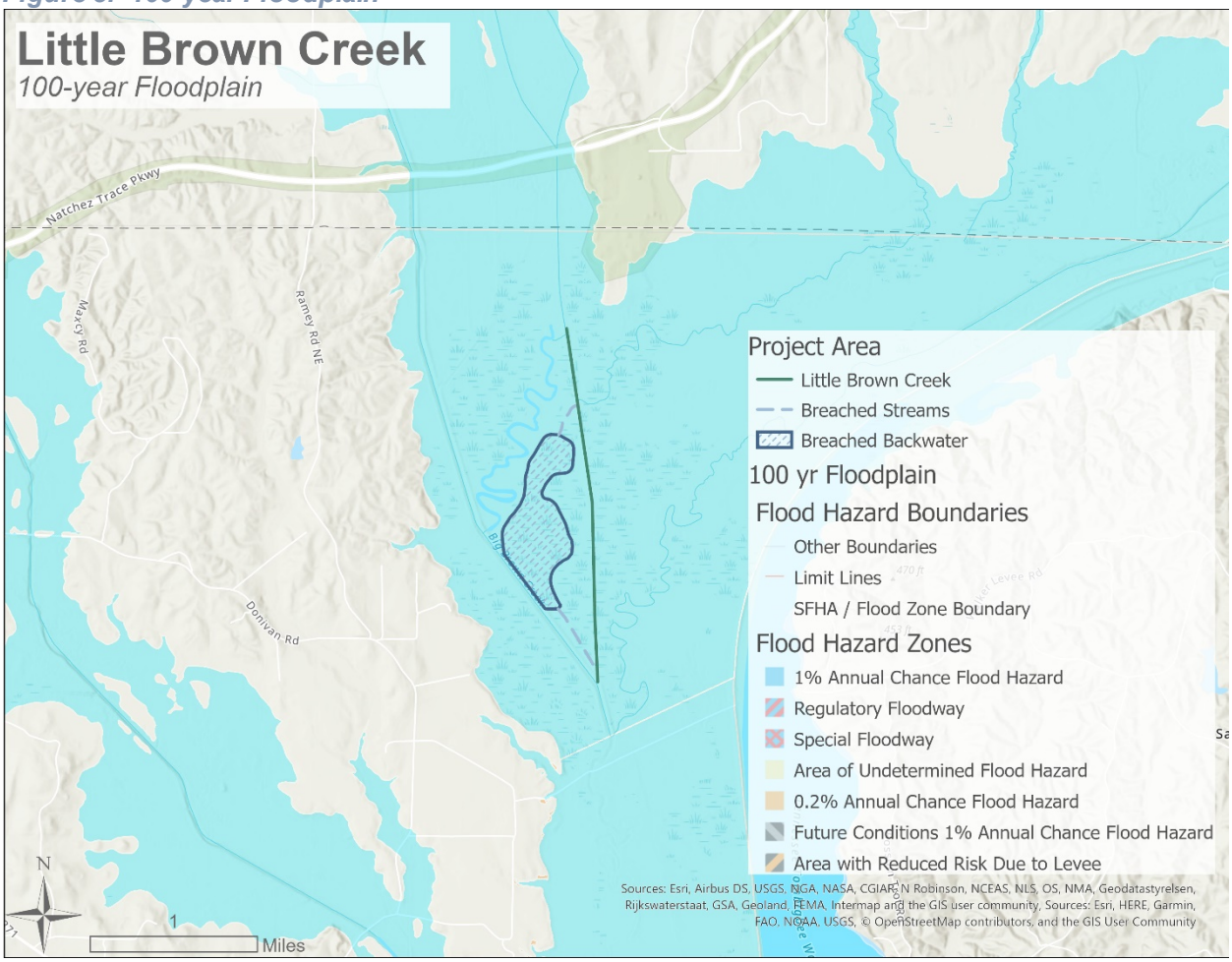
2.2.4. *Hydrology*

The project location lies within the 100-year floodplain and frequently experiences flash flooding due to the Little Brown Creek breach. As rapid floodwaters flow into the project location, the surrounding area experiences backlogging into neighboring crops.

2.2.4.1. *Future Without Project Conditions*

Flooding under FWOP conditions would continue to increase due to additional breaches that would occur.

Figure 8: 100-year Floodplain



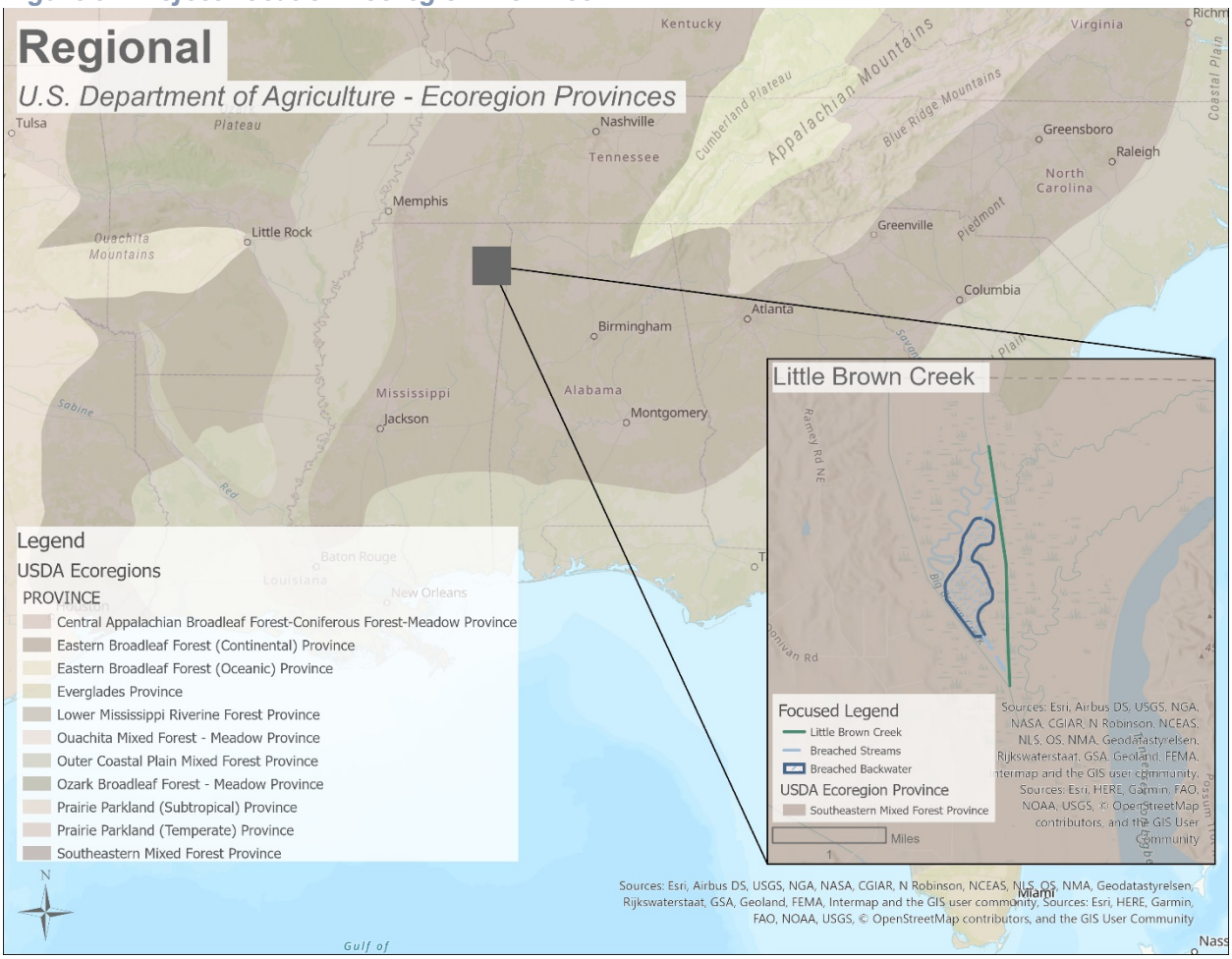
2.2.5. *Vegetation*

The U.S. Department of Agriculture (USDA) has defined ecological regions of the U.S. through a hierarchal assessment of domains, divisions, and provinces. Based on the USDA Ecoregion Map provided in **Figure 9**, the project location lies within the Southeastern Mixed Forest Province of the continental U.S. (Bailey 1995).

Since extensive cultivation practices during the 19th century, much of the Piedmont Ecoregion has reverted to pine and hardwood woodlands. Vegetation within the Southern Mixed Forest Province ranges from medium to tall forests of broadleaf deciduous trees and evergreen pine trees (Bailey 1995). Existing habitat within the project location ranges from heavily to moderately disturbed areas. The surrounding habitat includes forested riparian settings. Dominant native plant species throughout the project location include tulip poplar (*Liriodendron tulipifera*), white oak (*Quercus alba*), northern red oak (*Q. rubra*), black oak (*Q. velutina*), post oak (*Q. stellata*), hickories (*Carya glabra*, *C. tomentosa*, and *C. cordiformis*), American beech (*Fagus grandifolia*), loblolly pine (*Pinus taeda*), Virginia pine (*Pinus virginiana*), sweetgum (*Liquidambar styraciflua*), black cherry (*Prunus serotina*), flowering dogwood (*Cornus florida*), box elder (*Acer negundo*), and eastern red cedar (*Juniperus virginiana*).

Invasive plant species throughout the area include Japanese arrowroot (*Pueraria montana var. lobata*), cogongrass (*Imperata cylindrical*), yellow iris (*Iris pseudacorus*), Japanese honeysuckle (*Lonicera japonica*), star-of-Bethlehem (*Ornithogalum umbellatum*), garlic mustard (*Alliaria petiolate*), and Chinese wisteria (*Wisteria sinensis*). No formalized invasive species control plans exist within or near the project location.

Figure 9: Project Location Ecoregion Province



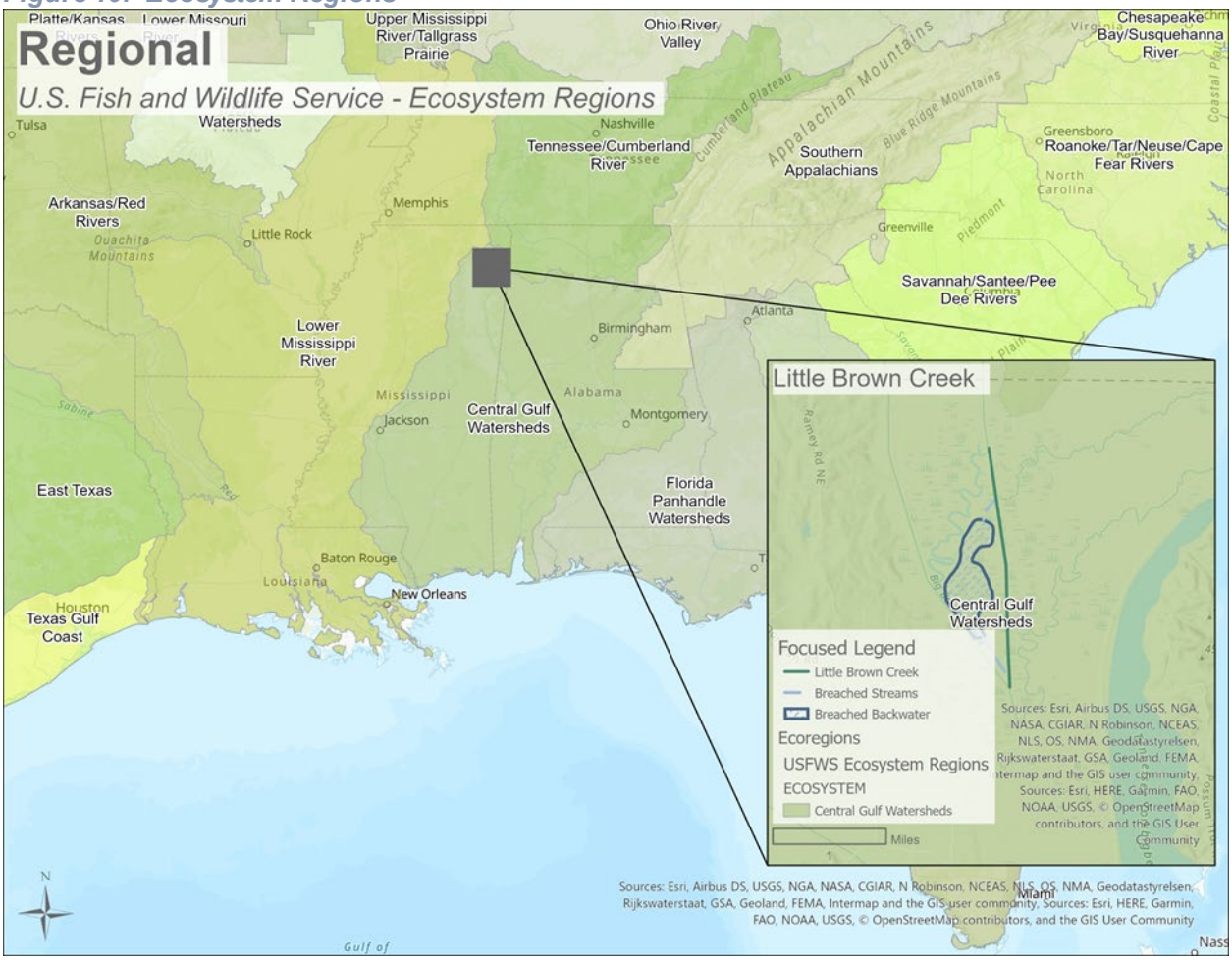
2.2.5.1. *Future Without Project Conditions*

Future Without Project Conditions would not be significantly changed from existing conditions.

2.2.6. *Fish and Wildlife Resources*

The U.S. Fish and Wildlife Service (USFWS) created the Ecosystem Regions as shown in **Figure 9** to categorize broad habitat reaches within the United States. The project location lies within the Central Gulf Watersheds. Species that can be found within this ecosystem are detailed in **Sections 2.2.6.1** and **2.2.6.2**.

Figure 10: Ecosystem Regions



2.2.6.1. *Aquatic Species*

Little Brown Creek is a man-made channel that provides lower quality habitat than a natural stream. Few living macro organisms were observed within the creek. Relict mussel shells were discovered along the bank of Little Brown Creek during a site visit on September 4, 2019 by a USACE biologist; however no living mussels were observed. Species that can be found within the surrounding area are listed in **Table 1**.

Table 1: Aquatic Species within the Surrounding Area

Fish	Mussels	Amphibians and Reptiles
Alabama Darter (*Etheostoma ramseyi*)	Threehorn Wartyback (*Obliquaria reflexa*)	Eastern Cottonmouth (*Agkistrodon piscivorus piscivorus*)
Alligator Gar (*Atractosteus spatula*)	Washboard (*Megalonaias nervosa*)	snapping turtles (*Chelydra serpentina*)
Black Crappie (*Pomoxis nigromaculatus*)	Bankclimber (*Plectomerus dombeyanus*)	Eastern Spiny Softshell (*Apalone spinifera spinifera*)
Blue Catfish (*Ictalurus furcatus*)	Southern Mapleleaf (*Quadrula apiculata*)	River Cooter (*Pseudemys Concinna*)
Bluegill (*Lepomis macrochirus*)	Fragile Papershell (*Leptodea fragilis*)	pond slider (*Trachemys scripta*)
Channel Catfish (*Ictalurus punctatus*)	Alabama Orb (*Quadrula asperata*)	Gulf Coast Smooth Softshell Turtle (*Apalone calvata*)

Flathead Catfish (*Pylodictis olivaris*)	Ebonyshell (*Fusconaia ebena*)	Alabama Map Turtle (*Graptemys pulchra*)
Redbreast Sunfish (*Lepomis auritus*)	Yellow Sandshell (*Lampsilis teres*)	Gulf Coast Spiny Softshell (*Apalone spinifera aspera*)
Redear Sunfish (*Lepomis microlophus*)	Gulf Pigtoe (*Fusconaia cerina*)	American Alligator (*Alligator mississippiensis*)
Spotted Bass (*Micropterus punctulatus*)	Monkeyface Mussel (*Quadrula metanevra*)	Florida Banded Water Snake (*Nerodia fasciata pictiventris*)
Striped Bass (*Morone saxatilis*)	Butterfly Mussel (*Ellipsaria lineolata*)	
Walleye Perch (*Sander vitreus*)	Elephant ear (*Elliptio crassidens*)	
White Bass (*Morone chrysops*)	Fawnsfoot (*Truncilla donaciformis*)	
White Crappie (*Pomoxis annularis*)		

2.2.6.1.1. *Future Without Project Conditions*

Future Without Project Conditions would not be significantly changed from existing conditions.

2.2.6.2. *Terrestrial Species*

Common species throughout the surrounding area are included in **Table 2**.

Table 2: Terrestrial Species within the Project Location

Mammals	**Birds**	**Reptiles**
Eastern Cottontail Rabbit (*Sylvilagus floridanus*)	Blue Jay (*Cyanocitta cristata*)	Gopher Tortoise (*Gopherus Polyphemus*)
Raccoon (*Procyon lotor*)	Northern Mockingbird (*Mimus polyglottos*)	Green Anole (*Anolis carolinensis carolinensis*)
Norway Rats (*Rattus norvegicus*)	American Crow (*Corvus brachyrhynchos*)	Eastern Fence Lizard (*Sceloporus undulates*)
Grey mouse (*Pseudomys albocinereus*)	American Goldfinch (*Spinus tristis*)	Mole Skink (*Plestiodon egregious*)
White-tailed Deer (*Odocoileus virginianus*)	American Robin (*Turdus migratorius*)	Five-Lined Skink (Plestiodon fasciatus)
Greater Mouse-Eared Bat (*Myotis myotis*)	Barn Swallow (*Hirundo rustica*)	Southern Copperhead (*Agkistrodon contortrix contortrix*)
Little Brown Bat (*Myotis lucifugus*)	Barred Owl (*Strix varia*)	Eastern Worm Snake (*Carphophis amoenus amoenus*)
Groundhog (*Marmota monax*)	Blue-gray Gnatcatcher (*Polioptila caerulea*)	Northern Black Racer (*Coluber constrictor constrictor*)
American Red Fox (*Vulpes vulpes fulvus*)	Carolina Chickadee (*Poecile carolinensis*)	Timber Rattlesnake (*Crotalus horridus*)
Striped Skunk (*Mephitis mephitis*)	Carolina Wren (*Thryothorus ludovicianus*)	Eastern Ribbon Snake (*Thamnophis sauritus sauritus*)
Coyotes (*Canis latrans*)	Red-tailed Hawk (*Buteo jamaicensis*)	Eastern Glass Lizard (*Ophisaurus ventralis*)

2.2.6.2.1. *Future Without Project Conditions*

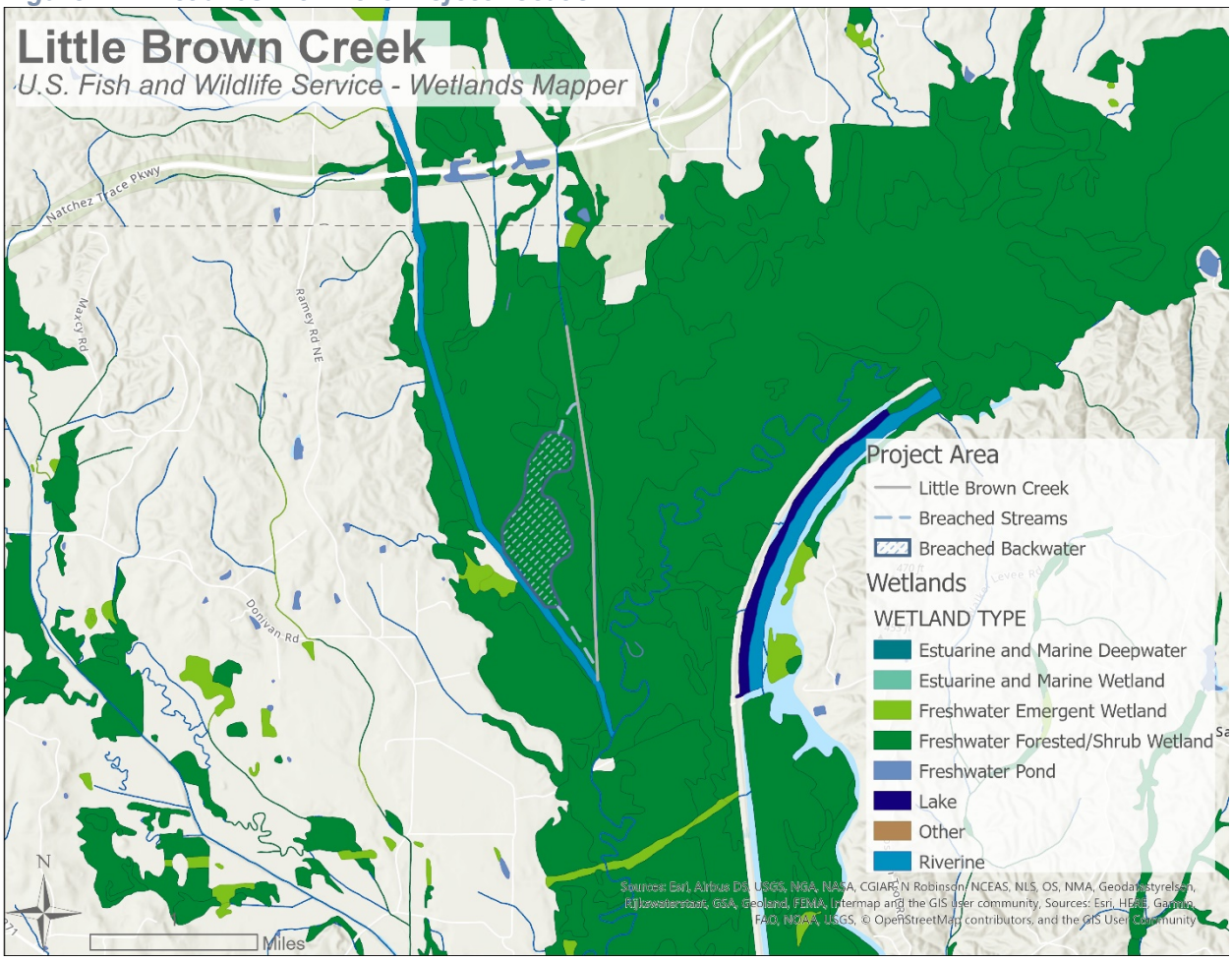
Future Without Project Conditions would not be significantly changed from existing conditions.

2.2.7. *Wetlands*

Section 404 of the CWA establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. According to the *1987 Corps of Engineers Wetlands Delineation Manual and Regional Supplements*, wetlands are defined as jurisdictional when three criteria are met: hydrologic connectivity, hydric soils, and hydrophyte vegetation. As shown in **Figure 11** the project location contains a high potential for having jurisdictional wetlands. A desktop delineation of jurisdictional wetlands is included in **Appendix B**.

Activities in waters of the United States regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports) and mining projects. Section 404 requires a permit before dredged or fill material may be discharged into waters of the United States, unless the activity is exempt from Section 404 regulation (e.g., certain farming and forestry activities). The basic premise of the program is that no discharge of dredged or fill material may be permitted if: (1) a practicable alternative exists that is less damaging to the aquatic environment (i.e. avoid) or (2) the nation's waters would be significantly degraded.

Figure 11: Wetlands within the Project Location



2.2.7.1. *Future Without Project Conditions*

Future Without Project Conditions would not be significantly changed from existing conditions.

2.2.8. *Federally Protected Species*

2.2.8.1. *Threatened and Endangered Species*

The Endangered Species Act (ESA) "provides for the conservation of species that are endangered or threatened throughout all or a significant portion of their range, and the conservation of the ecosystems on which they depend." The ESA makes it illegal to "take" a Federally-listed species, such as threatened and/or endangered species (T&E), without a permit. "Take" is defined by the ESA as "to harass, harm, pursue, hunt, shoot, would, kill, trap, capture, or collect or attempt to engage in any such conduct." The U.S. Fish and Wildlife Service (USFWS) has statutory authority for the assessment of Federally–listed or petitioned species on the land or in freshwater. According to the USFWS ESA Overview, "A species is considered endangered if it is in danger of extinction throughout all or a significant portion of its range or threatened if it is likely to become an endangered species within the foreseeable future."

Those federally listed species occurring within Itawamba County, Mississippi are referenced in **Table 3**.

Table 3: Threatened and Endangered Species in Itawamba County, Mississippi

Species Name	Common Name	Status T/E	Suitable Habitat	Habitat Presence
Mammals				
Myotis sodalis	Indiana Bat	E	small to medium river and stream corridors with well developed riparian woods	Yes
Myotis septentrionalis	Northern Long-eared Bat	T	Winter: caves; summer: underneath bark, in cavities or in crevices of both live trees and snags (dead trees)	Yes
Birds				
Mycteria americana	Wood Stork	T	Forested/herbaceous wetland	Yes
Insects				
Neonympha mitchellii mitchellii	Mitchell's Satyr Butterfly	E	rare wetlands called fens which are low nutrient wetlands that receive carbonate-rich ground water from seeps and springs	No
Fishes				

Percina tanasi	Snail Darter	T	clean gravel or sandy shoals in large creeks and rivers	No
Clams				
Medionidus acutissimus	Alabama Moccasinshell	T	sand and gravel substrate in clear water of moderate flow in small to large rivers	No
Pleurobema curtum	Black Clubshell	E	clean, swift-flowing rivers where the bottom is formed of firm rubble, gravel, or sand	No
Epioblasma brevidens	Cumberlandian Combshell	E	medium-sized streams to large rivers on shoals and riffles in coarse sand, gravel, cobble, and boulders	No
Pleurobema taitianum	Heavy Pigtoe	E	gravel with large component of coarse sand in water exceeding 6 m with variable current	No
Potamilus inflatus	Inflated Heelsplitter	T	sand, mud, silt, and sandy-gravel substrates in slow to moderate currents and is usually collected on the protected side of bars in water as deep as 20 feet	No
Orangenacre Mucket	Lampsilis perovalis	T	high quality lotic (living in actively moving water) habitats with stable gravel and sandy-gravel substrates	No
Pleurobema perovatum	Ovate Clubshell	E	sand/gravel shoals and runs of small rivers and large streams	No
Epioblasma capsaeformis	Oyster Mussel	E	Small to medium-sized rivers, in areas with coarse sand to boulder substrates and moderate to swift currents	No
Quadrula cylindrica cylindrica	Rabbitsfoot	T	small- to medium-sized stream and	No

			some larger rivers. It occurs shallow water areas along the bank and in shoals with reduced water velocity.	
Pleuronaia dolabelloides	Slabside Pearlymussel	E	large creek to moderately-sized river species. It generally is found in gravel substrates with interstitial sand, with moderate current, at depths less than 1 meter deep in moderate to swift current velocities	No
Epioblasma triquetra	Snuffbox Mussel	E	small- to medium-sized creeks, inhabiting areas with a swift current	No
Pleurobema decisum	Southern Clubshell	E	highly oxygenated streams with sand and gravel substrate in shoals of large rivers to small streams	No
Epioblasma penita	Southern Combshell		high-quality lotic (living in actively moving water) habitats with stable gravel and sandy-gravel substrates	No
Plants				
Apios priceana	Price's Potato-bean	T	open, mixed-oak forests, forest edges and clearings on river bottoms and ravines, being unable to tolerate deep shade	No
Platanthera integrilabia	White Fringeless Orchid	T	wet, boggy areas at the heads of streams and on sloping areas kept moist by groundwater seeping to the surface	No

Within the surrounding area, suitable habitat is present for the Indiana bat, Northern Long Eared Bat, and Wood Stork. No critical habitat has been designated within the project location.

2.2.8.1.1. *Future Without Project Conditions*

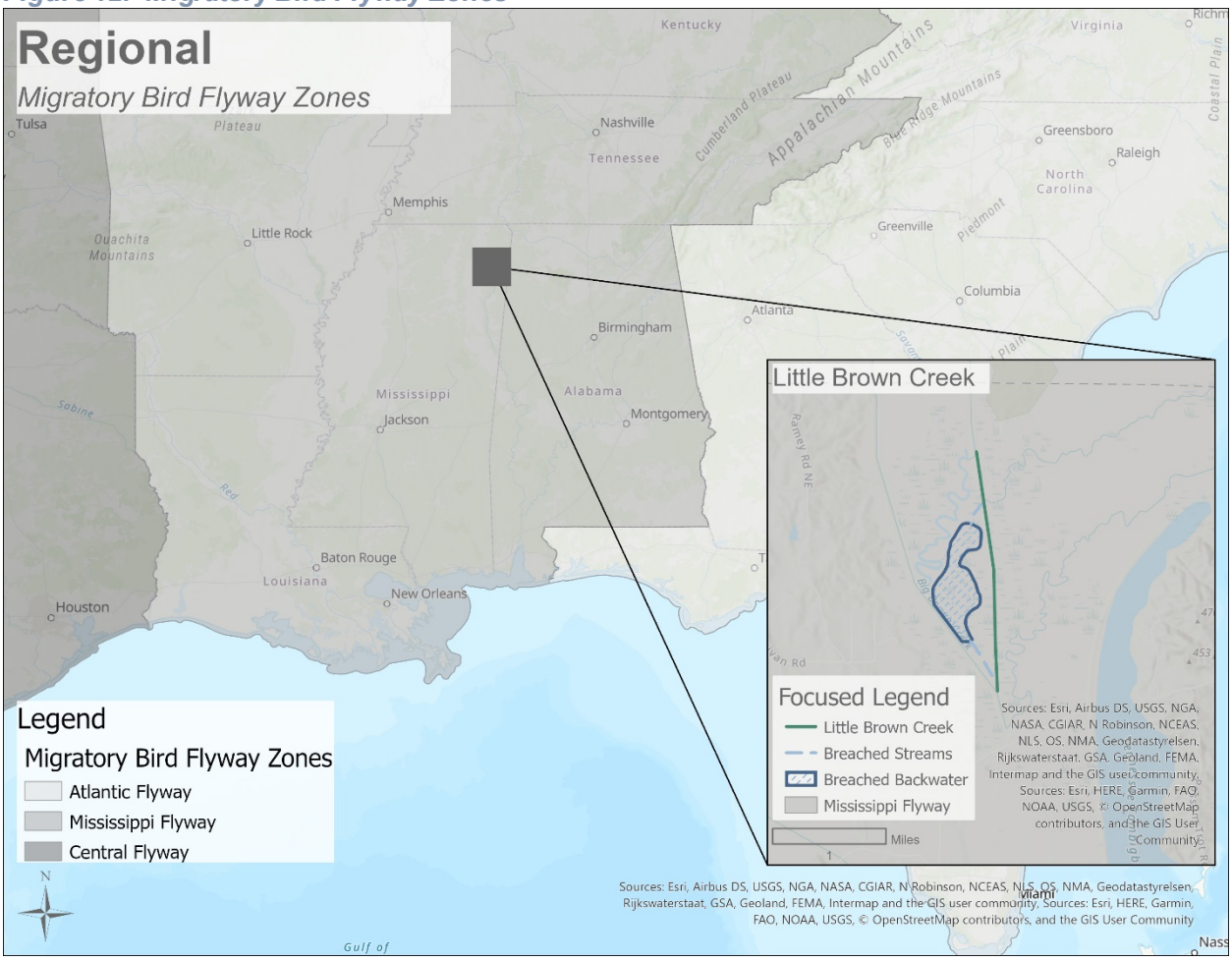
Future Without Project Conditions would not be significantly changed from existing conditions.

2.2.8.2. *Migratory Birds*

The Migratory Bird Treaty Act (MBTA) makes it illegal to "take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter" a species identified in 50 CF 10.13. The USFWS has statutory authority and responsibility for enforcing the MBTA under 16 U.S.C. 703-712. The USFWS recently proposed in the Federal Register (Vol. 83, No. 229, November 28, 2018) both adding and removing species. Migratory species protected by the MBTA are internationally protected through conventions between the U.S. and Canada, Mexico, Japan, and Russia. Any species protected through one or more of the four international conventions is qualified for protection under the MBTA.

The project location is located in the Mississippi Flyway zone. No stopover sites are known to occur within or surrounding the project location; however migratory birds, such as the Common Ground-Dove (*Columbina passerine exigua*) occasionally utilize the project location as a resource.

Figure 12: Migratory Bird Flyway Zones



2.2.8.2.1. *Future Without Project Conditions*

Future Without Project Conditions would not be significantly changed from existing conditions.

2.2.8.3. *Bald and Golden Eagles*

The Bald and Golden Eagle Protection Act (BGEPA) prohibits the "taking" of Bald Eagles (*Haliaeetus leucocephalus*) or Golden Eagles (*Aquila chrysaetos*) as defined in 16 U.S.C. 668-668c. "Take" is defined by the BGEPA as to "pursue, shoot, shoot at, poison, wound, kill capture, trap, collect, molest or disturb." "Disturb" is further defined as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." The BGEPA extends to activities occurring near nests when eagles are not present.

According to the National Bald Eagle Management Guidelines dated May 2007, Bald Eagles primarily nest near aquatic habitat in mature or dead trees. Man-made structures such as power-poles and communication towers also serve as nesting sites for some Bald Eagles. Bald Eagle nests are distinctly large at four to six feet in diameter and three feet deep weighing more than 1,000 pounds. Nests are generally constructed with large sticks and lined with soft and pliable greenery such as moss, grass, or lichens.

Bald Eagles primarily inhabit forested habitat adjacent to large river systems. There are no known Bald or Golden Eagle nests within the project location; however the project location is suitable for eagle nesting.

2.2.8.3.1. *Future Without Project Conditions*

Future Without Project Conditions would not be significantly changed from existing conditions.

2.2.9. *Cultural and Archaeological Resources*

A search of the National Register of Historic Places indicated the nearest listed resource located approximately 16 miles southwest of the project area. Coordination with the State Historic Preservation Officer and federally recognized tribes is ongoing and will be included in the Final EA.

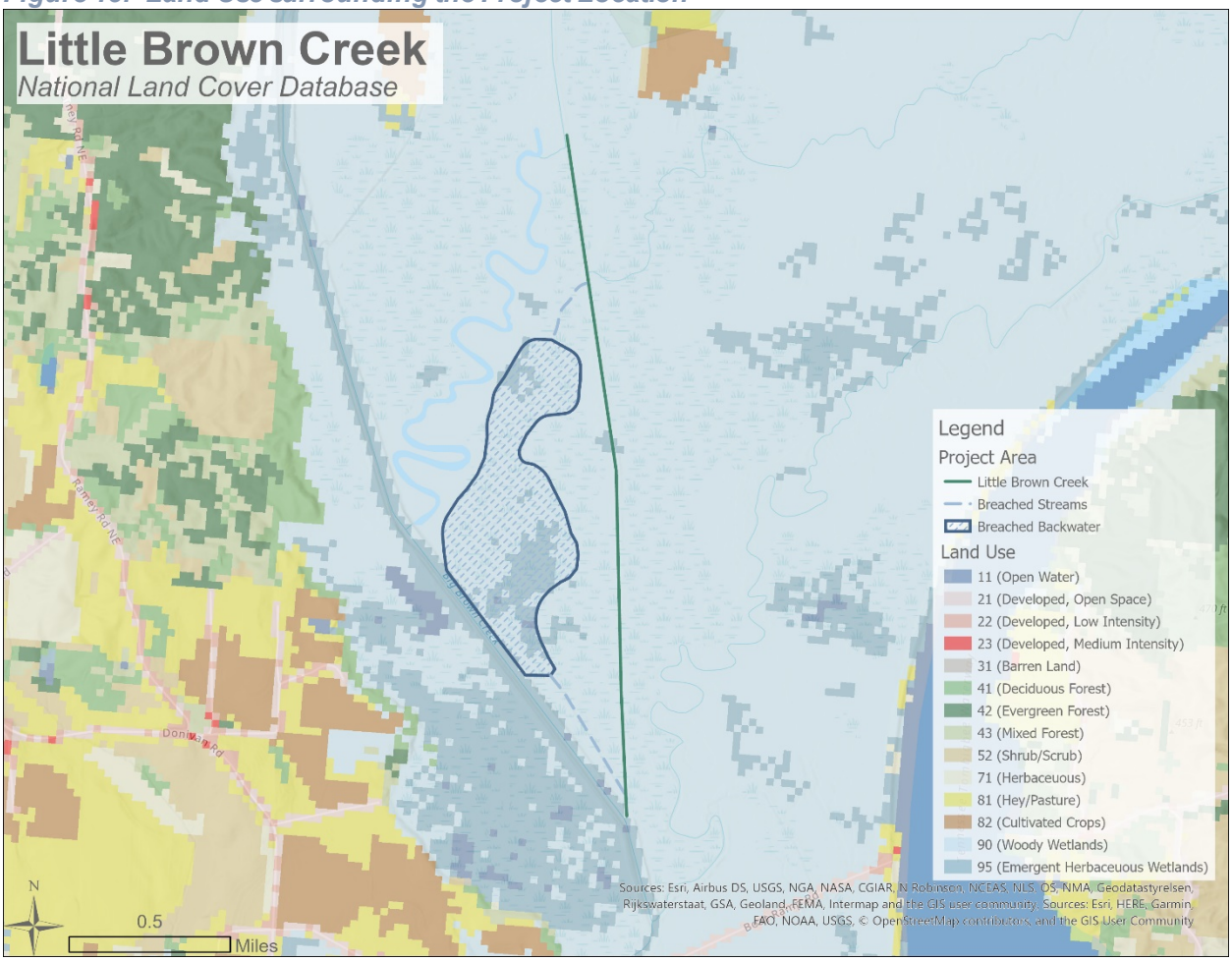
2.2.9.1. *Future Without Project Conditions*

Future Without Project Conditions would not be significantly changed from existing conditions.

2.2.10. *Land Use*

Land use of the surrounding area is predominantly agricultural farm through private landownership. Much of the area is undeveloped and rural.

Figure 13: Land Use surrounding the Project Location



2.2.10.1.1. *Future Without Project Conditions*

Future Without Project Conditions would not be significantly changed from existing conditions.

2.2.11. *Noise*

Ambient noise of the area is consistent with rural zones. The project location is surrounded by private landowners with limited development. No traffic, construction, or community events would contribute to persistent noise.

2.2.11.1.1. *Future Without Project Conditions*

Future Without Project Conditions would not be significantly changed from existing conditions.

2.2.12. *Aesthetics*

Aesthetics is an approach to assign appreciation of natural environments. According to the Planning Principles and Guidelines dates 1983, “Aesthetic attributes are perceptual stimuli that provide diverse and pleasant surroundings for human enjoyment and appreciation. Included in this category are sights, sounds, scents, tastes, and tactile impressions and the interactions of these sensations, of natural and cultural resources.”

The general aesthetics of the project location is woody vegetation and wetland habitat with no little to no human development.

2.2.12.1.1. *Future Without Project Conditions*

Future Without Project Conditions would result in continued riverbank erosion and sheer failure which would result in altered riverfront aesthetics.

2.2.13. *Recreation*

The surrounding area is predominantly composed of private lands primarily used for farming. No recreational parks are within the vicinity of the area. Limited recreational hunting and fishing may occur in the surrounding area.

2.2.13.1.1. *Future Without Project Conditions*

Future Without Project Conditions would not be significantly changed from existing conditions.

2.2.14. *Industry*

Local industry within the area is predominantly farming. Adjacent landowners are unable to utilize the full potential of their property due to ongoing backwater flooding resulting from the siltation and breech of Little Brown Creek. Some crops have experienced flood damages to render the entire cropland unusable. Flooding of local industry is exhibited in **Picture 1** thru **Picture 8**. Though these crops may not contribute to significant economic revenue within Itawamba County, the ongoing flooding significantly reduces the livelihood of each adjacent landowner.

2.2.14.1.1.1. Future Without Project Conditions

Future Without Project Conditions would result in continued bankline instability which would result in continued degradation of infrastructure and weaken Selma's appeal for heritage tourism thus reducing tourism and its benefits to Selma.

2.2.15. *Transportation Navigation*

Local transportation consists of access roads used by private land owners. No major roadways are located within the project location. Little Brown Creek feeds into Big Brown Creek which is a tributary of the Tennessee Tombigbee Waterway (TTWW). The TTWW is considered a low-use navigable waterway. The USACE Mobile District does not have an authorized commercial dredging maintenance section for Little Brown Creek; however Big Brown Creek is regularly maintained. Recreational navigation is limited to local fishermen.

2.2.15.1.1. *Future Without Project Conditions*

Future Without Project Conditions would not be significantly changed from existing conditions. It is not anticipated that any substantial increase in budget would occur that would allow this section of the Alabama River to be dredged on a more frequent basis.

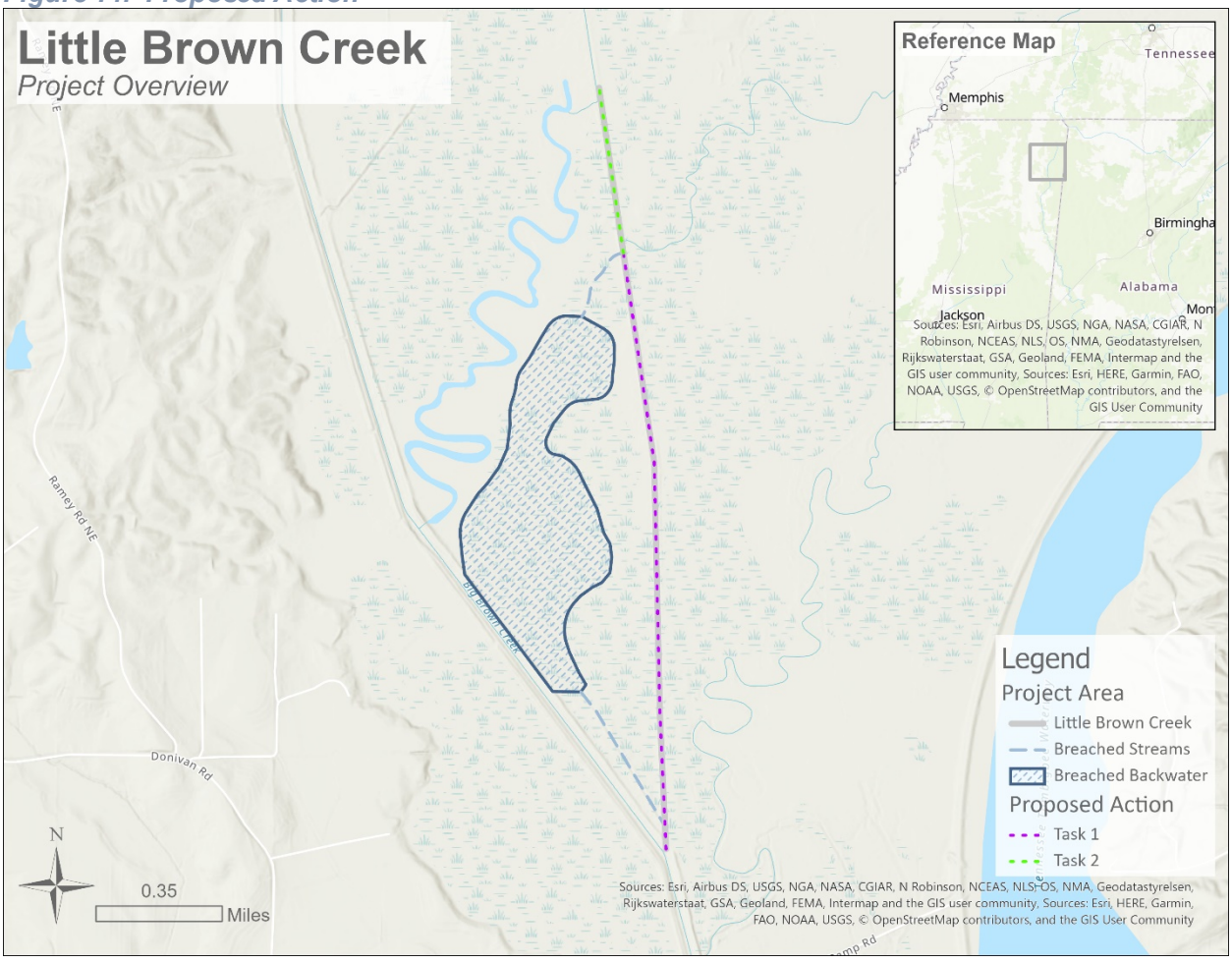
SECTION 3.0DESCRIPTION OF THE PROPOSED ACTION

The proposed dredging of Little Brown Creek would occur in two separate tasks. Task 1 would involve the use of an excavator at the downstream end (**Figure 14**) to mechanically

dredge the creek, advancing upstream. Dredged material would be placed on existing disposal berm and runoff would be maintained using silt fencing and hay bales. Approximately 7,100 linear feet totaling approximately 50,500 cubic yards of material would be dredged to maximum depth of 6 feet with a 1:2 bank slope. Current channel capacity in this section is estimated to be 100% silted in. Additionally, any minor breaches would be repaired using filter fabric and no more than 300 tons of class III stone.

Task 2 would involve mechanically dredging approximately 2,000 linear feet totaling approximately 14,200 cubic yards of material to depths not exceeding 6 feet. Dredged material would be placed on existing disposal berm and runoff would be maintained using silt fencing and hay bales. Current channel capacity in this section is estimated to be approximately 50-70% silted in. At the northern most end of the creek on USACE property, a grade control structure would be installed to prevent the potential of "head-cutting." Best Management Practices would be utilized to reduce environmental impacts. All riprap material would be cleaned from sediments and contaminants prior to fill activity; therefore, the proposed action would have no significant adverse impacts to water quality.

Figure 14: Proposed Action



SECTION 4.0 ALTERNATIVES TO THE PROPOSED ACTION

4.1. No Action Alternative

Under the No Action Alternative (NAA), no dredging or repair of breeched sections would occur. The project location would continue to experience flash flooding events which would contribute to additional breeches. Increased sedimentation of Little Brown Creek would occur and would eventually completely fill the channel. Without connectivity, Little Brown Creek would continue to backlog water to northern portions of the channel and flood private landowner's agricultural crops. Significant damage to farmlands would occur. For this reason, the NAA was not selected.

SECTION 5.0 ENVIRONMENTAL IMPACTS

5.1. Biological and Physical Impacts

Table 4 summarizes the overall impacts as described in each corresponding section.

Table 4: Environmental Impacts Summary

Resources		Alternatives	
Section	**Sub-section**	**No Action (FWOP)**	**Proposed Action**
Geology and Soils		No Significant Impact	No Significant Impact
Prime and Unique Farmlands		No Significant Impact	No Significant Impact
Climate		No Impact	No Significant Impact
Air Quality and Greenhouse Gasses		No Significant Impact	No Significant Impact
Water Quality		Adverse Impacts	No Significant Impact
Hydrology		Adverse Impact	Beneficial Impact
Hazardous, Toxic, and Radiological Waste		No Impact	No Impact
Vegetation		Beneficial Impact	No Significant Impact
Fish and Wildlife Resources		--	--
	Aquatic Species	No Significant Impact	No Significant Impact
	Terrestrial Species	No Significant Impact	No Significant Impact
Wetlands		No Impact	Adverse Impact
Federally Protected Species		--	--
	T&E Species	No Significant Impact	No Significant Impact
	Migratory Birds	No Significant Impact	No Significant Impact
	Bald and Golden Eagles	No Significant Impact	No Significant Impact
Cultural and Archaeological Resources			
Land Use		Adverse Impact	Beneficial Impact
Noise		No Significant Impact	No Significant Impact
Aesthetics		No Significant Impact	No Significant Impact
Recreation		No Impact	No Impact
Industry		Adverse Impact	Beneficial Impact
Transportation and Navigation		Adverse Impact	Beneficial Impact

5.1.1. *Geology*

5.1.1.1. *No Action Alternative Impacts*

Direct Impacts: In general, activities that would contribute to significant geologic or soil alteration would include but are not limited to fracking, injection wells, and large-scale grading. Under the No Action Alternative (NAA), no dredging, construction, staging, or

land use changes would occur; therefore no direct impacts to the geology and soils within the project location would occur.

Indirect Impacts: Indirect effects of the NAA would adversely impact geology of the channel as continued siltation and breaches would occur under FWOP conditions. These impacts would compound with the continued flooding to create worsening land use impacts.

5.1.1.2. *Proposed Action*

Direct Impacts: Impacts to geology would occur through excavation of the terrain to reestablish the authorized depth of the channel. These impacts are anticipated to be minor due to the degraded history of the project location.

Indirect Impacts: No significant indirect impacts would occur as a result of the proposed action.

5.1.2. *Climate*

5.1.2.1. *No Action Alternative Impacts*

Direct Impacts: Climate change can be influence by human interaction through increased emissions. Under the NAA, no dredging, construction, or staging would occur that would contribute to increase emissions within the project location. As a result, no direct adverse impacts to the climate are anticipated as a result of the No Action Alternative.

Indirect Impacts: Under FWOP conditions, the project location is anticipated to remain in a similar state with respect to development, recreation, traffic, and land use. The NAA would likely be equal to FWOP conditions since no increased development would occur as a result of the alternative; therefore no significant increased emissions which could indirectly affect the project location climate are anticipated from heavy machinery and/or vehicular use. As a result, no indirect adverse impacts to the climate are anticipated.

5.1.2.2. *Proposed Action*

Direct Impacts: Because the project location lies within a rural area and is not located within a nonattainment zone for pollutant criteria, the minimal construction using heavy machinery would not significantly contribute to climate change.

Indirect Impacts: The proposed action would not result in an increase of vehicular use or land use changes. Restoral of the authorized channel would allow floodwaters to evacuate the project location as originally designed; therefore, the surrounding agricultural lands would be able to crop year-round. The additional vegetation would be beneficial to filter greenhouse gas emissions; however the amount of additional vegetation would not be significant enough to offset climate change.

5.1.3. *Prime and Unique Farmlands*

5.1.3.1. *No Action Alternative Impacts*

Direct Impacts: The majority of prime and unique farmland soils occur in the surrounding areas. Under the NAA, no dredging, construction, or staging would occur that would directly convert any designated prime or unique farmlands; therefore, no direct impacts would occur to this resource.

Indirect Impacts: Should the NAA be selected, impacts resulting from this action would be consistent with the FWOP conditions. Therefore, no significant alterations or conversions of prime and unique farmlands would occur as a result of this action.

5.1.3.2. *Proposed Action*

Direct Impacts: No dredging, construction, or staging would occur in areas designated as prime or unique farmlands; therefore no significant impacts to this resource would occur.

Indirect Impacts: No significant indirect impacts to prime and unique farmlands are anticipated as a result of the proposed action.

5.1.4. *Air Quality and Greenhouse Gasses*

5.1.4.1. *No Action Alternative Impacts*

Direct Impacts: Adverse impacts to air quality primarily occurs via emissions from natural (e.g. volcanic eruptions) and man-made contributions whereas beneficial impacts occur through increased vegetation. No dredging, construction, or staging would occur as a result of the NAA. Additionally, no natural geologic features or natural phenomenon, such as methane leaks, occur within the project location. Therefore no significant vegetation disruption or emission releases would occur. As a result, no direct adverse impacts to the climate are anticipated.

Indirect Impacts: While adverse impacts to air quality are primarily driven by emissions, vegetation plays a considerable role in filtering air chemicals (EPA 2011). Though abundant vegetation can benefit air quality, a significant reduction in vegetation would have the opposite effect. Under FWOP conditions, no significant increase or decrease to vegetation is anticipated to occur within or surrounding the project location. Additionally, the project location is anticipated to remain in a similar state with respect to development, recreation, traffic, and land use; therefore no significant impacts resulting from increased emissions are anticipated. No significant increase of urban vegetation is anticipated to occur under the FWOP conditions; therefore, no indirect benefits would occur as a result of the alternative.

5.1.4.2. *Proposed Action*

Direct Impacts: The proposed action would require the use of heavy machinery such as an excavator for dredging. The increased emissions would be localized and would revert to preconstruction levels upon completion. Therefore no significant adverse impacts to air quality are anticipated as a result of the proposed action.

Indirect Impacts: The proposed action would not result in a land use change that would increase local traffic and navigation. Therefore, no significant indirect impacts to air quality are anticipated.

5.1.5. *Water Quality*

5.1.5.1. *No Action Alternative*

Direct Impacts: Under the NAA, no dredging, construction, or staging would occur within Waters of the U.S. Therefore no direct impacts to water quality would occur.

Indirect Impacts: The project location does contain 303d listed impaired waterbodies; however Little Brown Creek does hydrologically connect to Big Brown Creek which currently meets TMDL standards. Under the NAA, continued flooding would contribute to increased siltation of Little Brown Creek and Big Brown Creek. Thus the NAA would have a negative impact on water quality within and surrounding the project location.

5.1.5.2. *Proposed Action*

Direct Impacts: The proposed action would require dredging of approximately 50,500 cubic yards of material over 7,100 linear feet. Task 1 would dredge excess sedimentation within the portion of Little Brown Creek that does not have a hydrologic connection due to a 100% silted channel. Beginning the proposed action in this area would decrease the amount of turbidity that would occur. Task 2 would then focus on the remaining 2,000 linear feet section of Little Brown Creek and would remove approximately 14,200 cubic yards of material. Best Management Practices (BMPs) would be used to minimize impacts. The proposed action would require Water Quality Certification prior to implementation. Coordination with the Mississippi Department of Environmental Quality is included in **Appendix C**.

Indirect Impacts: Though Little Brown Creek is not listed as an impaired waterbody, it connects with Big Brown Creek which currently meets the TMDL standard for sediment. Therefore, increased turbidity within Little Brown Creek would indirectly affect water quality within Big Brown Creek. Coordination with the Mississippi Department of Environmental Quality is included in **Appendix C**.

5.1.6. *Hydrology*

5.1.6.1. *No Action Alternative Impacts*

Direct Impacts: Rapid floodwaters continue to breech Little Brown Creek and divert floodwaters through adjacent private agriculture and into Big Brown Creek. This pattern is anticipated to continue. No dredging, construction, or staging would occur as a result of the NAA. Therefore, no direct impacts to hydrology are anticipated.

Indirect Impacts: Under FWOP conditions the project location is anticipated to continue experiencing frequent flood events. Development of the floodplain could alter the permeable surface conditions which could have an impact on hydrology; however no significant development of the floodplain is anticipated under FWOP conditions. Therefore no indirect effects to hydrology would occur as a result of this alternative.

5.1.6.2. *Proposed Action*

Direct Impacts: Dredging of Little Brown Creek would restore the channel to the authorized channel depth which would allow floodwaters to evacuate the area and discharge into Big Brown Creek properly. The proposed action would restore the

hydrologic connectivity of Little Brown Creek and therefore would benefit the project location.

Indirect Impacts: Restoration of the Little Brown Creek channel depth would result in a concentration of floodwaters at the confluence of the two streams which could increase velocity within the downstream reaches. However, the volume of water would not be significantly increased. Therefore the proposed action would not significantly adversely affect the surrounding area.

5.1.7. *Vegetation*

5.1.7.1. *No Action Alternative Impacts*

Direct Impacts: The NAA does not involve dredging, construction, staging, or any activities which would involve the grading of soils and removal of vegetation. Therefore no direct impacts are anticipated as a result of the NAA.

Indirect Impacts: As stated previously, no significant land development within and surrounding the project location is anticipated under the FWOP conditions. The channel would continue to experience increased siltation and would convert to bottomland hardwood. Therefore the proposed action would have a beneficial impact on vegetation; however these impacts are anticipated to be minor.

5.1.7.2. *Proposed Action*

Direct Impacts: Minimal tree clearing would be required. The southern portion of Little Brown Creek experiencing 100% siltation has resulted in increased vegetation within the channel footprint. Vegetation within the channel footprint would be removed during excavation; however the amount of vegetation removal is anticipated to be minor. Therefore no significant adverse impacts to vegetation are anticipated.

Indirect Impacts: Current hydrology has breeched areas within Little Brown Creek and floods the surrounding terrain. Though the project location is located within the 100-year floodplain and the surrounding habitat is suited for wetlands; floodwater breeches are considered such an abrupt change in dynamics that vegetation within the surrounding area becomes stressed. The proposed action would remove these breeches and restore the hydrologic connectivity. Therefore no adverse indirect impacts are anticipated as a result of the proposed action.

5.1.8. *Fish and Wildlife Resources*

5.1.8.1.1. *Aquatic Species*

5.1.8.1.1.1. No Action Alternative Impacts

Direct Impacts: No dredging, construction, or staging would occur within or adjacent to rivers or streams as a result of the NAA. Therefore, no direct impacts to aquatic species would occur.

Indirect Impacts: Because the project location is a degraded man-made creek, aquatic species within this habitat is limited. Therefore no significant indirect impacts are anticipated under the NAA.

5.1.8.1.1.2. Proposed Action

Direct Impacts: Dredging of aquatic habitat would span approximately 2,000 linear feet during Task 2; however because the habitat quality of Little Brown Creek is degraded no rich biodiversity of aquatic species exist within the proposed action. Therefore no direct adverse impacts are anticipated as a result of the proposed action.

Indirect Impacts: Task 1 of the proposed action would restore approximately 7,100 linear feet of man-made channel which could serve as a low quality aquatic habitat for some aquatic species. Therefore the proposed action may benefit aquatic resources however these benefits are anticipated to be minor.

5.1.8.1.2. *Terrestrial Species*

5.1.8.1.2.1. No Action Alternative Impacts

Direct Impacts: No terrestrial habitat loss would occur under the NAA. Additionally, no ground disturbances that could result in species' mortality would occur. Therefore no adverse impacts to terrestrial species are anticipated as a result of the NAA.

Indirect Impacts: Dredging, construction or demolition activities temporarily increase noise volume within the local area which results in the temporary and isolated disturbance to terrestrial species. Since no activities would occur under the NAA, no indirect adverse impacts to terrestrial species would occur.

5.1.8.1.2.2. Proposed Action

Direct Impacts: Approximately 7,100 linear feet of channel would be restored during Task 1. This section of Little Brown Creek has experienced 100% siltation and has converted to terrestrial terrain. Therefore the proposed action would convert minimal terrestrial habitat to aquatic habitat; however these impacts are anticipated to be minor.

Indirect Impacts: Dredging, construction, and staging activities could disrupt natural behavior of terrestrial species. Species would migrate out of the project location and would return upon project completion. Therefore no significant indirect adverse impacts are anticipated.

5.1.9. *Wetlands*

5.1.9.1. *No Action Alternative Impacts*

Direct Impacts: No placement of dredged or fill material would enter wetland areas under the NAA. Therefore no adverse impacts are anticipated.

Indirect Impacts: Jurisdictional wetlands are required to meet three criteria: hydrologic connectivity, hydric soils, and hydrophyte vegetation. Under FWOP conditions, the project location would continue to experience flooding events. Established wetlands within the floodplain would maintain their hydrologic connectivity. Soil transport during flooding events is a common occurrence in fluvial regions; however soil accumulation

trends in channelized systems appear primarily within the river channel. Any soil accumulation not contained within the channel would be spread throughout the floodplain. Thus the resulting accumulation within wetlands would be considered *de minimus* and would not impact existing hydric soils. Likewise, wetland vegetation would continue to thrive under FWOP conditions. Therefore no changes to wetlands within and surrounding the project location are anticipated.

5.1.9.2. *Proposed Action*

Direct Impacts: The surrounding area of the project location is considered jurisdictional bottomland hardwood wetland. Excavated material would be placed upon existing berms to minimized impacts to jurisdictional wetlands. Coordination with the MDEQ is included in **Appendix B**.

Indirect Impacts: Restoration of the channel would result in a hydrologic disconnection from Little Brown Creek to the surrounding floodplain; however hydric soils would be maintained through seasonal rainfall. Therefore no significant indirect impacts to wetlands are anticipated.

5.1.10. *Federally Protected Species*

5.1.10.1.1. *Threatened or Endangered Species*

5.1.10.1.1.1. No Action Alternative Impacts

Direct Impacts: Under the NAA, no construction, staging, or demolition would occur. Therefore there would be no direct impacts to federally listed threatened or endangered species (TES) within the Project location.

Indirect Impacts: As described within **Section 3.2.4.1** there are 20 federally listed threatened or endangered (T&E) species listed for Itawamba County, Mississippi. A list of federally listed species is included in **Table 5**. Habitat suitable for federally listed Indiana bat, Northern Long Eared bat, and wood stork occur within the surrounding area. No adverse impacts to suitable habitat surrounding the project location is anticipated under FWOP conditions. However within the project location, long-term continual erosion would negatively impact suitable habitat. These impacts are anticipated to be gradual over a long-term timeframe. Therefore the USACE has determined that the NAA would have no effect to federally listed species within the project location.

5.1.10.1.1.2. Proposed Action

Direct Impacts: The proposed action would not result in any direct incidental take of Indiana bat, Northern Long Eared bat, or wood stork.

Indirect Impacts: The proposed action may result in the removal of vegetation within the suitable habitat for Indiana bat, Northern Long Eared bat, and wood stork; however, tree removal would occur during the nonmaternity season. Therefore the USACE determined that the proposed action may affect but is not likely to adversely affect the Indiana bat, Northern Long Eared bat, and wood stork. Coordination with the U.S. Fish and Wildlife Service is included in **Appendix C**.

5.1.10.1.2. *Migratory Birds*

5.1.10.1.2.1. No Action Alternative Impacts

Direct Impacts: No dredging, construction, or staging would occur as a result of the NAA; therefore no impacts to migratory birds would occur.

Indirect Impacts: Floodplain and wetland areas are prime foraging and resting habitats for migratory birds. Under FWOP conditions, the continued flooding and limited land use development would maintain existing floodplain and wetland habitat. Therefore under the NAA no adverse impacts to migratory birds would occur.

5.1.10.1.2.2. Proposed Action

Direct Impacts: Dredging, construction, and staging activities would cause migratory birds within the immediate vicinity to vacate the project area. Therefore no direct mortality of migratory birds is anticipated.

Indirect Impacts: Increased noise due to dredging, construction, and staging activities may disrupt natural behavior of migratory birds within the project location. Upon project completion noise levels would revert to preconstruction conditions and migratory birds would resume normal behavior. Therefore no significant indirect impacts to migratory birds are anticipated.

5.1.10.1.3. *Bald and Golden Eagles*

5.1.10.1.3.1. No Action Alternative Impacts

Direct Impacts: No dredging, construction, or staging would occur under the NAA. As such, no tree removal would occur. Therefore no direct impacts to bald eagles are anticipated.

Indirect Impacts: No significant land use developments involving tree removal would occur under the FWOP conditions. Therefore, no indirect impacts to bald eagles would occur.

5.1.10.1.3.2. Proposed Action

Direct Impacts: Prior to tree removal, trees would be inspected for active and inactive bald eagle nests. No trees would be removed containing eagle nests. Therefore no direct adverse impacts are anticipated as a result of the proposed action.

Indirect Impacts: Eagle nests may occur in the surrounding area; however due to the dense vegetation construction activities would be obscured from nest viewpoint. Therefore no significant indirect adverse impacts to bald eagles are anticipated.

5.1.11. *Cultural and Archaeological Resources*

5.1.11.1. *No Action Alternative Impacts*

Direct Impacts: Under the NAA no dredging, construction, or staging would occur. Therefore the NAA would have no potential to effect cultural and archaeological resources within the Area of Potential Effect.

Indirect Impacts: Under the NAA, nearby sites could receive inundation, impacting site integrity

5.1.11.2.*Proposed Action*

Direct Impacts: Under the proposed action, all dredging and disposal would occur in an previously authorized channel in an area that has undergone cultural resources investigation, therefore there would be no impact to cultural and archaeological resources within the Area of Potential Effect.

Indirect Impacts: Under the proposed action, changes in flow could impact sites upstream and downstream of the area of potential effect through erosion processes. These sites would need to be monitored.

5.1.12. *Land Use*

5.1.12.1.*No Action Alternative Impacts*

Direct Impacts: No changes to land use within the project location would occur as a result of the NAA. The surrounding area would continue to be owned and operated by private landowners for agriculture. Therefore no direct impacts to land use is anticipated.

Indirect Impacts: No significant development would occur under the NAA. The project location and surrounding areas are not anticipated to undergo a significant growth. However continued flooding and channel breeches are anticipated to occur. Should no maintenance be implemented, the surrounding agricultural fields may eventually be unusable. Therefore the NAA may have a significant indirect impact on land use within the project location.

5.1.12.2.*Proposed Action*

Direct Impacts: The maintenance of the channel would not require land use changes; therefore no adverse impacts to land use are anticipated.

Indirect Impacts: Maintenance of the channel would restore hydrologic connectivity from Little Brown Creek to Big Brown Creek and would significantly minimize flooding in the surrounding area. Therefore the proposed action would have a significant benefit to land use within the surrounding area.

5.1.13. *Noise*

5.1.13.1.*No Action Alternative Impacts*

Direct Impacts: The project location and the surrounding area are not located within a high density population. As such, the project location is considered a tranquil and experiences minimal noise disturbance. Under the NAA, no dredging, construction, or staging would be implemented. Therefore there would be no increase in noise levels.

Indirect Impacts: No indirect impacts would occur as a result of the NAA.

5.1.13.2.*Proposed Action*

Direct Impacts: The proposed action would result in increased noise disturbances; however the increased noise would be minimal and localized to the immediate vicinity. Upon project completion noise levels would revert to preconstruction conditions. Therefore no significant direct impacts are anticipated.

Indirect Impacts: The proposed action would not result in long term increased traffic; therefore no significant indirect impacts to noise are anticipated.

5.1.14. *Aesthetics*

5.1.14.1.*No Action Alternative Impacts*

Direct Impacts: Current aesthetics of the project location show a man-made channel through bottomland wetlands surrounded by intermittent agricultural fields. No dredging, construction, or staging would be implemented under the NAA and therefore no direct modification to the aesthetics of the project location would occur.

Indirect Impacts: Should the NAA be selected, continued siltation would result in increased breeches of the channel which would negatively impact the surrounding area as sedimentation is transported to the surrounding terrain.

5.1.14.2.*Proposed Action*

Direct Impacts: The proposed action would restore the channel to the authorized depths. This would affect current aesthetics but would be consistent with the original design. Therefore no significant direct adverse impacts are anticipated.

Indirect Impacts: Dredging of the channel would result in temporary increased turbidity in the downstream reaches, but would subside upon project completion. Therefore no significant indirect adverse impacts are anticipated.

5.1.15. *Recreation*

5.1.15.1.*No Action Alternative Impacts*

Direct Impacts: Recreation in the project location is limited to local hunters and fishermen with direct permission from the private landowners. No dredging, construction, or staging would occur under the NAA and therefore no disturbances to recreational activities would occur.

Indirect Impacts: No significant indirect adverse impacts to recreation would occur.

5.1.15.2.*Proposed Action*

Direct Impacts: The proposed action may disrupt local hunting and fishing activities; however the disruption would be temporary. Therefore no significant direct impacts to recreation are anticipated.

Indirect Impacts: No significant indirect adverse impacts to recreation would occur.

5.1.16. *Industry*

5.1.16.1.*No Action Alternative Impacts*

Direct Impacts: No industries would be bought or relocated under the NAA; therefore no direct impacts to industry would occur.

Indirect Impacts: Flooding would continue to impact private landowner's agricultural farms. Currently, surrounding farms experience inundated crops during flood events due to a backwater effect. In addition, flood waters are sustained in the surrounding crops due to the inability to evacuate downstream. This results in a significant loss of crop usability year-round. Private landowners have begun to modify agricultural practices around the wet season and have lost revenue that they would have otherwise obtained under proper channel conditions.

5.1.16.2.*Proposed Action*

Direct Impacts: The proposed action would occur on federal lands and would not directly impact the surrounding industry.

Indirect Impacts: Maintenance of the channel would result in a significant benefit to the surrounding landowners as they would be able to operate their crops without the threat of flooding due to backwater effects.

5.1.17. *Transportation and Navigation*

5.1.17.1.*No Action Alternative Impacts*

Direct Impacts: No dredging, construction, or staging would occur and therefore no road detours would be necessary. Likewise, no work would occur within a navigable waterway. Therefore no disruption to existing transportation and navigation would occur.

Indirect Impacts: Continued siltation of the channel would occur which would increase the flooding extent in upstream areas. Local bridges and access roads would continue to experience flood inundation from backwater effects. Therefore the NAA would have significant adverse impacts to transportation.

5.1.17.2.*Proposed Action*

Direct Impacts: Dredging of the channel would require heavy machinery to be mobilized using existing access roads; however no significant disruption to traffic is anticipated. Therefore no impacts to transportation would occur. Additionally, no dredging, construction, or staging would occur within a commercial navigable waterway. Therefore no impacts to navigation would occur.

Indirect Impacts: No significant indirect impacts to transportation and/or navigation would occur.

5.2. Cumulative Impacts

A cumulative impacts analysis within an EA should consider the potential environmental consequences resulting from "the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (40 CFR 1508.7). USACE guidance in considering cumulative impacts affirms this requirement, stating that the first steps in assessing cumulative impacts involve defining the scope of the other actions

and their interrelationship with a proposed action. The scope must consider other projects that coincide with the location and timetable of a proposed action and other actions. Cumulative impacts analyses must also evaluate the nature of interactions among these actions.

5.2.1. *Biological and Physical Resources*

5.2.1.1. *No Action Alternative Cumulative Impacts*

Without maintenance of Little Brown Creek, the channel would continue to revert natural conditions; however the project location comprises a minimal amount of territory which would minimally increase habitat for foraging and nesting behaviors. When taken into consideration of the nearby Big Brown Creek, the NAA would result in a cumulative increase in sediment within the surrounding area. Dispersal of sediment into the floodplain would reduce overall sediment load within the main channels. Thus the NAA may have beneficial cumulative impacts to biological and physical resources within the surrounding area.

5.2.1.2. *Proposed Action*

The proposed action would not significantly contribute to cumulative impacts on biological and physical resources within the immediate and surrounding area. Nearby channels including Big Brown Creek and the TTWW, are maintained with regularity and continue to support fish and wildlife resources. Should the proposed action occur, similar impacts would be anticipated.

5.2.2. *Human Resources*

5.2.2.1. *No Action Alternative Cumulative Impacts*

Inadequate maintenance of Little Brown Creek would result in a significant accumulation of sedimentation within the channel. Without proper channel depths to distribute flood waters, flooding would continue to backlog into surrounding landowners' crops. Thus cumulatively the NAA has and would continue to have significant adverse impacts to human resources.

5.2.2.2. *Proposed Action*

The proposed action would significantly benefit human resources cumulatively.

SECTION 6.0 ENVIRONMENTAL JUSTICE (EXECUTIVE ORDER 12898)

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations* dated February 11, 1994 directs all Federal agencies to determine whether a proposed action would have a disproportionately high and adverse impact on minority and/or low-income populations. The project location is not within a residential area and thus would not disproportionately impact minority and/or low-income populations.

SECTION 7.0 PROTECTION OF CHILDREN (EXECUTIVE ORDER 13045)

Executive Order 13045, The Protection of Children from Environmental Health Risks and Safety Risks, was issued April 23, 1997. Executive Order 13045 applies to significant regulatory actions that concern an environmental health or safety risk that could disproportionately adversely affect children. Environmental health risks or safety risks refer to risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest.

Because the project location is not located in a residential area, the proposed action is not anticipated to impact the health and safety of children. However barriers, site workman, and other measures would be implemented during construction to ensure protection to non-project workers, including children.

SECTION 8.0 ANY IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED SHOULD THE TENTATIVELY SELECTED PLAN BE IMPLEMENTED

Any irreversible or irretrievable commitments of resources involved in the proposed action have been considered and are either unanticipated at this time, or have been considered and determined to present minor impacts. The proposed action is reversible, and reclamation of the property could be easily conducted in the future to return the property to natural conditions. Reclamation, if needed, would require filling Little Brown Creek and rerouting hydrology to disconnect the creek. Vegetation would be planted to ensure soil stability.

SECTION 9.0 ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

Any adverse environmental effects which cannot be avoided should the proposed action be implemented are expected to be minor individually and cumulatively. These include approximately 64,700 cubic yards of material excavation.

SECTION 10.0 THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE HUMAN ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The proposed action constitutes a short-term use of man's environment, will result in minimal environmental impacts, and is not anticipated to affect long-term productivity. The proposed action is compatible with surrounding uses and will improve land use and industry of the adjacent landowners.

SECTION 11.0 COORDINATION

This EA was coordinated with the USFWS, MDEQ, SHPO, and federally recognized tribal nations. The EA was posted to the USACE Planning webpage at <https://www.sam.usace.army.mil/Missions/Planning-Environmental/> for a 15-day public comment period.

SECTION 12.0 REFERENCES

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APPENDIX A

PRITCHARD ENGINEERING

P.O. Box 2523
Starkville, MS 39760
Phone: 662.324.2205
Fax: 662.324.2092

NOVEMBER 19, 2019

U.S. ARMY CORPS OF ENGINEERS
ROGER L. WILSON, JR.
NAVIGATION MANAGER
TENNESSEE TOMBIGBEE WATERWAY

VIA EMAIL: roger.l.wilson2@usace.army.mil

RE: SUBSURFACE EXPLORATION
LITTLE BROWN CREEK
NEW SITE, MISSISSIPPI

Dear Mr. Wilson:

Submitted herewith are boring logs depicting the results of subsurface exploration and laboratory analysis conducted on samples collected from each of four (4) borings conducted on the project captioned above. Due to restricted access borings were advanced by conventional hand auger to depths of five (5) to eight (8) feet. Be advised all field and laboratory procedures were accomplished in general accordance with applicable ASTM standards for quality assurance.

Boring locations were designated by a representative of the USACE. Hand held GPS coordinates obtained by the driller at the locations are as follows.

BORING	NORTH	EAST
1	34° 27' 28.08"	88° 25' 24.45"
2	34° 27' 10.09"	88° 25' 20.10"
3	34° 26' 2.17"	88° 25' 14.77"
4	34° 25' 58.93"	88° 25' 14.57"

We appreciate the opportunity to be of services. Feel free to contact us should you have any questions regarding the information provided.

Respectfully,

Clyde L. Pritchard, P.E.
Pritchard Engineering, Inc.


Boring #1
Boring #2
Boring #3
Boring #4
Big Brown Creek
Little Brown Creek
Tennesse-Tombigbee Waterway

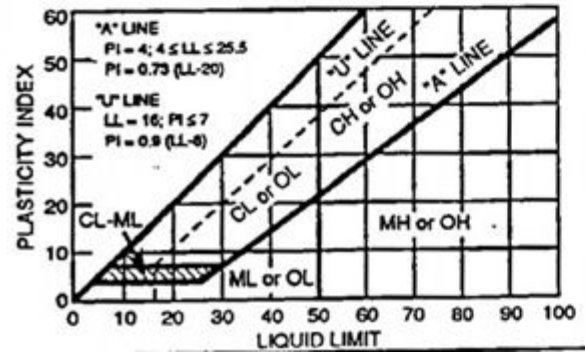
UNIFIED SOIL CLASSIFICATION SYSTEM

Soils are visually classified for engineering purposes by the Unified Soil Classification System. Grain-size analyses and Atterberg Limits tests often are performed on selected samples to aid in classification. The classification system is briefly outlined on this chart. Graphic symbols are used on boring logs presented in this report. For a more detailed description of the system, see "Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)" ASTM Designation: 2488-84 and "Standard Test Method for Classification of Soils for Engineering Purposes" ASTM Designation: 2487-85.

MAJOR DIVISIONS				GRAPHIC SYMBOL	GROUP SYMBOL	TYPICAL NAMES
COARSE-GRAINED SOILS Less than 50% passes No. 200 sieve)	GRAVELS (50% or less of coarse fraction passes No. 4 sieve)	CLEAN GRAVELS (Less than 5% passes No. 200 sieve)			GW	Well graded gravels, gravel-sand mixtures, or sand-gravel-cobble mixtures
					GP	Poorly graded gravels, gravel-sand mixtures, or sand-gravel-cobble mixtures
		GRAVELS WITH FINES (More than 12% passes No. 200 sieve)	Limits plot below "A" line & hatched zone on plasticity chart		GM	Silty gravels, gravel-sand-silt mixtures
			Limits plot above "A" line & hatched zone on plasticity chart		GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS (50% or more of coarse fraction passes No. 4 sieve)	CLEAN SANDS (Less than 5% passes No. 200 sieve)			SW	Well graded sands, gravelly sands
					SP	Poorly graded sands, gravelly sands
		SANDS WITH FINES (More than 12% passes No. 200 sieve)	Limits plot below "A" line & hatched zone on plasticity chart		SM	Silty sands, sand-silt mixtures
			Limits plot above "A" line & hatched zone on plasticity chart		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more passes No. 200 sieve)	SILTS Limits plot below "A" line & hatched zone on plasticity chart	SILTS OF LOW PLASTICITY (Liquid Limit less than 50)			ML	Inorganic silts, clayey silts of low to medium plasticity
		SILTS OF HIGH PLASTICITY (Liquid Limit 50 or more)			MH	Inorganic silts, micaceous or diatomaceous silty soils, elastic silts
	CLAYS Limits plot above "A" line & hatched zone on plasticity chart	CLAYS OF LOW PLASTICITY (Liquid Limit less than 50)			CL	Inorganic clays of low to medium plasticity, gravelly, sandy, and silty clays
		CLAYS OF HIGH PLASTICITY (Liquid Limit 50 or more)			CH	Inorganic clays of high plasticity, fat clays, sandy clays of high plasticity
	ORGANIC SILTS AND CLAYS	ORGANIC SILTS AND CLAYS OF LOW PLASTICITY (Liquid Limit less than 50)			OL	Organic silts and clays of low to medium plasticity, sandy organic silts and clays
		ORGANIC SILTS AND CLAYS OF HIGH PLASTICITY (Liquid Limit 50 or more)			OH	Organic silts and clays of high plasticity, sandy organic silts and clays
ORGANIC SOILS		PRIMARILY ORGANIC MATTER (dark in color and organic odor)			PT	Peat

NOTE: Coarse-grained soils with between 5% and 12% passing the No. 200 sieve and fine-grained soils with limits plotting in the hatched zone on the plasticity chart have dual classifications.

PLASTICITY CHART



DEFINITION OF SOIL FRACTIONS

SOIL COMPONENT	PARTICLE SIZE RANGE
Boulders	Above 12 in.
Cobbles	12 in. to 3 in.
Gravel	3 in. to No. 4 sieve
Coarse gravel	3 in. to 3/4 in.
Fine gravel	3/4 in. to No. 4 sieve
Sand	No. 4 to No. 200 sieve
Coarse sand	No. 4 to No. 10 sieve
Medium sand	No. 10 to No. 40 sieve
Fine sand	No. 40 to No. 200 sieve
Fines (silt and clay)	Less than No. 200 sieve

PRITCHARD ENGINEERING

PROJECT NO. 6012 G-2292
LITTLE BROWN CREEK
NEW SITE, MISSISSIPPI

BORING NO. 1
ELEVATION
DRILLED 11/12/19
DRILLER SM

DEPTH (FT)	SAMP (FT)	SR	VISUAL CLASSIFICATION / REMARKS	CONSIST.	SPT (N)	w %	LL	PI	-200 %	UNIFIED CLASS	q_u (tsf)
0											
1			Brown & gray fine to medium coarse silty	Loose		30		NP		SM	
			SAND								
			Trace organics								
2				Loose		34		NP		SM	
			(saturated)								
3				Loose		29		NP		SM	
4				Loose		35		NP		SM	
5				Loose		28		NP	41.3	SM	
6				Loose		29		NP		SM	
7				Loose		27		NP		SM	
8			**BORING TERMINATED**	Loose		29		NP		SM	
9			NOTE: Boring advanced by hand auger in standing water.								
10											

SAMPLE RETRIEVAL (SR)

- [ ] DRY AUGER.....ASTM D-1452
- [ ] SHELBY TUBE.....ASTM D-1582
- [X] PENETRATION TEST.....ASTM D-1586

WATER OBSERVATION (S)

NONE ENCOUNTERED

____ FT. AFTER ____ HRS.

BOREHOLE CAVED AT 6 FT.

PRITCHARD ENGINEERING

PROJECT NO. 6012 G-2292
LITTLE BROWN CREEK
NEW SITE, MISSISSIPPI

BORING NO. 2
ELEVATION
DRILLED 11/12/19
DRILLER SM

DEPTH (FT)	SAMP (FT)	SR	VISUAL CLASSIFICATION / REMARKS	CONSIST.	SPT (N)	w %	LL	PI	-200 %	UNIFIED CLASS	q_u (tsf)
0											
1			Brown & gray silty **CLAY** with organics	Soft		54				CL-ML	
2			Brown & gray fine to medium coarse silty **SAND**	Loose		30		NP	18.9	SM	
			Trace organics								
3			(saturated)	Loose		37		NP		SM	
4				Loose		32		NP		SM	
5			**BORING TERMINATED** Bore hole caving	Loose		30		NP	41.3	SM	
6											
7											
8											
9			NOTE: Boring advanced by hand auger.								
10											

SAMPLE RETRIEVAL (SR)

- ☐ DRY AUGER.....ASTM D-1452
- ■ SHELBY TUBE.....ASTM D-1582
- ☒ PENETRATION TEST.....ASTM D-1586

WATER OBSERVATION (S)

NONE ENCOUNTERED

4 FT. AFTER 0.5 HRS.

BOREHOLE CAVED AT 4 FT.

PRITCHARD ENGINEERING

PROJECT NO. 6012 G-2292
LITTLE BROWN CREEK
NEW SITE, MISSISSIPPI

BORING NO. 3
ELEVATION
DRILLED 11/12/19
DRILLER SM

DEPTH (FT)	SAMP (FT)	SR	VISUAL CLASSIFICATION / REMARKS	CONSIST.	SPT (N)	w %	LL	PI	-200 %	UNIFIED CLASS	q_u (tsf)
0											
1			Light brown fine silty **SAND**	Loose		26		NP		SM-SP	
2				Loose		25		NP		SM-SP	
3				Loose		22		NP		SM-SP	
4			Brown & gray fine clayey **SAND**	Loose		42		NP		SM	
5			Trace organics	Loose		44		NP		SM	
6				Loose		36		NP		SM	
7			*Hit water @ 7'	Loose		29		NP	11.8	SM	
8			**BORING TERMINATED**	Loose		34		NP		SM	
9			NOTE: Boring advanced by hand auger.								
10											

SAMPLE RETRIEVAL (SR)

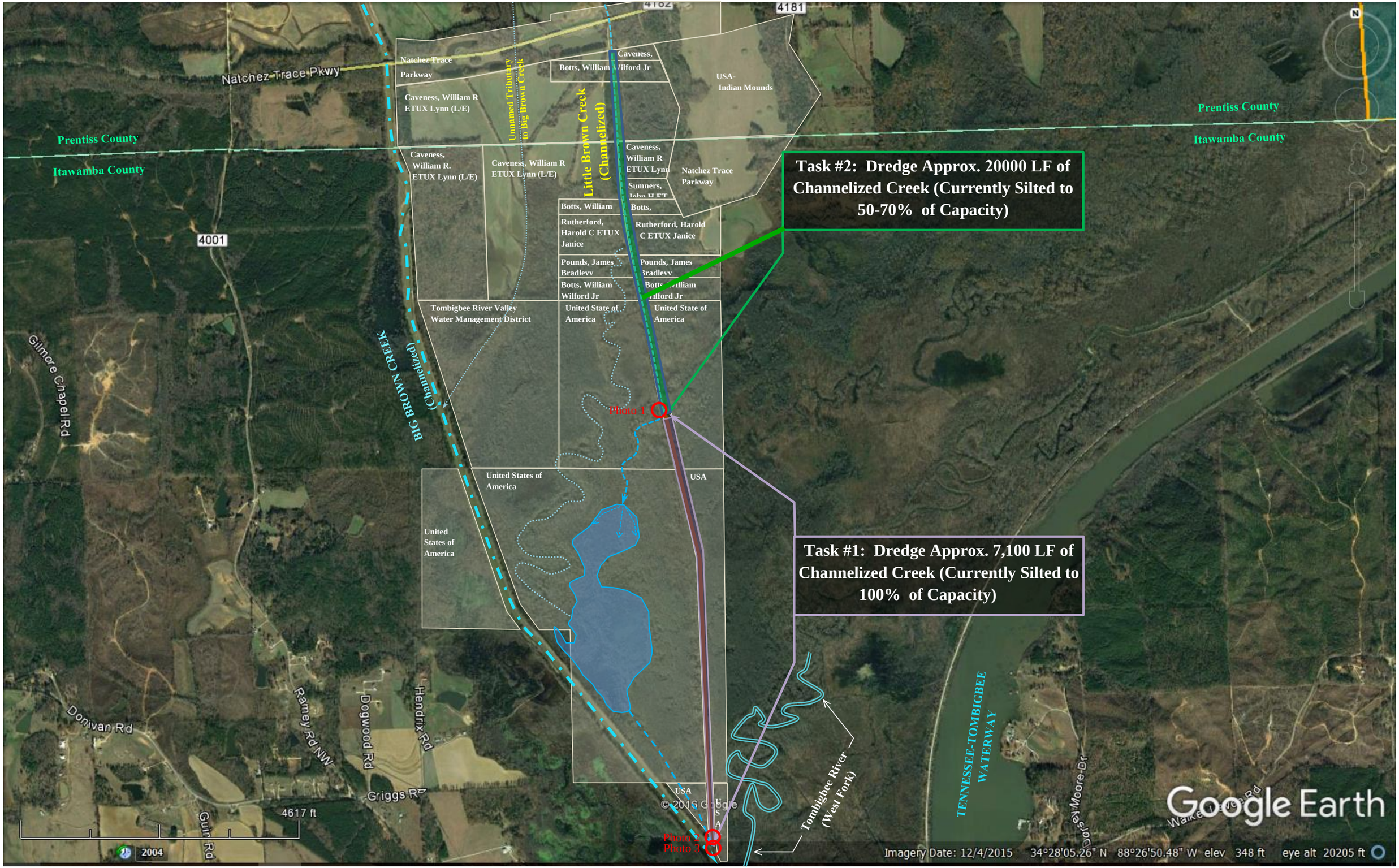
- [ ] DRY AUGER.....ASTM D-1452
- [ ] SHELBY TUBE.....ASTM D-1582
- [X] PENETRATION TEST.....ASTM D-1586

WATER OBSERVATION (S)

NONE ENCOUNTERED

7 FT. AFTER 0.5 HRS.

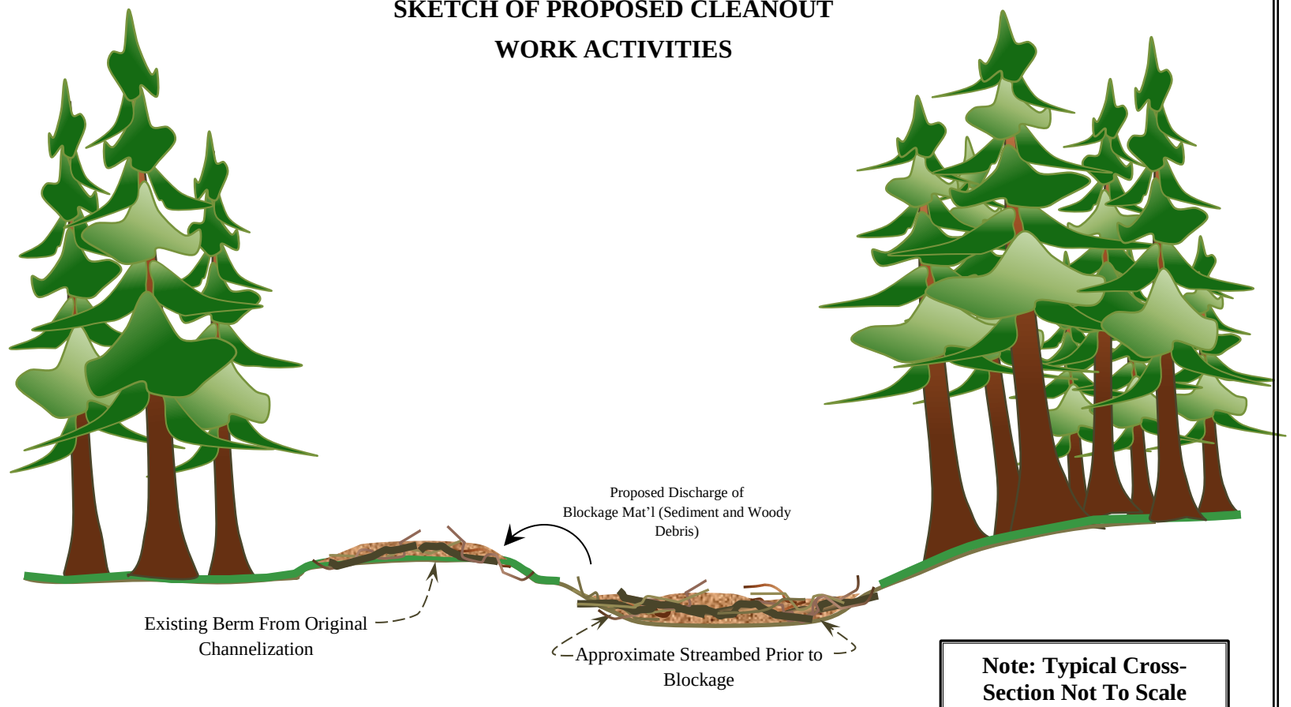
BOREHOLE CAVED AT 7 FT.


Natchez Trace Pkwy
Natchez Trace Parkway
Prentiss County
Itawamba County
4001
4162
4181
Caveness, William R ETUX Lynn (L/E)
Unnamed Tributary to Big Brown Creek
Little Brown Creek (Channelized)
Caveness, Wilford Jr
USA- Indian Mounds
Caveness, William R. ETUX Lynn (L/E)
Caveness, William R ETUX Lynn (L/E)
Caveness, William R ETUX Lynn
Natchez Trace Parkway
Sumners, John H ET
Botts, William
Botts,
Rutherford, Harold C ETUX Janice
Rutherford, Harold C ETUX Janice
Pounds, James Bradlevv
Pounds, James Bradlevv
Botts, William Wilford Jr
Botts, William Wilford Jr
Tombigbee River Valley Water Management District
United State of America
United State of America
BIG BROWN CREEK (Channelized)
United States of America
United States of America
USA
USA
Photo 1
Photo 2
Photo 3
Task #2: Dredge Approx. 20000 LF of Channelized Creek (Currently Silted to 50-70% of Capacity)
Task #1: Dredge Approx. 7,100 LF of Channelized Creek (Currently Silted to 100% of Capacity)
Tombigbee River (West Fork)
TENNESSEE-TOMBIGBEE WATERWAY
Gilmore Chapel Rd
Donivan Rd
Ramey Rd NW
Dogwood Rd
Hendrix Rd
Griggs Rd
Guin Rd
Moore Dr
Wake Robert Rd
4617 ft
2004
© 2016 Google
Google Earth
Imagery Date: 12/4/2015 34°28'05.26" N 88°26'50.48" W elev 348 ft eye alt 20205 ft

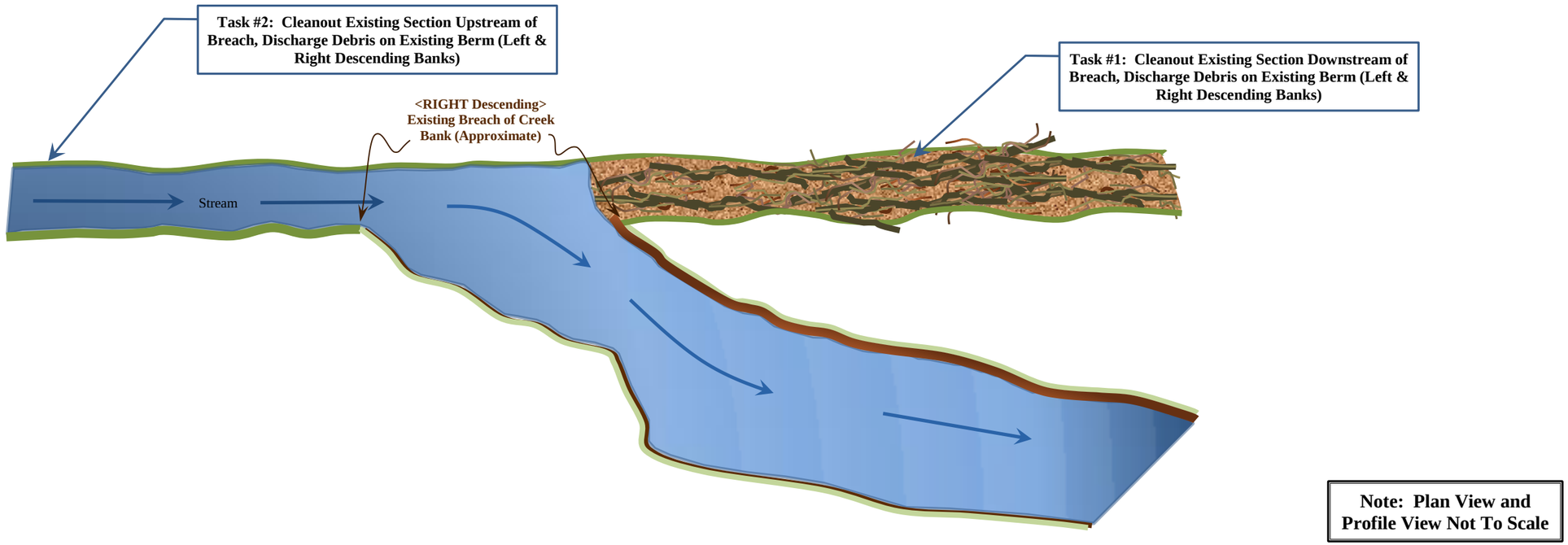
Appendix A

Appendix A

SKETCH OF PROPOSED CLEANOUT WORK ACTIVITIES



Note: Typical Cross-Section Not To Scale



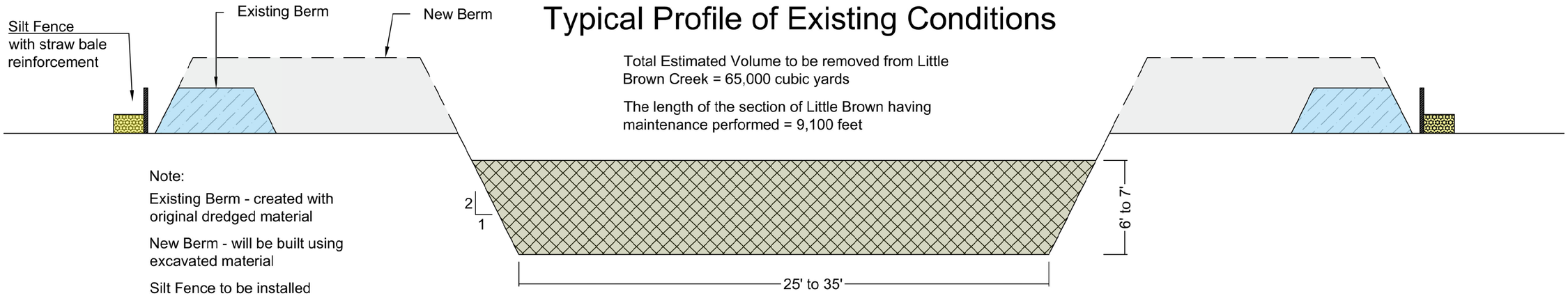
Note: Plan View and Profile View Not To Scale

Photo 1: Area of Major Breach, View to South/Southwest, 34°27'09N / 88°25'21"W

Photo 2: Area of Major Breach, View to South/Southwest (Approx. 200' N of Confluence)

Photo 3: Area of Confluence of Little Brown Creek into Big Brown Creek

Typical Profile of Existing Conditions



Total Estimated Volume to be removed from Little Brown Creek = 65,000 cubic yards

The length of the section of Little Brown having maintenance performed = 9,100 feet

Note:

Existing Berm - created with original dredged material

New Berm - will be built using excavated material

Silt Fence to be installed approximately 6" below existing elevation of existing berm

Straw bales to be secured with NO. 4 Rebar

US Army Corps of Engineers
Mobile District

Symbol	Description	Date	Approved

Designed By: R. WILSON	Drawn By: J. OLIVER	Checked By: —	Reviewed By: —
Date: 15 JAN 2020	File No.	I.S.O. Sheet File Name:	Solicitation Number:

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
MOBILE, ALABAMA

TYPICAL CROSS-SECTION VIEW & VOLUME ESTIMATE

TENNESSEE TOMBIGBEE WATERWAY
LITTLE BROWN CREEK
ITAWAMBA COUNTY, MISSISSIPPI
FLOOD CONTROL
CHANNEL MAINTENANCE

Sheet Reference Number:
1 of 1

APPENDIX B

*Ongoing. Final Coordination will be included in Final EA

APPENDIX C

*Ongoing. Final Coordination will be included in Final EA