



**U.S. Department of Housing and Urban
Development**

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Washington, DC 20410
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Environmental Assessment Determinations and Compliance Findings for HUD-assisted Projects 24 CFR Part 58

Project Information

Project Name: Big Creek National Disaster Resilience Design Project

Responsible Entity: Government of Shelby County

Grant Recipient (if different than Responsible Entity):

State/Local Identifier: Tennessee

Preparer: Barge Design Solutions, Inc.

Certifying Officer Name and Title: Lee Harris, Shelby County Mayor

Grant Recipient (if different than Responsible Entity):

Consultant (if applicable): Barge Design Solutions, Inc.

Direct Comments to:

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Project Location:

The proposed project is located in Millington, Tennessee, in northern Shelby County, approximately 15 miles northeast of downtown Memphis. These activities are proposed along Big Creek (35.334482, -89.917250) in Millington, TN, on the north side of Paul Barret Parkway (State Route (SR) 385) between US Highway 51 (35.332391, -89.919611) and Sledge Road (35.308930, -89.835597). Additional county-owned land has been identified west of US Highway 51 (35.335411, -89.924699) for potential mitigation sites if needed. No activity or improvements have currently been planned for these areas. South of the project, at Raleigh Millington Road and Duncan Road (35.285666, -89.920633), a location has been identified for excess fill material to be taken for an unrelated Shelby County project.

Description of the Proposed Project [24 CFR 50.12 & 58.32; 40 CFR 1508.25]:

The Government of Shelby County, TN, has received funding from the United States Department of Housing and Urban Development (HUD) to assist with resiliency planning and recovery needs resulting from May 2011 flooding. The grant is designed to address flooding issues by improving the community's resilience to future flooding and alleviating current flooding conditions of adjacent communities. The proposed actions would include grading, filling, and earth moving to lower land elevations and provide additional floodwater conveyance and storage.

In recent years, the Millington area has experienced flooding on multiple occasions when Big Creek water levels have exceeded the height of the protective levee. The proposed project seeks to improve Millington's resilience to future flooding and alleviate current flooding conditions of surrounding communities by establishing a large floodway between the existing levee north of Big Creek and Paul Barrett Parkway, the elevated highway to the south. This would allow flood waters to bypass the community and provide flood protection for nearby neighborhoods and the Naval Support Activity Mid-South.

Although the primary purpose of the project is to alleviate current flooding conditions of adjacent communities, this project also intends to restore and enhance the existing floodplain and natural aquatic systems. Restoration and enhancement of the adjacent floodplain's natural conditions will include transitioning some of the currently drained (previously converted) wetland soils into native herbaceous wetlands. Grade controls, where appropriate, will be installed. These controls will lead to enhanced stabilization of the stream channels, reducing upgradient erosion and downstream sediment loading.

In addition to flood alleviation measures, trails and recreational amenities that are resilient to flooding are planned for development within the project area. The surrounding community would benefit from access to greenway trails, walking paths, multipurpose fields, and other recreational amenities.

Proposed Action Alternative:

The current conceptual plan, included in the attachments, identifies three sections with varying activities as discussed below. While Shelby County and the project team are currently working with stakeholders to determine what exact actions, improvements, and features will be a part of the project, the general location of the project and intensity of uses within the area have been identified. The following provides a project description of what has been identified as the Proposed Action Alternative.

Area 1

Area 1 focuses on multipurpose recreational areas, including four 240' x 360' multipurpose fields, three parking areas, one amphitheater stage, three shelters, one playground and one disc golf course. A pedestrian bridge crossing Big Creek with a trail connector to neighborhoods north of Big Creek is also included within Area 1.

As currently proposed, a new curb cut would be required along US 51 to create an entrance into Area 1, allowing vehicular access into the project area for parking. The entrance would be right-in, right-out only, approximately 650 lf northeast of the northbound lane of the US 51/ Paul Barrett Parkway interchange. From the entrance, a minimum 24-foot wide road would bend southeast for approximately 900 lf until running roughly parallel with Paul Barrett Parkway, following along TDOT ROW. The roadway would then continue for approximately 2,350 lf before ending in a roundabout, allowing cars to easily turnaround.

As the road straightens to run parallel with Paul Barrett Parkway, a 29-space parking lot would provide visitors with the westernmost parking option before reaching the multipurpose fields. An existing tree line will be maintained as a buffer between US 51 and the planned park area. The eastern edge of the tree line lies between 400 and 1,200 lf from US 51, running north to southeast. A 296-space parking lot is included along the roadway, just beyond the existing tree line. The parking lot, which is roughly 800 lf long, is located just north of the roadway with an entrance/exit on each end and one approximately 300 lf from the eastern edge of the parking lot. East of this parking lot, the road continues with a 15-spot parking area on the north side of the road before dead-ending into a roundabout.

In addition to vehicular access, the parking lot connects to the trail system, allowing patrons to easily access all multipurpose fields and trails continuing into other areas of the park. Within the multipurpose field area, three locations for picnic tables have been included. East of the multipurpose fields and north of the parking lot, a stage with an observation mound, constructed from relocated site fill material, is proposed. A permanent restroom facility is planned for Area 1 near the athletic fields that will serve the park.

East of the multipurpose fields, a 10-foot wide asphalt trail will travel northeast for roughly 400 lf before turning east to travel along the south side of Big Creek atop the levee for approximately 2,000 lf with another running along the south side of the roadway. The southern trail would begin from the parking lot and continue along Paul Barrett Parkway for approximately 2,400 lf until turning north, traveling on the west side of an existing railroad for approximately 500 lf. The trail system will also meander through forested area before joining the other two trails. All trails west

of the railroad merge to create one singular path before crossing east of the railroad. This path is accomplished through a trail crossing beneath the railroad. The railroad bridge above the trail will be widened to prevent potential falling items from landing on or near the trail. The trail continues east of the railroad before crossing under Raleigh Millington Road and entering Area 2. The trail under Raleigh Millington Road bridge is to be constructed as part of the Shelby Raleigh Millington Road, Bridge Over Big Creek Project (TDOT PIN 122544.00).

In addition to the floodplain and recreational improvements to the project area, levee improvements are planned north of Big Creek. The project proposes to increase the height of the existing levee by 4 feet for approximately 1 mile, north of Big Creek from US 51 to the rail line west of Raleigh Millington Road. A gate structure at Newport Ditch would also be replaced. A trail would run along the top of the western portion of the levee to improve connectivity between neighborhoods in the areas north of Big Creek. The net result will be filling approximately 120,000 cubic yards in raising the area for multipurpose fields, parking, and access roads. Other activities planned for Area 1, including trails and disc golf course, will remain at existing grades. Work associated with the development of Area 1 would impact approximately 25.98 acres within the floodplain and would not result in impacts to wetlands.

Area 2

Continuing from Area 1, the 10-foot wide trail would continue into Area 2, crossing under Raleigh Millington Road and continuing east just south of Big Creek. The trail would continue to meander through Area 2, splitting into two trails occasionally to offer differing paths for trail users.

Throughout much of Area 2, a trail is also planned to travel along Paul Barrett Parkway. The north and south trails within Area 2 would be connected to create a loop around the large pond and wetland area. From the eastern edge of the loop, a trail would continue along the south side of Big Creek to Singleton Avenue where the trail would lead into Area 3. Additional amenities and observation and picnic areas are included within Area 2 of the proposed project. Near the eastern trailhead, three camp sites are planned along high ground. A 47-spot parking lot and two small, 10-spot trailhead parking areas off of Jones Boyd Road are planned south of the wetland area and would provide access to Area 2. Just off of the 47-spot parking lot, permanent restroom facilities would be available to guests.

Within Area 2, Shelby County and the Chickasaw Basin Authority plan to work with local community organizations to program activities focused on the education and stewardship of ecological resources. This would likely include the use of pavilions as outdoor classrooms and guided tours through the natural trail areas.

The construction of a pump station and supporting flood control elements, such as a floodwall to tie in to the existing levee, is also planned along North Fork Creek near Pitts Street and Brinkley Street. The floodwall, planned northeast of the existing levee improvements, would begin at Veterans Parkway and cover approximately 1,500 lf on the west side of North Fork Creek. The structure would be constructed to an average height of 6 feet and protect a flood-risk neighborhood not previously protected from flooding. The net result will be excavation of approximately 120,000 cubic yards. Most of this material would come from the western edge of Area 2 (approximately 14 acres) and would be used as fill material in Area 1. The remainder of Area 2 will contain trails,

boardwalks, and other site amenities that will remain at or near existing grades. Approximately 0.08 acre of wetland and 18.96 acres of floodplains will be impacted by development within Area 2.

Area 3

Due to an existing TDOT wetland mitigation site, work will be limited within Area 3. TDOT has been involved in discussions and planning for Area 3. For most of Area 3, the land will be kept in a natural state with a meandering trail. While activity and programming through Area 3 will focus on the natural environment and flood control, the Proposed Action Alternative includes a paved trail traveling along Big Creek with a primitive trail to the south following roughly along the Old Big Creek Channel. Sections of boardwalks are proposed to be built up throughout Area 3 to cross over wetland areas. A portion of existing unpaved trail will remain. This begins in the southeastern corner of Area 3 and continues along the proposed high flow channel before traveling south and connecting to proposed boardwalks. Observation areas are planned throughout the accessible portions of Area 3. A 24-spot parking area is proposed east of Singleton Avenue, near the western edge of Area 3, and two 10-spot trailhead parking areas are planned near the project's eastern terminus along Sledge Road. A berm and Big Creek diversion channel are planned within Area 3 to provide additional flood storage. A section of Sledge Road will be raised to connect to an existing berm, providing flood protection to a nearby residential area. The net result will be fill of approximately 530,000 cubic yards used for the 70-acre berm outlining the majority of Area 3. This material will come from the excavation of the 15-acre diversion channel. The remainder of Area 3 will contain primitive trails, boardwalks and three trail heads that will remain at or near existing grades. Approximately 2.88 acres of wetlands and 76.57 acres of floodplain will be impacted by project development within Area 3.

Statement of Purpose and Need for the Proposal [40 CFR 1508.9(b)]:

In recent years, the Millington area has experienced flooding on multiple occasions when Big Creek water levels have exceeded the height of the protective levee. The proposed project seeks to improve Millington's resilience to future flooding and alleviate current flooding conditions of surrounding communities by establishing a large floodway between the existing levee north of Big Creek and Paul Barrett Parkway, the elevated highway to the south. This would allow flood waters to bypass the community and provide flood protection for nearby neighborhoods and the Naval Support Activity Mid-South. The Big Creek Activity would also provide broader community benefits through connectivity of greenway trails, walking paths, athletic fields, and other recreational amenities.

Shelby County experienced a series of three powerful storms in April 2011 resulting in Federal Emergency Management Agency (FEMA) Presidential disaster declarations: FEMA 1974-DR, 1978-DR, and 1979-DR. Noting the extent of most impacted and distressed characteristics, HUD pre-qualified Shelby County as an eligible applicant for the NDRC. Despite a substantial recovery, Shelby County still faces Unmet Recovery Needs (URN) for housing, infrastructure, and environmental degradation caused by the 2011 storm events.

During the 2011 storms, 198 homes in Shelby County flooded, and there has been no allocation of CDBG-NDRC funds for home repair. On February 5th, 2015, Shelby County completed a windshield survey of homes with remaining damage from the declared disaster. The survey found

80 homes with unmet repair needs due to the 2011 storms and 37 vacant lots adjacent to these damaged properties that regularly experience flooding. Further, Shelby County staff collected 26 homeowner signatures certifying they were unable to repair storm-related damage to their homes.

The 2011 flood produced some of the worst flooding in recent years in Millington and the surrounding area. Stormwater runoff caused streams and rivers to overflow their banks and caused major damage to infrastructure as well as residential, commercial, and industrial properties. The qualifying event resulted in damages of approximately \$5,000,000 in the Millington area.

As part of the program, the CDBG-NDRC targets impacted communities with significant low- and moderate-income (LMI) populations. For CDBG funding, a person qualifying under the Section 8 Housing Assistance Payments program is considered to be “very low income”. The Section 8 requirement is typically based on 50 percent of area median. CDBG moderate income relies on Section 8 "lower income" limits, which are generally tied to 80 percent of area median income. The City of Millington was determined to be eligible for CDBG funding as it is made up of more than 50 percent LMI households (HUD 1984).

The flood damage not only displaced the LMI population but also disrupted livelihoods stemming from displacement, loss of income, and recovery needs still unmet today. The effects have been worsened by recent storm events in this area measuring well over the 1,000-year rainfall occurrence. The major cause of disaster in these 2011 events was significant flooding from Shelby County’s main tributaries. Part of this flooding was exacerbated by continued environmental degradation along the river banks from agricultural runoff upstream. Resilient interventions such as flood protection infrastructure, improved wetlands, and retention and detention ponds could vastly decrease the impact of future flood events on infrastructure and residents.

In November 2011, Shelby County Government was awarded a \$2,619,999 Sustainable Communities Regional Planning Grant from HUD to prepare the Mid-South Regional Greenprint and Sustainability Plan. The 25-year plan is designed to enhance regional sustainability by establishing a unified vision for a region-wide network of green space areas, or Greenprint, which serves to address long-term housing and land use, resource conservation and environmental protection, community health and wellness, transportation alternatives, economic development, neighborhood engagement, and social equity in the Greater Memphis Area.

Had the extensive flood protection interventions proposed in the Greenprint for resilience improvements been in place at the time of the storms, the impact of the flood events would have likely been significantly reduced in the region. During the CDBG-NDRC grant application and selection process, a Benefit Cost Analysis was prepared and concluded that had the proposed improvements to the Big Creek floodplain been constructed prior to the 2011 flood, most flooding in Millington would not have occurred, reducing approximately \$4.5 million of losses to residential property damage, facilities, and lost jobs. In addition to economic benefits of flood prevention and reduction, flood intervention activities, most importantly, help prevent loss of life due to flooding.

Existing Conditions and Trends [24 CFR 58.40(a)]:

The project area has transitioned from an active naturally forested floodplain to cultivated pastures to its current condition of wooded wetland, shrubs, and pasture mix. Over several decades, Big Creek has become a severely incised and over-widened channel that does not adequately convey the discharge it receives from large storm events. As the impairment of the stream continues, channel degradation exacerbates downstream water quality and threatens the recovery of “connected” natural aquatic systems.

Funding Information

Grant Number	HUD Program	HUD Funding Amount
B-13-US-47-0002	CDBG-NDRC	\$25,146,022.00

Estimated Total HUD Funded Amount:

\$25,146,022.00

Estimated Total Project Cost (HUD and non-HUD funds) [24 CFR 58.32(d)]:

HUD: \$25,146,022.00
 State of Tennessee: \$6,000,000.00
 Shelby County: \$3,000,000.00

Compliance with 24 CFR 50.4, 58.5, and 58.6 Laws and Authorities

Record below the compliance or conformance determinations for each statute, executive order, or regulation. Provide credible, traceable, and supportive source documentation for each authority. Where applicable, complete the necessary reviews or consultations and obtain or note applicable permits of approvals. Clearly note citations, dates/names/titles of contacts, and page references. Attach additional documentation as appropriate.

Compliance Factors: Statutes, Executive Orders, and Regulations listed at 24 CFR §58.5 and §58.6	Are formal compliance steps or mitigation required?	Compliance determinations
STATUTES, EXECUTIVE ORDERS, AND REGULATIONS LISTED AT 24 CFR 50.4 and 58.6		
Airport Hazards 24 CFR Part 51 Subpart D	Yes No <input type="checkbox"/> <input checked="" type="checkbox"/>	The project is approximately 1 mile from the Millington-Memphis Airport. The airport has an 8,000-foot runway that is able to accommodate a variety of commercial, private planes, and cargo carriers. The

		<p>Millington-Memphis Airport is operated as a public airport that primarily serves private and military aircraft. The master plan is included in the attachments.</p> <p>Based on a review of the Millington Regional Jetport Airport Master Plan, the project does not fall within the Accident Potential Zone (APZ) or Runway Protection Zone (RPZ)/Clear Zone (CZ). In addition, elevations of the proposed activities fall within the limits of the identified critical elevations of the area and would not cause violations of the Far Part 77 surfaces. In addition to considered elevations, the proposed activities and land use are not likely to cause any additional wildlife attractant concerns near the airport when compared to the existing conditions and undeveloped land.</p>
<p>Coastal Barrier Resources</p> <p>Coastal Barrier Resources Act, as amended by the Coastal Barrier Improvement Act of 1990 [16 USC 3501]</p>	<p>Yes No</p> <p><input type="checkbox"/> <input checked="" type="checkbox"/></p>	<p>According to the attached Coastal Barrier Resources System map, the project site is not located within a coastal barrier resources area. No further analysis is required.</p>
<p>Flood Insurance</p> <p>Flood Disaster Protection Act of 1973 and National Flood Insurance Reform Act of 1994 [42 USC 4001-4128 and 42 USC 5154a]</p>	<p>Yes No</p> <p><input checked="" type="checkbox"/> <input type="checkbox"/></p>	<p>A map showing the project area and the FEMA Flood Insurance Rate Map (FIRM) is attached. Based on a review of the proposed project area found on Map Nos. 47157C0155F, 47157C0160G, 47157C0165F, 47157C0170F, 47157C0180G and 47157C0190G of the Shelby County FIRM, the vast majority of the project area falls within the existing 100-year floodplain, with areas immediately along Big Creek identified as a floodway.</p> <p>The Proposed Action Alternative would involve work within the floodplain. To satisfy the requirements of EO 11988, the Water Resources Council developed an eight-step process that agencies should carry out as part of their decision making on projects that have potential impacts to or within a floodplain or a wetland. The eight steps reflect the decision-making process</p>

		<p>required in Section 2(a) of the EO and are reflected in FEMA regulations at 44 CFR 9.6.</p> <p>In total, the Proposed Action Alternative is estimated to affect approximately 121.51 acres of floodplain. Due to the Proposed Action Alternative’s location and proposed activity within the floodplain, the eight-step process will be carried out as part of the project. Shelby County is in the process of completing the steps of the process which involve early public review, identifying and evaluating alternatives, identifying impacts, announcing the decision, and implementing the proposed action in compliance with impacts minimization plans and flood insurance requirements. As part of the process, an initial public notice ran to announce the potential activity within the floodplain and wetlands. This notice appeared in the Memphis Flyer and Tri-State Defender on August 1, 2019, Memphis Daily News on August 2, 2019, and La Prensa Latina on August 4, 2019. A final public notice announcing the decision to proceed with the activity within the floodplain appeared in the Memphis Flyer and Tri-State Defender on September 12, 2019, Memphis Daily News on September 13, 2019, and La Prensa Latina on September 15, 2019.</p>
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STATUTES, EXECUTIVE ORDERS, AND REGULATIONS LISTED AT 24 CFR 50.4 & 58.5

<p>Clean Air</p> <p>Clean Air Act, as amended, particularly section 176€ & (d); 40 CFR Parts 6, 51, 93</p>	<p>Yes No</p> <p><input type="checkbox"/> <input checked="" type="checkbox"/></p>	<p>Shelby County is currently in maintenance status for the 8-hour Ozone (2008) and Carbon Monoxide (1971) NAAQS pollutants. The Pollution Control Section of the Shelby County Health Department reviewed the project for conformity with the NAAQS and in a letter dated August 27, 2019, determined “...there will be no direct or indirect emissions associated with the project approaching de minimus [sic] levels identified in 40 CFR 93 § 153 which would require a formal conformity determination. Further, it is also apparent this project does</p>
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		<p>not include any stationary sources of air emissions that would need to receive a minor source permit...”.</p> <p>No proposed construction activities for this project require specific review or permitting for air emissions. No new construction or conversion of land use facilitating the development of significant public, commercial, or industrial facilities, or of dwelling units, is proposed for this project, limiting the potential for impacts to air quality and greenhouse gas production. Minimal greenhouse gas emissions, including carbon monoxide, are expected from heavy machinery during construction, but no significant impacts are anticipated. Construction activities may generate dust particulate matter that will require control. Fuel burning construction equipment should be fitted with appropriate, industry standard, emissions control devices. Contract documents will specify general BMPs such as water dampening for control of fugitive dust emissions from temporary roadways and other disturbed areas during construction activities. Any impacts to air quality are expected to be minor and temporary.</p>
<p>Coastal Zone Management</p> <p>Coastal Zone Management Act, sections 307€ & (d)</p>	<p>Yes No</p> <p><input type="checkbox"/> <input checked="" type="checkbox"/></p>	<p>Based on a review of the USFWS Coastal Barrier Resource System, the project site is not located within coastal zone boundaries. No further analysis is required.</p>
<p>Contamination and Toxic Substances</p> <p>24 CFR Part 50.3(i) & 58.5(i)(2)</p>	<p>Yes No</p> <p><input type="checkbox"/> <input checked="" type="checkbox"/></p>	<p>A review of data available through the Environmental Protection Agency (EPA) identified five Resource Conservation and Recovery Act (RCRA) documented sites within the immediate project area. No violations have previously been identified at these locations and no earthwork is anticipated within their immediate vicinity. The following table provides additional information on these sites.</p>

EPA ECHO - Detailed Facility Report

Big Creek Activity - 1-Mile Buffer

Facility	Street Address	City	State	Zip	Latitude	Longitude	Statute	Compliance Status
Aramark Uniform & Career Apparel Inc.	6195 Navy Road	Millington	TN	38053	35.338694	-89.857124	RCRA	No Violation Identified
51 Concrete Millington Ready	7630 Raleigh-Millington Road	Millington	TN	38053	35.33409	-89.89825	CWA RCRA	Terminated Permit No Violation Identified
Edsal Sandusky	4815 Biloxi Road	Millington	TN	38053	35.335653	-89.902953	CAA CWA RCRA	No Violation Identified No Violation Identified No Violation Identified
Sandusky Lee	4815 Jack Huffman Boulevard	Millington	TN	38053	35.334404	-89.903761	No Data	Records Returned
Collision Center Auto Body Shop	7654 US Highway 51 North	Millington	TN	38053	35.335347	-89.916327	RCRA	No Violation Identified

EPA - NEPAAssist - <https://www.epa.gov/nepa/nepassist>

EPA - ECHO - <https://echo.epa.gov>

In addition to these sites, the EPA's NEPAAssist tool identified 13 other RCRA locations within one mile of the project area. A NEPAAssist report identifying these locations is included in the attachments.

In 1997, USGS prepared a hydrogeology and groundwater quality report for the Naval Support Facility – Mid-South. As part of this study, 67 Solid Waste Management Units (SWMUs) and one Area of Concern were documented at the facility. During the investigations, a large amount of data was collected on contaminant concentrations in the shallow ground-water system. Generally, concentrations detected were less than applicable maximum contaminant levels. However, locally elevated concentrations of several contaminants have been previously detected (USGS 1997). The Big Creek Activity avoids all SWMU locations and the Area of Concern.

No hazardous waste would be generated during the construction and operation of the facility. During construction and operation of the facility, any materials determined to be wastes would be evaluated (e.g., waste determinations) and managed (e.g., inspections, container requirements, permitted transport, and disposal) in accordance with the Solid and Hazardous Wastes Rules and Regulations of the State of Tennessee (TDEC DSWM Rule 0400 Chapters 11 and 12, respectively).

		<p>A Stormwater Pollution Prevention Plan (SWPPP) will be prepared by a Certified Professional in Erosion and Sediment Control, a licensed Professional Engineer, or someone who has completed the TDEC Level 2 Tennessee Erosion Prevention and Sediment Control (EPSC) Training Program for Construction Sites Design Course. The SWPPP establishes the overall management plan for hazardous wastes and materials. The following are some general BMPs from the SWPPP that outline these procedures.</p> <ul style="list-style-type: none"> • All hazardous waste materials will be disposed of in a manner which is compliant with local or State regulations. • For all hazardous materials stored on site, the manufacturer's recommended methods for spill cleanup will be clearly posted. • Any hazardous substance release occurring within a 24-hour period in an amount equal to or in excess of a reportable quantity established under either 40 CFR 117 or 40 CFR 302 will be documented as prescribed in the SWPPP. <p>Procedures to limit fuel spills would be implemented during construction and operation of the facility. Details regarding the handling of fluid spills and general trash will be included in the SWPPP.</p> <p>Nonhazardous wastes would be disposed of in an approved, operating landfill. Bulk chemicals would be stored in storage tanks or in returnable delivery containers. The transport, storage, handling, and use of all chemicals would be conducted in accordance with applicable laws, ordinances, regulations, and standards.</p>
<p>Endangered Species</p> <p>Endangered Species Act of 1973, particularly section 7; 50 CFR Part 402</p>	<p>Yes No</p> <p><input type="checkbox"/> <input checked="" type="checkbox"/></p>	<p>The USFWS Information for Planning and Consultation (IpaC) Trust Resource website was evaluated for protected species that may be present within the project area. An official list of protected species with potential to be affected by activities proposed at this location may be found in the</p>

		<p>attachments. The IpaC identified two potential endangered and threatened species within the project area: The endangered Indiana bat (<i>myotis sodalis</i>) and the threatened northern long-eared bat (<i>myotis septentrionalis</i>).</p> <p>While much of the project area is mature forest that could present opportunity for summer roosting habitat for the federally listed Indiana bat and northern long-eared bat, the USFWS determined it could not be reasonably certain that take of bats would occur with spring/summer tree clearing in areas with no known occurrences such as this. Specific to the Indiana bat, the USFWS currently uses the Map of Indiana bat sites in Tennessee to review a proposed project's location in relation to hibernacula and documented presence. Based on this map, the nearest recorded presence are two maternity roosts documented in southeastern McNairy County, near the Tennessee-Mississippi state line. Considering the USFWS comments, no direct effects to the federally listed bats are anticipated; however, potential indirect effects to the federally listed Indiana bat and the northern long-eared bat may occur due to loss of potential summer roosting habitat. The proposed project would have no effect on winter roosting habitat as no hibernacula are located within or near the project area.</p>
<p>Explosive and Flammable Hazards</p> <p>24 CFR Part 51 Subpart C</p>	<p>Yes No</p> <p><input type="checkbox"/> <input checked="" type="checkbox"/></p>	<p>Based on a review of available information including current and previous land use and RCRA sites, there are no known hazardous operations handling conventional fuels or chemicals of an explosive or flammable nature in the immediate project area.</p>
<p>Farmlands Protection</p> <p>Farmland Protection Policy Act of 1981, particularly sections 1504(b) and 1541; 7 CFR Part 658</p>	<p>Yes No</p> <p><input type="checkbox"/> <input type="checkbox"/></p>	<p>The entire project area contains 15 known soil types. Of these soils, 13 are found within the main project area proposed for the Big Creek Activity. The predominant soils within this area are Falaya silt loam and Waverly silt loam, comprising approximately 33 and 41 percent of the on-</p>

site soil, respectively. In addition to the main area targeted for flood reduction measures and recreational amenities, there are approximately 230 acres proposed for potential fill material or mitigation activities. Falaya silt loam is the predominate soil in these areas, reported at nearly 53 percent of the land.

Based on data available from the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), just over 930 acres within the main project area are considered prime farmland. Within the additional auxiliary areas, approximately 175 acres are identified as prime farmland.

In total, the activities associated with the Big Creek National Disaster Resilience Design Project would involve over 1,100 acres of prime farmland. The remaining soils appear for Shelby County on the Soil Data Access (SDA) Prime and other Important Farmlands listing but are not considered prime farmland (USDA NRCS 2018b).

A land evaluation and site assessment system is used by the USDA NRCS to establish a farmland conversion impact rating score. When considering the impact rating score, project stakeholders must consider alternative sites if the potential adverse impacts on the farmland exceed the recommended allowable level (USDA 2014). The construction and operation of the proposed activity would potentially impact/convert prime farmland. There are approximately 270,000 acres of prime farmland in Shelby County, accounting for roughly 54 percent of the total land area in the county. Nearly 51 percent, over 1,100 acres, of the total project site soil is considered prime farmland. The proposed project would impact a minimal portion of the total available farmland in the county. In addition, much of the improvements proposed for the project would not result in the permanent or irreversible conversion of

		<p>farmland. While agricultural production would not occur on the project site, long-term impacts to prime farmlands and soil productivity on much of the site would be insignificant.</p> <p>Based on the limited site disturbance, there would be minimal direct and indirect effects on prime farmland under the proposed project. A figure identifying the approximate distribution of each soil type and tables listing the soils identified within the project area are included as attachments.</p>
<p>Floodplain Management</p> <p>Executive Order 11988, particularly section 2(a); 24 CFR Part 55</p>	<p>Yes No</p> <p><input checked="" type="checkbox"/> <input type="checkbox"/></p>	<p>Although federal agencies are typically required to avoid direct and indirect support of floodplain development, the CDBG-NDRC funds are allocated for projects dedicated to the purpose of promoting innovative resilience projects to better prepare communities for future storms and mitigate flooding. Specifically, the Proposed Action Alternative would involve the construction of a berm along the south side of Big Creek between Sledge Road and Singleton Avenue in conjunction with a high flow diversion channel and floodplain excavation. The berm along with portions of Paul Barrett Parkway will create a storage area that will store flood waters during a high flow event. While the berm will be constructed of fill placed in the floodway, the combined effect of the berm, the diversion channel, and the additional excavation will reduce flood levels downstream. On the downstream end of the project, an existing USACE levee will be extended by 4 feet to provide additional flood protection between US 51 and Raleigh Millington Road. Additionally, a portion of an existing levee around the Shady Oaks Mobile Home Park will be extended and the existing pump station will be upgraded.</p> <p>These construction activities within the floodplain and floodway are proposed to improve the community's resilience to future flooding and alleviate current flooding</p>

		<p>conditions of adjacent communities. The “No-Rise” study shows that a change in flood elevations will occur if the improvements are constructed and a Letter of Map Revision (LOMR) will be required.</p> <p>While alterations to the floodplains would result in changes to elevations, heightened elevations are limited to storage in Area 3. Residential and commercial areas would be protected by berms and would not experience a change in elevation related to the proposed project. Based on the results of the “No-Rise” study, minor impacts, including benefits to the surrounding communities through berm protection and additional water storage, are expected to the floodplain.</p>
<p>Historic Preservation</p> <p>National Historic Preservation Act of 1966, particularly sections 106 and 110; 36 CFR Part 800</p>	<p>Yes No</p> <p><input type="checkbox"/> <input checked="" type="checkbox"/></p>	<p>A cultural resource survey identified one archaeological site that is potentially eligible for inclusion in the National Register of Historic Places (NRHP). As currently planned, construction activities associated with the Big Creek Activity would avoid the potentially eligible archaeological site.</p> <p>The State Historic Preservation Office (SHPO) reviewed the proposed project and Phase I cultural resources survey and supporting documentation. Specific to architectural resources, the SHPO responded in a letter dated May 11, 2018, stating, “Considering the information provided, we find that no architectural resources eligible for listing in the [NRHP] will be affected by this undertaking...” On April 8, 2019, the SHPO concurred with Shelby County’s determination that no archaeological resources eligible for listing in the NRHP would be affected by the proposed project.</p> <p>In addition to the SHPO, pursuant to 36 CFR Part 800.3(f)(2), Shelby County is consulting with federally recognized Indian tribes regarding historic properties within the proposed project’s APE that may be of religious and cultural significance. After review of preliminary project information,</p>

		<p>the Coushatta Tribe of Louisiana requested to serve as a consulting party. On August 9, 2019, the Phase I cultural resources survey was submitted to the Coushatta Tribe of Louisiana for review. At this time no response has been received from the Tribe.</p>
<p>Noise Abatement and Control</p> <p>Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978; 24 CFR Part 51 Subpart B</p>	<p>Yes No</p> <p><input type="checkbox"/> <input checked="" type="checkbox"/></p>	<p>The proposed project does not include new construction or rehabilitation for residential use (thus no increase in residential population receptors) and no development of significant public, commercial, or industrial facilities that could increase noise within the project area is proposed.</p> <p>The Proposed Action Alternative would result in short-term noise production related to construction activities. Construction equipment typically results in a maximum noise level within the range of 80 to 85 dBA at a distance of 50 feet from the equipment (USDOT 2006). Elevated noise levels caused by construction equipment could be experienced by nearby residents, but construction noise would be of short duration and likely not exceed the 65 dBA noise level at nearby houses for prolonged periods.</p> <p>Contract documents will specify that contractors must ensure that the standard noise abatement devices (such as mufflers) on all equipment are functional and in use during construction and that construction hours will be limited to no earlier than 7:00 a.m. and no work on Sundays except for emergency situations. All construction will be conducted to minimize the impact of construction noise and inconvenience to persons or residences adjacent to the construction areas.</p> <p>Elevated noise levels from construction equipment could be perceptible above background noise but would be of short duration, during normal daylight hours and would likely not exceed the 65 dBA noise level for prolonged periods. Maintenance activities, primarily mowing, would result in</p>

		noise periodically; however, this noise would be similar to existing noises near the project site. Overall noise impacts resulting from the Proposed Action Alternative would be insignificant.
Sole Source Aquifers Safe Drinking Water Act of 1974, as amended, particularly section 1424€; 40 CFR Part 149	Yes No <input type="checkbox"/> <input checked="" type="checkbox"/>	As shown on the attached map, the project site is not located on a Sole Source Aquifer. No further analysis is required.
Wetlands Protection Executive Order 11990, particularly sections 2 and 5	Yes No <input checked="" type="checkbox"/> <input type="checkbox"/>	<p>In total, the Proposed Action Alternative is estimated to affect approximately 2.96 acres of wetlands. The eight-step process will be carried out as part of the project.</p> <p>The eight steps reflect the decision-making process required in Section 2(a) of the EO and are reflected in FEMA regulations at 44 CFR 9.6.</p> <p>Shelby County is in the process of completing the steps of the process which involve early public review, identifying and evaluating alternatives, identifying impacts, announcing the decision, and implementing the proposed action in compliance with impacts minimization plans and flood insurance requirements. As part of the process, an initial public notice ran to announce the potential activity within the floodplain and wetlands. This notice appeared in the Memphis Flyer and Tri-State Defender on August 1, 2019, Memphis Daily News on August 2, 2019, and La Prensa Latina on August 4, 2019. A final public notice announcing the decision to proceed with the activity within the floodplain appeared in the Memphis Flyer and Tri-State Defender on September 12, 2019, Memphis Daily News on September 13, 2019, and La Prensa Latina on September 15, 2019.</p>
Wild and Scenic Rivers Wild and Scenic Rivers Act of 1968, particularly section 7(b) and (c)	Yes No <input type="checkbox"/> <input checked="" type="checkbox"/>	The project area is not located within the vicinity of any designated wild, scenic, or recreational rivers. The nearest Wild and Scenic Rivers designated river to the project is the Eleven Point National Wild and Scenic River in southern Missouri, nearly 150 miles

		<p>from the project area. In addition to Wild and Scenic Rivers, the Hatchie River is listed on the Nationwide Rivers Inventory and is located roughly 20 miles north and northeast of the project area. Data available from the National Wild and Scenic Rivers System and the Nationwide Rivers Inventory were reviewed to determine the project's proximity to these resources. No adverse impacts to any wild, scenic, or recreational rivers are anticipated. No further analysis is required.</p>
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ENVIRONMENTAL JUSTICE

<p>Environmental Justice Executive Order 12898</p>	<p>Yes No <input type="checkbox"/> <input checked="" type="checkbox"/></p>	<p>The proposed project is located in Millington and unincorporated Shelby County, approximately 15 miles northeast of downtown Memphis. Based on U.S. Census data available through the EPA's EJSCREEN, approximately 9,500 people live within one-mile of the project area, just over 1 percent of the Shelby County population of 936,990 (Census 2016).</p> <p>Recorded population within the one-mile radius is predominantly white, with 63 percent reporting race as white and 37 percent minority (USEPA 2018a). The reported minority population within the one-mile radius is over 23 percentage points lower than the Shelby County minority population of just over 60 percent, which is over two and a half times Tennessee's 22.2 percent minority population.</p> <p>While median household income is not reported at this level through EJSCREEN, the City of Millington has a reported median income of almost \$48,000, slightly higher than the Shelby County median income of \$46,854. Considering the location of housing stock and assumed population concentrations, it is likely the median income within one-mile of the project area is comparable to the City of Millington's median income.</p>
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		<p>In addition to median income, reported populations below poverty level were also considered. The City of Millington reports a higher percent of population below poverty when compared to Shelby County, the Memphis Metropolitan Statistical Area (MSA), Tennessee, and the United States, with the percent decreasing as population sizes increase. While the differences only vary by a few percentage points, this supports the data identifying much of Millington as LMI households.</p> <p>While the Big Creek Activity is located within a LMI community, the development of the Proposed Action Alternative would protect surrounding neighborhoods and businesses from future flooding and would not result in long-term adverse effects. Consequently, there would be no disproportionately adverse impacts to minority or low-income populations. It is worth noting that the City of Millington is made up of more than 50 percent LMI households, many of which would directly benefit from the reduction of flooding in the surrounding neighborhoods and recreational amenities. The community as a whole would benefit from the additional resources focused on improving community health and wellness, transportation alternatives, and social equity in access to the amenities, including recreational areas, multiuse trails, wetlands, boardwalks, community pavilions, blight reduction, and camping areas.</p>
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Environmental Assessment Factors [24 CFR 58.40; Ref. 40 CFR 1508.8 &1508.27] Recorded below is the qualitative and quantitative significance of the effects of the proposal on the character, features and resources of the project area. Each factor has been evaluated and documented, as appropriate and in proportion to its relevance to the proposed action. Verifiable source documentation has been provided and described in support of each determination, as appropriate. Credible, traceable and supportive source documentation for each authority has been provided. Where applicable, the necessary reviews or consultations have been completed and applicable permits of approvals have been obtained or noted. Citations, dates/names/titles of contacts, and page references are clear. Additional documentation is attached, as appropriate. **All conditions, attenuation or mitigation measures have been clearly identified.**

Impact Codes: Use an impact code from the following list to make the determination of impact for each factor.

- (1) Minor beneficial impact
- (2) No impact anticipated
- (3) Minor Adverse Impact – May require mitigation
- (4) Significant or potentially significant impact requiring avoidance or modification which may require an Environmental Impact Statement

Environmental Assessment Factor	Impact Code	Impact Evaluation
LAND DEVELOPMENT		
Conformance with Plans / Compatible Land Use and Zoning / Scale and Urban Design	3	<p>As part of the planning efforts of the Mid-South Regional Greenprint, the City of Millington oversaw the preparation of the Millington Greenway Plan, which provides a vision and strategy for the development of an integrated, connected system of greenways, paths, and sidewalks to connect the existing park system, open spaces, and other destinations throughout the City. The concept of the proposed project is included in the Millington Greenway Plan and Mid-South Regional Greenprint.</p> <p>The elements and activities of the proposed project are compatible with plans, zoning, and surrounding land uses. The project area is split between land within the Millington city limits and unincorporated Shelby County. Land within the Millington city limits is a mixture of zoning, including residential, commercial, and agriculture. A portion of the land has been acquired from the Naval Support Activity Mid-South.</p> <p>Land within unincorporated Shelby County is zoned for Conservation Agriculture (CA). As described in the Memphis and Shelby County Unified Development Code (UDC), the CA District is intended to conserve agricultural land and undeveloped natural amenities while preventing the encroachment of incompatible land uses. In addition to the CA District, this land also falls within a Floodplain Overlay. The proposed project is in alignment with allowed development, as discussed in the UDC, within the Floodplain Overlay.</p> <p>Project information was sent to the Memphis and Shelby County Division of Planning and Department. A statement of “No Comment” was provided in an email response from the Memphis and Shelby County Division of Planning and Department.</p>

Soil Suitability/ Slope/ Erosion/ Drainage/ Storm Water Runoff	1	<p>During construction, erosion and sediment controls would be utilized. The project will install soil and slope stability measures in stream reaches that have experienced erosion due to high waters from storm events. In addition, restoration activities are planned for tributaries of Big Creek.</p> <p>As the grantee, Shelby County Engineering has been involved throughout project development and fully supports the proposed activities. During the environmental review, Shelby County Engineering issued a letter expressing support of the project.</p> <p>In addition to Shelby County Engineering, the City of Millington City Engineer reviewed project details but provided no additional comments.</p>
Hazards and Nuisances including Site Safety and Noise	2	<p>The proposed project would not result in hazards and nuisances. All state and local construction safety procedures would be followed. Therefore, no impacts would result.</p> <p>The Shelby County Department of Public Safety reviewed project information and provided a response that expressed support of the project but offered no specific comment.</p>
Energy Consumption	2	Due to the limited operational needs, the Proposed Action Alternative will not result in a significant increase in energy consumption.

Environmental Assessment Factor	Impact Code	Impact Evaluation
SOCIOECONOMIC		
Employment and Income Patterns	2	<p>The proposed project would not likely result in an increase in local employment as no workers would be needed for day-to-day operation of facilities associated with the Big Creek Activity. While periodic maintenance activities, primarily mowing, would be required, City of Millington, Shelby County, and Chickasaw Basin Authority Staff will oversee these responsibilities, which are not likely to result in an increase in employment.</p> <p>While long-term employment growth is not anticipated from the development of the Big Creek Activity, alleviating flooding in the area will help protect the Naval Support Facility Mid-South, a large economic driver in Millington and the surrounding communities, from continued flooding.</p>
Demographic Character Changes, Displacement	2	The project is not expected to induce any change in demographic character of the surrounding area, displace individuals or families, eliminate jobs, local businesses,

		<p>or community facilities, or disproportionately affect particular populations.</p> <p>Project information specific to the environmental review was sent to the Shelby County Department of Housing. In an email response, the Shelby County Department of Housing acknowledged their involvement throughout the grant planning and application process but provided no additional comment.</p>
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Environmental Assessment Factor	Impact Code	Impact Evaluation
COMMUNITY FACILITIES AND SERVICES		
Educational and Cultural Facilities	2	Project information was sent to the Millington Municipal Schools Superintendent who stated in a reply email that impacts to schools are not anticipated.
Commercial Facilities	2	<p>After reviewing project information, the Millington Chamber of Commerce expressed support of the project in a response email.</p> <p>In addition to the Millington Chamber of Commerce, the Memphis Area Association of Realtors was contacted for project review and comment. No response was received from the organization.</p>
Health Care and Social Services	2	<p>The Shelby County Health Department, Department of Housing, and Division of Community Services were contacted regarding the project. In addition to these offices, the Mid-South Chapter of the American Red Cross was sent project details and asked for comment.</p> <p>After review, the Shelby County Health Department found no emergent environmental public health issues related to the development and operation of the proposed project. In the response, the Health Department went on to commend the City of Millington for the proposed projects efforts to create sustainable pathways and improved connectivity and access to greenspace.</p> <p>The Shelby County Department of Housing Administrator expressed that he has been involved with the Shelby County Resilience Council and grant implementation of the funding for this project. He provided no additional comments specific to impacts related to the development or operation of the project.</p> <p>During a phone call with a project consultant, the Shelby County Division of Community Services stated they expect</p>

		<p>the proposed project to have positive impacts on the community.</p> <p>In an email response, the Mid-South Chapter of the American Red Cross stated that the proposed project could improve the safety and resiliency of the community.</p>
Solid Waste Disposal / Recycling	2	<p>Construction activities could result in waste such as oily rags, worn or broken metal and machine parts, defective or broken electrical materials, other scrap metal and plastic, empty containers, paper, glass, and other miscellaneous solid wastes. Once operational, waste would mostly be limited to trash and recyclable materials generated by visitors to the Big Creek Activity area. Occasionally, waste would be produced by maintenance activities. Waste would be disposed by means of appropriate refuse collection and recycling services. All applicable regulatory requirements would be followed in the collection and disposal of waste to minimize health and safety effects. Materials that cannot be recycled would be disposed of at an approved facility.</p> <p>Impacts from the generation of hazardous waste during the construction and operation of the proposed facility would be insignificant.</p> <p>As the grantee, Shelby County Engineering has been involved throughout project development and fully supports the proposed activities. During the environmental review, Shelby County Engineering issued a letter expressing support of the project.</p> <p>In addition to Shelby County Engineering, the City of Millington City Engineer reviewed project details but provided no additional comments.</p>
Waste Water / Sanitary Sewers	2	<p>As the grantee, Shelby County Engineering has been involved throughout project development and fully supports the proposed activities. During the environmental review, Shelby County Engineering issued a letter expressing support of the project.</p> <p>In addition to Shelby County Engineering, the City of Millington City Engineer reviewed project details but provided no additional comments.</p>
Water Supply	2	<p>The proposed project would not introduce any new development that would generate significant demand for water.</p> <p>As the grantee, Shelby County Engineering has been involved throughout project development and fully supports the proposed activities. During the environmental review,</p>

		<p>Shelby County Engineering issued a letter expressing support of the project.</p> <p>In addition to Shelby County Engineering, the City of Millington City Engineer reviewed project details but provided no additional comments.</p>
Public Safety – Police, Fire and Emergency Medical	2	<p>City of Millington Department of Public Safety reviewed project information and expressed support of the project in a response email.</p> <p>The Shelby County Office of Preparedness determined the proposed project would not have impacts on emergency management activities. In addition to this, the Office has served on the Shelby County Resilience Council, which has reviewed projects received funding through this grant.</p>
Parks, Open Space and Recreation	1	<p>The Millington Greenway Plan provides a vision and strategy for the development of an integrated, connected system of greenways, paths, and sidewalks to connect the existing park system, open spaces, and other destinations throughout the City. The concept of the proposed project is included in the Millington Greenway Plan and Mid-South Regional Greenprint, which provides a unified vision for a regional network of greenspaces.</p> <p>While no comments have been received directly from the City of Millington Parks and Recreation Department, the City has provided input throughout the development of the concept and master plan of the proposed project.</p>
Transportation and Accessibility	2	<p>Access for entrance improvements at US 51 will be obtained through appropriate Tennessee Department of Transportation (TDOT) channels and permitting, including a driveway permit for entrance off of US 51 and any slope and construction easements that may be needed for TDOT ROW.</p> <p>As currently proposed, the new curb cut would be required along US 51 to create an entrance into Area 1, allowing vehicular access into the project area for parking. The entrance would be right-in, right-out only, approximately 650 northeast of the northbound lane of the US 51/ Paul Barrett Parkway interchange.</p> <p>The Memphis Urban Area Metropolitan Planning Organization (MPO) reviewed project information and provided comments related to the main access on US 51, pedestrian crossings at Veterans Parkway and Singleton Avenue, and amount of parking to be included at the facility.</p>

	<p>Since the MPO’s review, further details of the project have been developed. The MPO expressed concern about a left turn out of the Big Creek Activity area and onto US 51. In addition, the MPO said a signal could lead to backup on the nearby exit ramp from Paul Barrett Parkway. It has since been determined that the entrance would be right-in, right-out only, approximately 650 northeast of the northbound lane of the US 51/ Paul Barrett Parkway interchange.</p> <p>The pedestrian crossings at Veterans Parkway and Singleton Avenue are proposed to pass under the bridges, allowing trail users access to the entire Big Creek Activity area without having to cross an active roadway. Throughout the Big Creek Activity, adequate parking is planned to accommodate guests. The MPO originally reviewed an early conceptual plan that included approximately 1,000 parking spaces. Based on the conceptual plan, the MPO expressed concern that the plan did not accurately illustrate the amount of land that would be needed to accommodate this much parking. The MPO also said that 1,000 parking spaces could be excessive for the Big Creek Activity and mentioned parking could be shared with nearby facilities if needed. The plans have since been revised to include approximately 500 parking spaces across the entire Big Creek Activity project area.</p>
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Environmental Assessment Factor	Impact Code	Impact Evaluation
NATURAL FEATURES		
Unique Natural Features, Water Resources	3	<p>Within the project limits, 56 wetlands (WTLs), totaling 288.03 acres, were identified (“WTL-1 – WTL-56”). Additionally, 25 streams (STRs) (STR-1 – STR-25) and 34 wet weather conveyances (WWCs) (WWC-1 – WWC-34) were also found within the limits of investigation. The USACE and TDEC provided concurrence for the delineation of these features.</p> <p>The Proposed Action Alternative includes construction activities, which would result in permanent direct impacts to streams and wetlands and have the potential to temporarily affect surface water via stormwater runoff.</p> <p>Although the primary purpose of the project is to alleviate current flooding conditions of adjacent communities, this project also intends to restore and enhance the existing floodplain and natural aquatic systems. Restoration and enhancement of the adjacent floodplain’s natural</p>

		<p>conditions will include transitioning some of the currently drained (previously converted) wetland soils into native herbaceous wetlands. Grade controls, where appropriate, will be installed. These controls will lead to enhanced stabilization of the stream channels, reducing upgradient erosion and downstream sediment loading.</p> <p>As defined in Executive Order (EO) 11990, this project involves “new construction” in wetlands, in the form of fill and related activities. Multiple small areas of direct impact to wetlands by grading and fill, totaling approximately 0.20 acres, are proposed. These fill areas are primarily for placement of the proposed trail system. These direct impacts are expected to be permissible through the USACE’s and TDEC’s Division of Water Resources permit programs under the CWA (Sections 404 and 401 respectively) and are not anticipated to affect the functional capacity of the site’s wetlands.</p> <p>Restoration and enhancement of the floodplain’s natural communities will include transitioning some of the currently drained (previously converted) wetland soils into native herbaceous wetlands. Site wetlands are anticipated to be impacted by the potential increase in frequency and duration of inundation resulting from the flood controls proposed for Big Creek, lowering its banks to the 5-year flood elevation. Because these impacts are not expected to occur annually, no significant alteration to the wetlands’ function are anticipated.</p>
Vegetation, Wildlife	3	<p>The project area is a mixture of wooded wetland, shrubs, and pasture. From Paul Barrett Parkway, the southern boundary, the project area is obscured from view by a vegetation buffer. Major landscapes and vegetation units were identified using aerial imagery before surveying the project area. While the project would involve limited clearing for the development of multipurpose fields, trails, and other recreational amenities, the activity would provide for sustainable wildlife areas with native vegetation, wetlands, and other natural features. As part of the project, tree planting will occur for any cleared area to ensure no net loss of the tree canopy. Minor impacts to vegetation and wildlife would be isolated and limited due to the abundance of similar habitat and undeveloped land in the surrounding area.</p>
Other Factors		

Additional Studies Performed:

Big Creek Basin-Wide Drainage Study
Ecology Survey
Stream and Wetland Delineations
Cultural Resource Survey
Hydrologic/Hydraulic Analysis and Modeling

Field Inspection (Date and completed by):

Barge Design Solutions w/ Brophy-Heineke & Associates – July 2017
Barge Design Solutions – March 2019
Barge Design Solutions – June 2019
Panamerican Consultants, Inc. – January/February 2019

List of Sources, Agencies and Persons Consulted [40 CFR 1508.9(b)]:

See attached.

List of Permits Obtained:

Issuing Agency	Type Approval	Identification No.	Date of Approval
TDEC	Aquatic Resource Alteration Permit (ARAP)	TBD	TBD
TDEC	Construction General Permit (CGP)	TBD	TBD
USACE	Section 404 Permit	TBD	TBD

Public Outreach [24 CFR 50.23 & 58.43]:

Throughout the development of the Greenprint, Shelby County was consistently involved in outreach and stakeholder engagement. Beginning in 2012, the Memphis and Shelby County Office of Sustainability (MSCOS) led the planning process for the Greenprint, involving a consortium of 82 organizations represented by over 300 individuals and public outreach across nearly 100 events in the tri-state region, engaging over 4,000 individual residents. To guide outreach for the NDRC, the Shelby County Resilience Council created the Shelby County Outreach and Engagement Plan, a continuation of the approach that began during the Greenprint and has continued during both phases of the NDRC. For Phase 2, Shelby County and partnering organizations led an extensive community engagement plan. Wide-ranging engagement efforts were a hallmark of the Phase 2 development process, including four public charrettes focused on URN and resilience strategies, outreach to local community and professional groups, stakeholder meetings, and the development of a community resilience portal, ResilientShelby.com, with information about the NDRC application and a survey. A complete list of all stakeholders engaged can be found in the attachments. In order to reach LMI populations directly, Shelby County also utilized “The Mobile Porch,” a traveling citizen engagement experience used at five community events, including the Goat Days Festival in Millington.

Livable Memphis and the MSCOS made wide use of online networks, with a combined reach of over 10,000 email contacts, over 5,000 followers on Facebook and Twitter, and over 40,000 users on NextDoor. Additionally, Livable Memphis and MSCOS used NextDoor and Facebook to reach a broader segment of Shelby County. Facebook posts were targeted countywide and to URN areas

(using ZIP codes), reaching a total of 32,953 users, with 2,959 clicks, shares, or other post engagements.

Information regarding public meetings and the survey was distributed via media advisory and received coverage in several Memphis area news outlets, including the Memphis Commercial Appeal, with the largest print circulation in the Mid-South and a significant online presence. Input at the four public meetings confirmed the need to address flooding and provide community amenities that contribute to quality of life and neighborhood and regional connections to green space. Acknowledgement of the link between resilience projects and the Greenprint were also prominent, as was the need to minimize damage from future events and provide for quicker recovery after disasters.

In Millington, participants embraced the possibility to prevent severe flooding from Big Creek while creating recreational amenities that increase quality of life. The Resilient Shelby survey was administered online and through the Mobile Porch. Over 1,500 surveys were completed. Participants were asked to respond to questions about threats, risks and vulnerabilities, URN, needs in a natural or other disaster, and household demographics. Approximately 26 percent of respondents were from LMI households. Nearly 60 percent of respondents said that natural disasters – severe storms, extreme weather, earthquakes and other disasters – are the greatest threat to Shelby County communities. Respondents also indicated that people (because of age, social isolation, ability) and infrastructure were the most vulnerable to risks. Housing and infrastructure ranked among the top three priorities, with emergency planning indicated as the single greatest need still remaining from the April 2011 storm events.

Considering regional planning initiatives and feedback received through the Greenprint and NDRC processes, the Proposed Action Alternative has been developed to address resilience planning needs while increasing recreational and community amenities available to residents of Millington and the surrounding areas.

Cumulative Impact Analysis [24 CFR 58.32]:

Cumulative impacts are defined by the Council on Environmental Quality (CEQ) as the impact on the environment resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually insignificant but collectively significant actions taking place over a period of time (40 CFR 1508.7). The cumulative impacts analysis recognizes the effects of the proposed alternatives on the various resources. It also recognizes the effects of other past, present, and reasonably foreseeable future actions, and it describes the additive or cumulative effects that might result. Although some cumulative effects, however minimal, could be identified for virtually any resource or condition, the effects described in this document are believed to be the most pertinent and most representative of those associated with the proposed action.

This Proposed Action Alternative has potential to contribute to cumulative impacts on land use, water resources, geological resources and farmlands, visual resources, noise, air quality, floodplains, biological resources, solid waste, and utilities in the area

Planned residential development near the Big Creek Activity includes a 247-unit apartment complex and 72 single-family home development on 46 acres just south of the project area near Paul Barrett Parkway and Raleigh Millington Road (Business Journal).

Within Millington and near the project area, transportation projects are the largest contributors to cumulative impacts. The Naval Facility Connector, a 0.5 mile roadway reconstruction project, is currently under construction less than one mile north of the proposed project area. Within the Memphis Metropolitan Planning Organization's Fiscal Year 2020-2023 Transportation Improvement Program (TIP), which was approved in September 2019 and is currently under FHWA review for final approval, the City of Millington has two capital projects listed: The Navy Streetscape and Median Project and Raleigh Millington Road at SR-385 Intersection Improvements (MPO 2019).

As shown in the TIP, the Navy Streetscape and Median Project and intersection improvements at Raleigh Millington Road are scheduled for construction in 2020. Funding for a new Raleigh Millington Road bridge over Big Creek is also identified in the TIP. This bridge is within the Big Creek Activity project area and its construction will include some trail improvements as discussed for the Proposed Action Alternative. In addition to these projects, Millington also has funding for minor resurfacing, bicycle and pedestrians, and Intelligent Transportation System projects.

The City of Millington recently received a Multimodal Access Grant from TDOT. The grant funds are for a sidewalk project along US 51 which will tie into the planned entrance for the Big Creek Activity. The proposed project is along US 51 from just south of Big Creek to Veterans Parkway. The grant is intended to improve pedestrian access along the corridor. The project covers approximately 2.5 miles along US-51 and includes replacement of deteriorated sections of sidewalk, new accessible curb ramps, and new pedestrian traffic signal equipment. The project is currently in the preliminary engineering phase.

The largest project within the area is a segment of the future Tennessee portion of I-69. A segment is planned for Millington and is set to follow Paul Barrett Parkway near the project area (TDOT 2019). While existing highway alignments would be used for many segments of the proposed I-69, roads would need to be widened and new segments are proposed that would affect agricultural or undeveloped land. Proposed highway improvements and construction of new highway would likely affect wetlands and other water resources; however, compensatory mitigation would be required to offset unavoidable impacts. As part of the project undertaking, the Federal Highway Administration, in conjunction with TDOT, will complete a NEPA analysis to consider the impact of I-69 on these resources, as well as noise, visual resources, and air quality, among other things. Considering recent and planned development near the project area, the proposed Big Creek Activity is expected to result in minor direct impacts and would not contribute to a cumulative adverse effect on these resources.

Alternatives [24 CFR 58.40€; 40 CFR 1508.9]:

While the Proposed Action Alternative is provided in the previous Description of the Proposed Project, the following discusses alternatives that have been eliminated throughout project development.

In August 2015, a Big Creek Basin-Wide Drainage Study was conducted to evaluate the effects of potential improvement projects focused on eliminating or reducing flooding in Millington and surrounding areas. The study was not designed to identify and develop specific construction projects but rather to investigate several broad, conceptual approaches. These approaches focused on reducing flooding levels and improving water quality and included preparing preliminary, planning-level opinions of probable construction costs for the studied alternatives. The results of this study provided local officials with data to assess each concept, determine funding needs, and consider potential methods for providing resiliency against future flood damages. The study considered four conceptual alternatives:

- 1) Floodwater Detention Sites
- 2) Enhanced Structural Protection (Levee)
- 3) High Flow Diversion
- 4) Increased Channel/Overbank Flow Capacity

Temporary Floodwater Detention Sites

One of the most commonly-used methods of reducing flood flows in a reach is to construct detention structures upstream of the reach where the reduction in floodwater elevation is desired. Detention structures serve to reduce flood flows downstream by temporarily storing a portion of the high flows and releasing it slowly over a longer period of time to the downstream reach. The most critical reach of Big Creek in terms of potential flood damages is from US 51 upstream to Sledge Road since this is the most highly developed portion of the basin. Consequently, areas were investigated for potential detention sites along Big Creek upstream of Sledge Road. The study evaluated four unique sites upstream of Millington including combinations of multiple detention structures. It was determined that the detention structures would be effective in mitigating flood flows in Millington; however, permitting challenges and land acquisition would have made constructing such structures challenging. Additionally, funding for impoundment structures was not readily available.

Enhanced Structural Protection (Levee)

Standard levee improvements were considered for the second alternative. These would include raising and extending the Millington and Naval Support Activity Mid-South levees. This alternative was developed to be a focused approach to provide a low-cost alternative to specifically address Naval Support Activity Mid-South flooding during the May 2010 event. This approach involved examining the location and extent of the overtopping and evaluating the effects to adjacent areas by modifying the existing levee to mitigate the potential of overtopping from a similar flood event. This alternative would increase flood protection for the immediate areas around Millington by increasing the heights of existing levees and constructing new levees between areas that are not protected. Levees are effective at mitigating flooding for areas immediately “land side” or behind but can increase peak flows downstream by cutting off flood waters that would otherwise be stored in the floodplain. To avoid potential increases to peak flows downstream, limiting the project to levee improvements was eliminated from further consideration.

High Flow Diversion

The third alternative evaluated proposed constructing a high flow diversion upstream of the Naval Support Activity Mid-South along a major tributary to Big Creek called Crooked Creek. This

alternative was developed as a non-traditional approach to reducing water surface elevations, which typically involves acquiring land rights for large areas associated with regional detention facilities. Using this approach, the flow from Crooked Creek would be diverted about 15 miles to the south where it would enter the Loosahatchie River during major flood events. With a drainage area of 18.4 sq. mi. at the confluence, Crooked Creek represents about 36 percent of the total drainage area (51.4 sq. mi.) after the two streams join. Significantly reducing the contribution from Crooked Creek would have a major effect on the peak flows in the area of primary concern downstream.

This could potentially increase Loosahatchie River flows downstream of the diversion entry point; however, it is believed that diverted Crooked Creek flow (from a drainage area of 18.4 sq. mi.) will peak well ahead of the main flow in the Loosahatchie River which has a 520 sq. mi. drainage area at that point, resulting in insignificant impacts to the composite hydrograph. The alignment of the excavated diversion channel could be set to roughly follow existing drainage ways to minimize the amount of cut, and consequently the amount of land acquisition required, but there would still be a maximum cut on the order of 50 feet in depth at the crest of the intervening ridge and new drainage structures would be required where the channel crossed Paul Barrett Parkway and Pleasant Ridge Road. This alternative was not further considered as community buy-in would be challenging given that floodwaters would be displaced onto another basin that may already have flooding concerns.

Increased Channel/Overbank Flow Capacity – Advanced Concept

The final alternative evaluated in the drainage study consisted of providing additional flow area in the left overbank along the critical reach of Big Creek from US 51 to Sledge Road. Several different scenarios within this alternative were evaluated, consisting primarily of various combinations of: increasing flow by reducing the Manning's friction factor, providing additional flow area by excavating in the south overbank and increasing existing bridge waterway openings to reduce bridge backwater effects.

This alternative proved effective in reducing the water surface profile along Big Creek during extreme flooding events impacting the City of Millington, the Naval Support Activity Mid-South, and the surrounding areas. Following the drainage study, the concept of increased channel/overbank flow capacity was selected to use as the basis for grant applications and funding requests. Specifically, excavation within the overbank and floodplain restoration activities were advanced in planning efforts. In addition to floodplain restoration and adding floodwater conveyance, the increased channel/overbank flow capacity concept was developed to include recreational amenities such as trails and multipurpose fields. This concept was termed "Making Room for the River" and received grant funding from HUD.

During the preliminary design phase of the project it was determined that this this alternative resulted in an increase of the peak water surface profile downstream of US 51 as result of the increase in conveyance. It proved challenging to provide a design that would incorporate the elements of the "Making Room for the River" concept without increasing flood elevations downstream of US 51. Additionally, the project relied upon excavating hundreds of acres several feet, resulting in millions of cubic yards of soil to be hauled off-site. Finding an economical place to dispose of this large amount of material would be challenging. During the initial phase of the

project coordination, meetings were held with multiple regulatory agencies including USACE and TDEC. During these coordination meetings, it was discovered that an active TDOT wetland mitigation site is located along the eastern portion of the project. It was determined early in the process that the previously established TDOT mitigation site presented challenges for any construction activities or development within Area 3. Beyond the mitigation site, excavation across approximately 1,200 acres could lead to substantial environmental challenges including additional impacts to streams and wetlands. By excluding approximately 400 acres of excavated storage, the “Making Room for the River” alternative would not provide the adequate reduction in flood elevations along Millington or Naval Support Activity Mid-South. After further consideration, lowering the floodplain through excavation of the entire project area was eliminated as an option.

Given the importance flood storage in the eastern portion of the project area has on mitigating flooding along Millington and the Naval Support Activity Mid-South, another alternative was developed, and the proposed project evolved into the activities as described in the Proposed Action Alternative. This alternative consisted of constructing a high flow diversion channel downstream of Sledge Road with the intent of “Reconnecting the Floodplain”. This concept would divert flow from Big Creek into the area between Sledge Road and Singleton Parkway during extreme flood events. The additional flood waters would be stored and detained in the area by constructing a small berm along Big Creek. Stored flood water would be slowly released over time after the peak of the flood event. This concept minimizes impacts to the TDOT wetland mitigation site and lowers peak flood elevations along Big Creek. Hydraulic modeling determined additional excavation in other areas of the project between US 51 and Singleton Parkway resulted in minimal flood reduction and are not worth the significant environmental and financial cost. The additional modeling also confirmed that any additional increase in flood capacity at the US 51 bridge resulted in an increase in flooding downstream. Therefore it was determined that high flow diversion culverts at US 51 are not worth the additional cost. An added measure of flood mitigation protection is proposed by increasing the height of the existing Millington Levee by 4 feet. This would provide adequate freeboard for future extreme events.

No Action Alternative [24 CFR 58.40(e)]:

The No Action Alternative provides for a baseline of conditions against which the impacts of the Proposed Action Alternative can be measured. Under this alternative, no flood alleviation measures or trails and recreational amenities would be constructed within the project area. Under the No Action Alternative, environmental conditions in the project area would remain unchanged in the immediate future. The identified land would not be developed into the proposed Big Creek Activity and flooding would continue to be an issue for the surrounding community.

Summary of Findings and Conclusions:

Proposed improvements will help mitigate damage caused by flooding in future storm events, while stabilizing stream banks, reducing erosion and decreasing sediment deposit downstream. As shown above in the Environmental Assessment Checklist, no significant land development, neighborhood, socioeconomic, natural resources, community facilities or other direct, indirect, or cumulative impacts would result from the proposed project. As shown in the accompanying Statutory Checklists, the proposed project would comply with all relevant regulations listed in 24 CFR subparts 58.5 and 58.6. Additional details, including more detailed discussions, are included in the full Draft Environmental Assessment.

Mitigation Measures and Conditions [40 CFR 1505.2(c)]

Summarize below all mitigation measures adopted by the Responsible Entity to reduce, avoid, or eliminate adverse environmental impacts and to avoid non-compliance or non-conformance with the above-listed authorities and factors. These measures/conditions must be incorporated into project contracts, development agreements, and other relevant documents. The staff responsible for implementing and monitoring mitigation measures should be clearly identified in the mitigation plan.

Law, Authority, or Factor	Mitigation Measure
Clean Water Act (CWA) – Section 401 (TDEC)	Onsite stream mitigation has been proposed. Specifics will be determined by agreements established by the Aquatic Resource Alteration Permit (ARAP).
CWA – Section 404 (USACE)	Onsite stream mitigation has been proposed. Specifics will be determined by agreements established by the Section 404 permit.
CDBG-NDRC Grant Application	Shelby County has identified areas for tree planting to mitigate for Big Creek Activity tree loss. These plantings will occur as part of two other NRDC funded projects: South Cypress Creek Watershed and West Junction Neighborhood Redevelopment and the Wolf River Wetland Restoration and Greenway projects.

Determination:

Finding of No Significant Impact [24 CFR 58.40(g)(1); 40 CFR 1508.27]
The project will not result in a significant impact on the quality of the human environment.

Finding of Significant Impact [24 CFR 58.40(g)(2); 40 CFR 1508.27]
The project may significantly affect the quality of the human environment.

Preparer Signature: *Katie McKeel* Date: 10/15/19

Name/Title/Organization: Katie McKeel
NEPA Project Coordinator
Barge Design Solutions Inc.

Certifying Officer Signature: *Lee Harris* Date: 10/16/2019

Name/Title: Mayor Lee Harris
Shelby County, Tennessee

This original, signed document and related supporting material must be retained on file by the Responsible Entity in an Environmental Review Record (ERR) for the activity/project (ref: 24 CFR Part 58.38) and in accordance with recordkeeping requirements for the HUD program(s).