

Environmental Assessment

Lumbee Tribe of North Carolina Lumbee Cultural  
Center Dam Repairs

PA-04-NC-4393-PW-02243/PN 2243;

PA-04-NC-4285-PW-01459/PN 1459

Robeson County, North Carolina

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**U.S. Department of Homeland Security**  
**Federal Emergency Management Agency**  
**Region IV**  
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*List of Acronyms and Abbreviations*

APE	area of potential effect	NCICC	North Carolina Indian Cultural Center
BFE	base flood elevation	NHPA	National Historic Preservation Act
BMP	Best Management Practice	NCNHP	North Carolina Natural Heritage Program
CAA	Clean Air Act	NPDES	National Pollutant Discharge Elimination System
CECLA	Comprehensive Environmental Response, Compensation, and Liability Act	NRCS	Natural Resources Conservation Service
CEQ	Council of Environmental Quality	NRDF	National Disaster Recovery Framework
CFR	<i>Code of Federal Regulations</i>	NRHP	National Register of Historic Places
CO	Carbon Monoxide	NO2	Nitrogen Dioxide
CWA	Clean Water Act	O3	Ozone
DAQ	Division of Air Quality	PA	Public Assistance
DHS	Department of Homeland Security	Pb	Lead
EA	Environmental Assessment	PCN	Pre-Construction Notification
EIS	Environmental Impact Study	PM2.4	particulate matter less than 2.4 microns in aerodynamic diameter
EMC	Environmental Management Commission	PM10	particulate matter less than 10 microns in aerodynamic diameter
EO	Executive Order	PNP	Private Nonprofit
EPA	U.S. Environmental Protection Agency	PPD	Presidential Policy Directive
ESA	Endangered Species Act	PPE	Personal Protective Equipment
FEMA	Federal Emergency Management Agency	RCRA	Resource Conservation Recovery Act
FPPA	Farmland Protection Policy Act	RSF	Recovery Support Functions
FWCA	Fish and Wildlife Coordination Act	SHPO	State Historic Preservation Office
GHG	greenhouse gas	SO2	Sulfur Dioxide
IPaC	Information for Planning and Consultation	SOI	Secretary of the Interior
LOMR	Letter of Map Revision	SOW	Scope of Work
NAAQS	National Ambient Air Quality Standards	SWPPP	Stormwater Pollution Prevention Plan
NEPA	National Environmental Policy Act	TNW	Traditionally Navigable Water
NCDEQ	North Carolina Department of Environmental Quality	THPO	Tribal Historic Preservation Officer
NC DWR	North Carolina Division of Water Resources	USACE	U.S. Army Corps of Engineers
NCDMELR	North Carolina Division of Minerals, Energy and Land Resources	U.S. Code	<i>United States Code</i>
NCAC	North Carolina Administrative Code	USDA	U.S. Department of Agriculture
		USFWS	U.S. Fish and Wildlife Service

## 1.0 INTRODUCTION

The Lumbee Tribe of North Carolina suffered damages to their dam and lake facilities due to heavy rain and flood waters during Hurricane Matthew and Hurricane Florence. The dam is adjacent to the Lumbee Tribe Cultural Center at 638 Terry Sanford Drive, Maxton, Robeson County, North Carolina and positioned slightly north of the Cultural Center Administrative Building (Figure 1). The Lumbee Cultural Center dam is operated and maintained by the Lumbee Tribe and forms Gum Swamp Lake (herein referred to as the Lumbee Cultural Center lake). The Lumbee Cultural Center Lake provides both cultural and recreational value to the Lumbee Tribe. According to the Tribe, the lake is an area of cultural significance, which has served as an essential component of the Lumbee Tribe Cultural Center for over 60 years. The lake continues to serve as a ceremonial and convening space for the Tribe where members partake in smudging rituals, praying, singing, and seasonal religious practices. It also provides recreational opportunities for the community including fishing, canoeing, and camping.

The Lumbee Cultural Center Lake is approximately 93-acres in size and includes three discharge outlets that flow to the Lumber River. It has a 37.1-square mile watershed and accepts flow from Gum Swamp and Little Juniper Branch. The dam system consists of an approximately 6,000 linear foot earth embankment that runs from the northwest to the southeast. There is a primary riser outlet at the south end, a secondary riser outlet approximately 800 feet from the north end, and a concrete overflow spillway located at the north end. Figure 2 depicts the locations of the dam components on aerial imagery. In October 2016, the Lumbee Cultural Center dam was overtopped during Hurricane Matthew. The dam experienced damage, including scouring and erosion, due to the overtopping and an extended period of highwater levels. The dam was overtopped again during Hurricane Florence in September 2018, resulting in further erosion and significant damages to the primary riser outlet. The Lumbee Tribe, having legal responsibility to repair the Lumbee Cultural Center Dam and maintain the property between the Cultural Center Lake and the Lumber River, is eligible for funding through the Federal Emergency Management Agency's (FEMA) Public Assistance (PA) Grant Program for emergency repairs pursuant to Title 44 of the Code of Federal Regulations (C.F.R.) Part 206.223(a)(3)<sup>1</sup>.

The Lumbee Tribe applied to FEMA for PA reimbursement funding to address embankment erosion and damage to water control structures caused by Hurricane Matthew. A proposed project to repair the damaged dam facility and restore the lake after overtopping during Hurricane Matthew received FEMA reimbursement funding (PA-04-NC-4285-PW-01459) to implement the following primary repairs:

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<sup>1</sup> PA is FEMA's largest grant program providing funds to assist communities responding to and recovering from major disasters or emergencies declared by the President. The program provides funding for emergency assistance to save lives and protect property and assists with funding for permanently restoring community infrastructure affected by a federally declared incident.

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- Draining the lake for control of water during construction;
- Clearing of approximately 1.0-acre of wooded area and 0.5-acre non-wooded area along the dam embankment;
- Adding riprap outlet protection and addressing erosional features at the primary dam spillway;
- Repairing erosion and scouring along the earthen embankment;
- Repairing the erosional head cut in vicinity of the natural/overflow spillway located immediately downstream of the primary dam spillway;
- Excavating and repairing piping, installing articulated block, and adding an emergency spillway with low flow siphon;
- Installing 3,200 linear feet of riprap along the dam embankment and removing the existing and compromised erosion protection slab;
- Replacing slide gates (4) and associated trash racks;
- Raising the dam embankment and clay core elevation from approximately 168.0 feet to approximately 169.5 feet using onsite material;
- Replacing topsoil, seeding and soil stabilization; and,
- Installing necessary erosion and sediment control devices.

The Lumbee Tribe has since applied for additional PA funding to address damages to the earthen dam embankment, spillway, riser outlet structures, dock, and pumphouse that resulted from Hurricane Florence. PA funding requested, following Hurricane Florence to repair the damaged dam facility and restore the cultural and recreational values of the lake, includes the necessary dam enhancements required by the NC Department of Environmental Quality (NCDEQ) Dam Safety Program. The scope of work that addresses NCDEQ Dam Safety requirements under Hurricane Florence (PA-04-NC-4393-PW-02243) is further detailed below under Section 2.0 (Purpose and Need). Itemized scopes of work for both PA-04-NC-4393-PW-02243 and PA-04-NC-4285-PW-01459 are provided in Appendix B, respectively.

This Environmental Assessment implements NEPA and has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 et seq.), the President's Council on Environmental Quality regulations to implement NEPA (40 C.F.R. Parts 1500-1508), and Department of Homeland Security (DHS) Directive 023-01: *Implementation of the National Environmental Policy Act* and DHS Instruction Manual 023-01-001-01, Revision 01, *Instruction Manual, Implementation of the National Environmental Policy*. FEMA is required to consider potential environmental impacts before funding or approving actions and PA projects. The purpose of this EA is to analyze the potential environmental impacts of dam repairs and improvements required as a direct result of Hurricane Florence (Disaster Declaration Number- DR 4393-NC), which encompasses the repairs necessary to address preceding damage caused by Hurricane Matthew (DR-4285-NC). FEMA will use the findings in this EA to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI) for both Hurricane Matthew and Hurricane Florence proposed repairs and improvements.

## **2.0 PURPOSE AND NEED**

### **2.1 Purpose**

The objective of FEMA's PA Grant Program is to provide financial assistance to State, Tribal and Local Governments, and certain types of Private Nonprofit (PNP) organizations so that communities can quickly respond to and recover from major disasters or emergencies declared by the President. Through the PA Program, FEMA provides supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain PNP organizations. The PA Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process.

The PA program is FEMA's largest grant program, providing funds to assist communities responding to and recovering from major disasters or emergencies declared by the President. The purpose of the project described herein is to support the Lumbee Tribe in permanently restoring the function and operation of the dam's discharge and storage capacity for the Lumbee Cultural Center lake by repairing the embankment, spillway, and riser components of the cultural center dam that were significantly impacted by flood waters during Hurricane Matthew and Hurricane Florence.

### **2.2 Need**

The Lumbee Cultural Center dam located within the Lumber River Floodplain provides an impoundment area of 93 acres that creates the Cultural Center Lake. The lake formed by the dam receives water via sheet flow from adjacent properties in addition to the Gum Swamp, Jordan Swamp, and Little Juniper Branch and has three discharge outlets that flow from un-named tributaries on tribal property and directly discharge into the Lumber River. For nearly 200 years, the location of Cultural Center lake has undergone intermittent surface flooding and impoundment, with a continuous existence of the lake itself since 1961 following dam construction. Prior to the dam, intermittent surface flooding at the location of the lake would occur during and immediately following storm events as there was continuous flow from Gum Swamp and Little Juniper Branch to perennial channels which discharge directly into the Lumber River.

The Lumbee Cultural Center dam is an area of cultural significance to the Lumbee Tribe as the dam structure, lake, and surrounding property have served as a focal point for the community for over 60 years. The dam was first constructed in 1961 as part of recreational development of the property for local resident use during the segregation era. The recreational area included a golf course, amphitheater, pool, playground, campground, canoeing, and fishing. In the decade from 1983–1993, the General Assembly appropriated funds to the Commission of Indian Affairs to purchase land and establish the North Carolina Indian Cultural Center (NCICC). The Lumbee Tribe purchased the NCICC property from the state in 2014 (including the land surrounding the former golf course, dam, and lake). The property has continued to provide as recreational benefits for the Lumbee Tribe where the community partakes in fishing, canoeing, and camping nearby the lake. Low-cost recreational opportunities are of value for limited-

income families in the Town of Pembroke and surrounding area. With a population near 3,000, Pembroke's poverty rate is nearly 50 percent and the median household income is less than \$20,000 according to the 2010 census. The lake serves as a ceremonial and convening space for the Tribe where members partake in smudging rituals, praying, and singing. Elders lead religious ceremonies at the lake on a quarterly basis in unison with seasonal changes. The lake serves as a centerpiece for the Lumbee Tribe during annual events, such as the Lumbee Spring Powwow, where there are commercial vendors, crafts, children's entertainment, and music.

Based on the dam breach analysis performed by Jewel Engineering Consultants (Appendix B), downstream properties including houses along Terry Sanford Drive are at risk of being flooded and significantly damaged if the existing dam unexpectedly breached as a result of a 1/3 Probable Maximum Precipitation (PMP) event. Downstream roadways, including Recreation Center Drive, Highway 710, Alternative Highway 74, and Harper Ferry Road would also be impacted and potentially washed out as a result of an unforeseen dam breach as depicted by Figure 3: Inundation Map (Appendix A). In accordance with 15A NCAC 02K.0205, the proposed dam repairs described herein include upgrades to the dam to pass the appropriate design storm (1/3 PMP for this dam) while minimizing the impacts of such an event on human safety, health, and welfare.

Water resource and floodplain development permits were obtained for the repairs and improvements under the Hurricane Matthew project by late 2017 (Appendix D). The lake was then drained to control water movement, protect downstream water resources and properties, and to allow for dry conditions conducive for the anticipated repair work; however, no repairs under PA-04-NC-4285-PW-01459 had begun by the incident period of Hurricane Florence. Following an inspection of and downstream areas after Hurricane Florence in 2018, the NCDEQ Dam Safety Program reviewed and re-classified the dam as a Class C High Hazard dam from a Low Hazard dam. North Carolina Administrative Code (15 NCAC 02K.0105) allows for the reclassification of dams if the NCDEQ Division of Energy, Mineral, and Land Resources Director determines that the hazard potential has changed. Dams are categorized by hazard potential based on the possible adverse incremental consequences that result from the release of water or stored contents due to failure of a dam or mis-operation of the dam or appurtenances. As per North Carolina General Statute 143-215.23 (NC Dam Safety Law of 1967) and Legislative Changes under HB 119, NCDEQ divides dams into the following three classes:

- Class A (Low Hazard): includes dams located where failure may damage uninhabited low value non-residential buildings, agricultural land, or low volume roads with damage equal to or less than \$30,000. Low Hazard classification is deemed when dam failure would not be expected to result in loss of life.
- Class B (Intermediate Hazard): includes dams located where failure may damage highways or secondary railroads, cause interruption of use or service of public utilities, cause minor damage to isolated homes, or cause minor damage to commercial and industrial buildings.
- Class C (High Hazard): includes dams located where failure will likely cause loss of life or serious damage to homes, industrial and commercial buildings,

important public utilities, primary highways, or major railroads. Class C High Hazard Classification is for dams located where failure will likely cause loss of life with economic damage typically greater than \$200,000. A High Hazard dam requires an Emergency Action Plan (EAP).

The reclassification (NCDEQ letter April 16, 2019, Appendix D), required a re-engineering of the dam in both dimensions and the associated components as the dam was no longer deemed adequate in providing the required outlet capacity to meet Class C High Hazard classification requirements<sup>2</sup>. To address Class C High Hazard classification requirements, and to restore the recreational and cultural values of the lake, the Hurricane Florence repair project's scope of work (PA-04-NC-4393-PW-02243) proposes to repair the damaged dam and primary spillway while providing improvements to increase the outlet capacity allowing the dam to safely pass the 1/3 Probable Maximum Precipitation (PMP) event<sup>3</sup>. The scope of work for the Hurricane Florence project includes the following primary repairs:

- Clearing of an additional 2.5-acre of vegetation along the dam embankment, including approximately 2-acres of wooded area;
- Expanding the emergency spillway outflow in dimension (from those dimensions in the Hurricane Matthew project) to approximately 125 linear feet to provide adequate outlet capacity;
- Increasing the length of armoring along the upstream side of the dam to the full length of the dam in the form of articulated concrete block (ACB) and riprap, an additional 3,600 linear feet of armoring;
- Providing permanent turf reinforced matting along the downstream toe of the dam up to the one percent annual chance water surface elevation of the Lumber River.
- Replacing four gates and repairing the trash rack at the primary riser/outlet structure;
- Dredging of the lake to remove sediment primarily near the inflow channel that resulted from an upstream culvert washout that has since been repaired by the CSX Railroad (CSX Transportation);
- Installing two temporary stream crossings for purposes of a haul road for borrow pit access;
- Demolishing the existing dock and pumphouse;
- Replacing topsoil, seeding and soil stabilization.

The itemized scope of work for PA-04-NC-4393-PW-02243 is provided in Appendix B. In absence of the dock that will not be restored, the existing paved boat ramp and area of non-paved shallow entry adjacent to the ramp will continue to provide a point of access for small boats, canoes, and kayaks. Fishing locations will continue to be accessible from

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<sup>2</sup> Design criteria, based on NCDEQ Hazard Classification, are found in 15A NCAC 02K, Section .0100 – General Provisions.

<sup>3</sup> PMP estimates at the dam location were calculated using the methods described in NWS Hydrometeorological Report No. 52 (HMR-52) “Application of Probable Maximum Precipitation Estimates - United States East of the 105th Meridian” (NWS, 1982) as applied by the U.S. Army Corps of Engineers – Hydrologic Engineering Center computer program HMR52 (USACE, 1987).

cleared areas adjacent to the lake. In addition to repair items, the scope of work for PA-04-NC-4393-PW-02243 includes the preparation of an Emergency Action Plan (EAP) and an Operation and Maintenance Manual, as required by NCDEQ Dam Safety following the reclassification from a Low Hazard to a High Hazard dam. The Draft EAP and Operation and Maintenance Manual for the Cultural Center Dam are contained within Appendix B of this EA. Class C – High Hazard dam maintenance requirements following the repair work would include mowing of the dam embankment and periodic inspections and testing of valves located at the riser structures.

Since September 2017, the Lumbee Cultural Center lake has been drained and closed for all activities. Construction to address repairs under Hurricane Matthew (PA-04-NC-4285-PW-01459) began in December of 2019 following design and project approval by FEMA. Additional PA funding from FEMA has been requested to repair damages resulting from Hurricane Florence and to improve the Lumbee Cultural Center dam to meet the requirements for a Class C High Hazard dam. In February of 2020, the Lumbee Tribal Council was awarded a two-million-dollar loan from the North Carolina Office of Recovery and Resiliency in order to move forward with the dam repair work and restore the lake prior to securing available PA funding from FEMA. Future funding to complete the necessary dam repairs and begin loan repayment may be secured through a combination of public funds from the Lumbee Tribe of North Carolina and eligible FEMA grant funds. The funds available from public funding sources alone would be insufficient in meeting the design, engineering and construction needs required to adequately address damage caused by Hurricane Matthew and Hurricane Florence.

### **3.0 ALTERNATIVES**

The NEPA process requires agencies to consider a range of reasonable alternatives. To be deemed reasonable, an alternative must meet the purpose and need for the project (as defined in Section 2.0) within a feasible technical and economic standpoint. Following Hurricane Matthew, a repair project was initially proposed to address disaster related damages at the Lumbee Cultural Center Dam. FEMA funding was then approved to raise the dam's elevation from approximately 168.0 feet to 169.5 feet, while improving the various dam facility components. The lake was drained to control water movement, protect downstream water resources during construction, and to allow for dry conditions that would be conducive for the anticipated repair work. However, no repairs under Hurricane Matthew (PA-04-NC-4285-PW-01459) had begun by the incident period of Hurricane Florence in September 2018. Following Hurricane Florence and NCDEQ's reclassification of the dam, from Class A – Low Hazard to Class C – High Hazard, it was necessary for the engineers to consider alternative plans to repair the Lumbee Cultural Center dam facilities in order to adequately address the more stringent classification requirements while increasing the outlet capacity to safely pass a larger design storm.

Lumbee Tribe and Jewell Engineering Consultants evaluated the necessary conditions of each primary dam component following both Hurricane Matthew and Hurricane Florence to develop plans for repair. The dam system comprises the following primary components (Figure 2).

- **Embankment:** The earth embankment is the primary structural component of the dam, beginning near the boat ramp located at the east side extending to the concrete overflow spillway at the north end. The embankment's height ranges from zero to roughly eight feet for approximately 6,000 feet. The embankment is constructed with a clay soil core and is covered by a topsoil layer suitable for grass growth. Grass forms a protective layer with surface vegetation and root mass shielding to reinforce the erodible soil. The embankment was reported to be overtopped during Hurricane Matthew in numerous locations and in several areas, soil was eroded from the embankment top and slopes. Numerous large trees growing from the embankment pose an additional threat to the integrity of the embankment.
- **Shoreline Erosion Protection:** Shoreline erosion protection on the dam consists of concrete slabs, which are approximately eight feet in width and run along the water edge from near the boat ramp to the west side of the lake. This concrete slab is intended to protect the embankment from erosion caused by wave action. In numerous places, the slab has been undercut by water forces, and tree roots have lifted and damaged the slab. Thus, compromising its ability to protect the embankment.
- **Primary Riser/Barrel Outlet:** The primary lake riser/barrel outlet is a rectangular concrete structure, approximately 30-feet by 16-feet. Located near the southern end of the lake, the primer riser/barrel outlet discharges water through four-60-inch reinforced concrete pipes into a natural channel that flows to the Lumber River, which is located approximately 700-feet downstream. The riser is protected by a galvanized steel trash rack and is capped by a rectangular installation of boards laid on edge. These boards serve to raise the lake surface up to 10-inches. The barrels' discharge through a concrete end wall has articulated concrete block across the top and down the sides as erosion protection.
- **Secondary Riser/Barrel Outlet:** The secondary riser/barrel outlet is a rectangular concrete structure, approximately 6-feet by 8-feet, located approximately 800-feet from the northern end of the lake. The riser is protected by a galvanized steel trash rack. A gate valve actuator is attached to the lake side of the riser. The outlet barrel discharges water into the downstream channel which runs across a former golf course and into the Lumber River.
- **Concrete Overflow Spillway:** The concrete overflow spillway, approximately 50-feet by 24-feet, is located at the northern extent of the lake. This spillway discharges to a natural channel that flows into the Lumber River, approximately 2,100-feet downstream. The spillway is free flowing without constraints, with exception of riprap (i.e., concrete rubble) located immediately downstream.

FEMA funding has been requested to repair damages to dam components resulting from Hurricane Florence and to implement improvements to meet NCDEQ's requirements for a Class C – High Hazard dam. In December of 2019, the Lumbee Tribe began making

repairs to the dam to address damages caused by Hurricane Matthew. Alternative 1, Alternative 2, and the No Action Alternative detailed below all consider construction progress, in the completion of repairs under Hurricane Matthew (PA-04-NC-4285-PW-01459) to date, in addition to the degree of environmental impacts as presented in Section 4.0. In preparation for the 2020 Atlantic hurricane season in July 2020, the Lumbee Tribe poured concrete to complete repairs at the primary outlet of the dam. The precautionary measure to stabilize the primary outlet structure while the lake was drained did not preclude the consideration of reasonable alternatives evaluated in this EA.

The Proposed Action (Alternative 1) was developed based on project needs, tribal input, and engineering requirements, which assumes PA funding from FEMA. The No Action Alternative considered in this EA assumes that no additional PA funding would be awarded by FEMA to address the necessary repairs to the Lumbee Tribes' dam facilities following Hurricane Florence. Alternative 1, Alternative 2, and the No Action Alternative are further described in the subsections below.

### **3.1 No Action Alternative**

Consistent with NEPA requirements, this EA presents the consequences of FEMA taking no action (the No Action Alternative). The No Action Alternative provides a benchmark against which the action alternatives, including the Preferred Alternative, can be evaluated. Further, the No Action Alternative assumes that the Lumbee Tribe will continue to consult with NCDEQ Dam Safety in absence of additional PA funding from FEMA to ensure compliance and to avoid a potential Notice of Violation from NCDEQ.

Prior to the overtopping of the dam in October 2016 during Hurricane Matthew, the dam facility, generally consisting of the earthen embankment, a primary riser outlet, secondary riser outlet, and a concrete overflow spillway was intact, creating the impoundment area that existed since 1961 – the Cultural Center lake where fishing, canoeing, and ceremonial activities regularly took place. In September 2017, the lake was drained to allow for dry conditions conducive for the repair work necessary to address scouring and erosion along the dam embankment caused by Hurricane Matthew. Subsequently, in September 2018 Hurricane Florence would further erode the dam embankment and significantly damage the primary riser structure. The Cultural Center lake has remained drained with only intermittent impoundment upstream of the jeopardized dam embankment during and directly following precipitation events. Since September 2017 numerous storm events have brought the water level within the lake to elevations cresting above the primary outlet structure elevation.

In December of 2019, the Lumbee Tribe began making repairs to the dam to address damages under the scope for Hurricane Matthew. Several critical repairs that would prevent further damage to the dam facility and were part of the scope of work for the Florence repair project were completed prior to the 2020 Atlantic Hurricane Season. The primary riser structure was repaired which included installing trash racks as part of the Florence repair project; the emergency spillway was installed to pass the 1/3 PMP storm event to meet the Class C High-Hazard classification requirements; and, repairs to the concrete spillway were completed to address the head cut caused by Hurricane Florence.

The dam embankment elevation was also raised to a consistent elevation of 169.5 feet. Wave and erosion protection, approved as part of the Hurricane Matthew scope of work, was completed on the upstream slope of the embankment. Dense vegetation was also removed from the dam embankment where stabilization measures have been implemented to protect the dam from failure. The installation of turf reinforced matting, a requirement of NCDEQ Dam Safety for the downstream slope of the embankment and a repair item under Hurricane Florence, has not been completed. Slopes have been temporarily stabilized with grass seed and mulch to meet the requirements of the NPDES Construction Stormwater Program General Permit and protect the dam from further damage.

Under the No Action Alternative, the Lumbee Tribe would not receive PA funding from FEMA to address the damages caused by Hurricane Florence, meet the requirements of a Class C – High Hazard dam, and restore the cultural and recreational values of the lake. The Lumbee Tribe would need to obtain additional funding from other sources in absence of PA funding from FEMA to complete the necessary dam repairs and meet the requirements of a Class C – High Hazard dam that includes installation of turf reinforced matting and final stabilization. Potential funding sources may include the North Carolina Office of Recovery and Resiliency and available NC DEQ Construction and Reimbursement funding. Funding from such sources aside from FEMA, likely will come in the form of a loan, which poses a financial burden for the tribe. This would be in addition to costs already incurred by the tribe for critical repairs implemented (to-date) under the scope of work for Hurricane Florence. As such, the No Action Alternative likely results in a scenario for the tribe of terminating construction prior to completing all repairs outstanding under the scope for Hurricane Florence and stabilizing disturbed areas as per the NPDES Construction Stormwater Program General Permit (NCG010000).

Under the No Action Alternative, the primary outlet structure gates would remain open, and the lake would remain drained. The No Action Alternative would fail to permanently restore the cultural and recreational uses of the lake by the Lumbee Tribe. Similar to Alternative 2 – Permanent and Engineered Dam Breach, the No Action Alternative would result in the loss of lake habitats that have existed since 1961 and would likely reduce the numbers of game fish and subsequently fishing opportunities. Environmental Affects are further evaluated within section 4.0 below.

### **3.2 Proposed Action**

As further detailed below, Alternative 1 raises the crest elevation of the dam, repairs damaged portions of the dam embankment, and increases the overall outlet capacity in order to meet Class C – High Hazard Classification requirements.

#### **Alternative 1 - Repair Embankment, Raise Crest Elevation and Reinforce Emergency Spillway**

Many of the repairs required to address damages to the dam facility are largely encapsulated under Hurricane Matthew (PA-04-NC-4285-PW-01459), which began in December 2019 after the lake had been drained. Alternative 1 involves completing the dam embankment, repairing the existing concrete spillway with a gabion structures, removing a pump structure to add an emergency spillway with outlet protection,

removing the existing dock, and repairing the primary riser outlet/barrel structure. The spillway would be constructed to meet Class C – High Hazard Criteria for Spillway Design (15A NCAC 02K .0205 Spillway Design). Fill for completing the embankment would be obtained from the borrow pits that are located approximately 750-feet west of the dam and directly north of the Lumbee Cultural Center Administrative Office. Alternative 1 not only repairs and stabilizes the embankment but provides increased protection against future embankment overtopping and consequent damages. The additional outlet capacity required to pass the Class C – High Hazard design storm will be accomplished by installing an emergency spillway with a surface armoring system that protects against erosion and damages from infrequent activation events. To minimize the risk of damage in future storm events, Alternative 1 also provides erosion protection in the form of articulated concrete block on the upstream slopes of the dam. Prior to approval of the dam repairs proposed under Alternative 1 by NCDEQ, an Emergency Action Plan (EAP) is required pursuant to Class C – High Hazard requirements. The Draft EAP as well as Operation and Maintenance Plan for the dam facility have been provided in Appendix F of this EA.

During Hurricane Florence, the CSX Railroad (CSX Transportation) culvert located at the Little Juniper Branch washed out. The railroad washout deposited a large amount of sediment in the channel, which carries flow from the railroad culvert to Cultural Center Lake. CSX repaired the culvert but failed to remove the sediment in the channel at the lake inlet that was deposited from the washout. This large sediment accumulation is currently slowing surface flow and further generating the collection of sediment and debris in the channel. If the sediment continues to accumulate and reduce channel flow capacity, the areas upstream of the Cultural Center Lake will have increased flood risks. Alternative 1 would apply PA funding for the dredging of sediment within the primary channel located at the lake inlet.

Alternative 1 was selected as the Proposed Action because it restores the cultural and recreational values of the lake, ensures compliance with NC DEQ requirements, and does not impose a financial burden on the Lumbee Tribe. Alternative 1 (Proposed Action) includes applying additional PA funding awarded by FEMA under Hurricane Florence to complete the following repair items to meet Class C – High Hazard Criteria (Figure 4-1):

- Clearing of an additional 2.5-acre of vegetation along the dam embankment, including approximately 2-acres of wooded area;
- Constructing an emergency spillway with a length of approximately 125 linear feet to provide adequate outlet capacity;
- Increasing the length of armoring along the upstream side of the dam to the full length of the dam in the form of articulated concrete block (ACB) and riprap, an additional 3,600 linear feet;
- Providing permanent turf reinforced matting along the downstream toe of the dam up to the one percent annual chance water surface elevation of the Lumber River.
- Replacing four gates and repairing the trash rack at the primary riser/outlet structure;

- Dredging of the lake to remove sediment primarily near the inflow channel that resulted from an upstream culvert washout that has since been repaired by the CSX Railroad (CSX Transportation);
- Installing two temporary stream crossings for purposes of a haul road for borrow pit access;
- Demolishing the existing dock and pumphouse;
- Replacing topsoil, providing seed and soil stabilization.

Following construction and repair there will be several on-going requirements that will need to be met by the Tribe for the dam to remain in compliance with NC DEQ requirements for Class C – High Hazard Dams, which include:

- Maintaining the NC DEQ Emergency Action Plan (EAP);
- Maintaining and updating the Operation & Maintenance Manual;
- Mowing on a regular schedule to keep the embankment visible;
- Conducting periodic inspections to address concerns before they become problematic; and,
- Operating/testing gates at outlet structures periodically to ensure they operate when needed.

### **3.3 Action Alternative 2**

#### **Alternative 2 – Permanent and Engineered Dam Breach**

A permanent breach requires engineering and design much like the proposed action (Alternative 1). The breach plan must ensure that no locations within the existing facilities footprint are capable of impounding surface water. An engineered breach would require removing the primary riser and restoring a stream channel to the four – 60 inch outlet pipes beneath Terry Sanford Drive, removing the concrete spillway, and providing a permanent breach channel at the northern segment of the dam beyond Terry Sanford Drive. The best location for a permanent breach channel is at the location of the proposed emergency spillway since there is an existing tributary at that location flowing directly to the Lumber River. The breach channel would be large enough (approximately 50-feet) to pass the one percent annual chance storm to provide adequate outlet capacity for Gum Branch and Little Juniper Branch (Figure 4-2).

The differences in the projected downstream flood impacts between the two action alternatives are minimal. To achieve the required outlet capacity for a 1/3 PMP design storm, the emergency spillway will activate in less than the one percent annual chance storm. During the one percent annual chance storm, the permanent breach would have the proposed breach (i.e., spillway) activated and the dam repair alternatives would have the primary outlet and the emergency spillway activated. The difference in the time to peak between the permanent breach and the repair alternatives is approximately 20 minutes, which is not significant in a watershed with an overall time to peak of 45 hours. Hydraulic modeling results showing the peak flow in the 25-year and the 100-year storm events for a dam breach scenario are provided in the Cultural Center Hydraulic Assessment located in Appendix B (Jewel - LJB, May 2020).

Although the difference in peak flow rate between a permanent breach (Alternative 2) and a dam repair scenario (Alternative 1) is insignificant, there would only be intermittent impoundment upstream of the existing embankment during and directly following rain events in an engineered breach scenario. The engineered breach would allow continuous flow through perennial channels from upstream tributaries directly into the Lumber River, which existed prior to the dam. Following rain events, the stage-storage capacity of the existing embankment would return to zero with a projected invert elevation of 155.5 feet at the primary outlet pipes (refer to Cultural Center Hydraulic Assessment, Table 1: Stage-Storage-Discharge Data). The dam breach would result in a loss of the Lumbee Cultural Center Lake, which is integral part of the Lumbee Tribe's Cultural Center property. The conversion of a 93-acre lake to low-flowing swamp waters would result in the loss of a centerpiece for cultural traditions as well as a primary source of recreation that provided boating and fishing opportunities. Loss of lake habitats that have existed since 1961 would also reduce the numbers of game fish and subsequently fishing opportunities. Although some of the game fish species and other aquatic wildlife that occupied the lake may continue to persist in perennial channels, numbers would be lower as species would be replaced by those adapted to low-flow, shallow water conditions characterizing swamp waters (i.e., swamp habitat). In absence of a formal wetland restoration project that would require sufficient funding, the perennial channels where intermittent impoundment would occur would not meet the needs of the Lumbee Tribe.

Under Alternative 2, terminating construction activities in preparation for a breach project will incur added costs associated with design, permitting, and construction. The overall project timeline would also be extended due to the additional engineering, NCDEQ Dam Safety coordination, and regulatory permitting requirements (e.g., Clean Water Act Section 404 and 401). The differences in the projected downstream flood impacts between the two alternatives are minimal. However, due to the costs that have already been incurred by FEMA to repair the dam under Hurricane Matthew, and the additional federal funds that would have to be incurred to construct the breach, Alternative 2 was not selected as the Preferred Alternative. Irrespective of cost implications, Alternative 2 was also not selected as the Preferred Alternative because it would fail to restore the Cultural Center Lake, which has served as an area of cultural significance and a recreational resource for the Lumbee Tribe for the past sixty years.

### **3.4 Alternatives Considered and Dismissed**

Three additional action alternatives were evaluated by the Lumbee Tribe to address damages to dam facilities following Hurricane Matthew that were later dismissed following Hurricane Florence and subsequent Class C – High Hazard dam classification by NCDEQ. The following alternatives (i.e., repair options) to address damage to the Cultural Center dam have been dismissed by the Lumbee Tribe and eliminated from further consideration and analysis within this EA.

#### **Minimal Repairs to Embankment**

Minimal repairs would include repairing and restoring the embankment only where erosion has occurred. This would not include any measures to avoid damages in the

future, such as actions to raise the dam embankment or improve the riser/barrel spillway and overflow spillway. To address erosion and scouring, concrete grout would be injected into cavities behind the erosion protection slab. Only the specific areas where disaster related erosion has occurred would be re-constructed with clay soil to improve integrity of the dam embankment. However, making minimal repairs to the dam facilities would not provide adequate outlet capacity to reduce the risk of a dam failure and would not comply with NCDEQ Dam Safety classification requirements.

#### **Repair Embankment and Raise Elevation**

Embankment damages would be repaired, and the embankment elevation would be raised to a consistent elevation of 169.5 feet. This action alternative reduces the likelihood of future embankment overtopping and includes replacing the existing shoreline erosion protection. Additionally, repairs to the embankment would include replacing embankment topsoil lost during recent storms, removing trees, shrubs and woody vegetation from the embankment as necessary, and extending the embankment core by approximately 2-feet vertically and 6-feet horizontally with suitable clay soil. Outlet structures would also be repaired, as needed. Even though this action alternative provides additional storage, it would not increase dam outlet capacity or the risk of overtopping during future storm events and subsequently would not comply with NCDEQ Dam Safety classification requirements.

#### **Repair Embankment, Raise Elevation, and Add Crest Gate Outlet Structure**

This action alternative includes repairing damages to the embankment as well as raising the to 169.5 feet. Additionally, a crest gate outlet structure would be added for lake level control and to avoid upstream impacts to existing structures. This action alternative eliminates the concrete spillway option but adds a crest gate structure to the dam at the same location. A crest gate structure does allow greater control of lake level but still does not significantly increase the outlet capacity or reduce the risk of flooding impacts to the upstream or downstream communities. This action alternative dismissed would not comply with NCDEQ Dam Safety classification requirements. Therefore, with this alternative the dam would still be at risk of overtopping during future storms.

### **4.0 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS**

This section describes the regulatory setting, affected environment (existing conditions) and environmental consequences (potential impacts) for each of the Proposed Action (Alternative 1), Alternative 2, and the No Action Alternative as defined in Section 3.0. Resources were evaluated for presence within the project area and for impacts. The following resources are either not present or would not be affected by the project and are therefore not evaluated in further detail in this EA:

- **Geology, Soils, and Seismic Activity:** None of the alternatives considered would involve any intrusive activity that would affect subsurface geological formations or seismic activity. Construction and dam improvements would be conducted using standard methods that would not impact geology. Each of the Action Alternatives includes features to prevent future dam embankment failure, soil erosion and subsequent sediment load downstream. Mitigation and best management practices to

address the potential for soil erosion will be included in the project as discussed in Section 4.2 – Water Resources.

- **Noise:** There are no noise-sensitive land uses in the project area and the alternatives proposed would have no permanent or significant effect on noise. The closest residential area located along Super Loop Drive and Terry Sanford Drive, approximately 500-feet southeast from the dam embankment, are unlikely to be impacted by construction related noise during business hours. A riparian corridor and a narrow strip of farmland provides a buffer between the dam embankment and residences along Terry Sanford Drive. The short-term effects of noise generated during construction activities and the potential impacts to construction workers are addressed in this EA in Section 4.5.5 – Public Health and Safety.
- **Traffic Circulation, Volume and Parking Access:** There would be no effect on ingress or egress to the Lumbee Cultural Center as a result of the proposed project. The Proposed Action, Alternative 2, and the No Action Alternative would all have no effect on local traffic patterns on tribal land or parking in vicinity of the Lumbee Cultural Center.
- **Public Services and Utilities:** No public services or utilities would be affected by the Proposed Action, Alternative 2 or the No Action Alternative. No alterations in land use are anticipated as a result of dam repairs. There are no major utility conflicts associated with the proposed dam repairs and improvements, and the project would not entail any changes to existing roadway configurations in vicinity of the dam or Lumbee Cultural Center lake. Public services, with regard to recreational and cultural values are further considered under Section 4.4 Cultural Resources and Section 4.5 Socioeconomic Resources, respectively.

The following resources are evaluated in detail in this EA:

- Section 4.1.1 Air Quality
- Section 4.2.1 Water Quality
- Section 4.2.2 Wetlands and Waters of the U.S.
- Section 4.2.3 Floodplains
- Section 4.3.1 Threatened and Endangered Species and Critical Habitat
- Section 4.3.2 Wildlife and Fish
- Section 4.4.1 Historic Properties
- Section 4.4.2 American Indian and Religious Sites
- Section 4.5.1 Environmental Justice
- Section 4.5.2 Economic Development and Land Use
- Section 4.5.3 Hazardous Material
- Section 4.5.4 Aesthetics
- Section 4.5.5 Public Health and Safety

For each resource, the affected environment is first defined and then evaluated for potential impacts, mitigation measures, or best management practices that would be incorporated to avoid or minimize impacts. Impacts common to Alternative 1, Alternative 2 or the No Action Alternative are discussed together; separate headings are provided when impacts differ between the alternatives. Documentation of regulatory agency consultation that has been conducted is provided in Appendix D.

As defined by NEPA (40 C.F.R.Parts 1500-1508), a determination of significance requires consideration of context, intensity, and duration. Impacts described in this section are evaluated in terms of type (beneficial or negative), context (setting or location), intensity (none, negligible, minor, moderate, or significant), and duration (short-term/temporary or long-term/permanent). The type, context, and intensity of an impact on a resource are explained under each resource area. Unless otherwise noted, short-term/temporary impacts are those that would result from activities associated with a project's construction/demolition phase. Long-term/permanent impacts are generally those resulting from operation of the proposed facility or activity and would remain post-mitigation. Impact intensities are defined and applied as applicable, as follows:

- **No impact** indicates that the action would not result in any effect or change to the environment.
- **Negligible impact** is defined as an environmental effect that is so small it would be difficult to observe or measure.
- **Minor impact** is defined as an environmental effect that is observable yet is unlikely to noticeably affect human health and welfare, cultural resources, or the environment.
- **Moderate impact** is defined as an environmental effect that is observable and may affect human health and welfare, cultural resources, or the environment.
- **Significant impact** is defined as an environmental effect that is observable and could cause a major impact to human health and welfare, cultural resources, or the environment.

The potential impacts and proposed avoidance, minimization, and mitigation measures of the Action Alternatives (Alternative 1 and Alternative 2) and the No Action Alternative are summarized in Table 2 (Section 4.6).

## 4.1 Physical Resources

### 4.1.1 Air Quality

The Clean Air Act (CAA) requires that states adopt ambient air quality standards that have been established to protect the public from potentially harmful amounts of air pollutants. Under the CAA, the United States Environmental Protection Agency (EPA) establishes primary and secondary air quality standards. Primary air quality standards protect the public health, including the health of sensitive populations, such as people with asthma, older adults, and children. Secondary air quality standards protect public welfare by implementing and promoting healthy ecosystems, preventing poor air visibility, and damage to crops and buildings. The EPA has set National Ambient Air

Quality Standards (NAAQS) for six of the following criteria pollutants; Ozone (O<sub>3</sub>), Nitrogen Dioxide (NO<sub>2</sub>), Carbon Monoxide (CO), Sulfur Dioxide (SO<sub>2</sub>), Inhalable Particulate Matter (PM<sub>2.4</sub> and PM<sub>10</sub>), and Lead (Pb).

### **Affected Environment**

According to U.S. EPA and North Carolina Department of Environmental Quality (NCDEQ), Robeson County is classified as an attainment area. Attainment areas are areas that meet and do not exceed the NAAQS set by EPA. NC DEQ Division of Air Quality (DAQ) enforces and monitors federal and state air quality standards in the state of North Carolina. The EPA has designated the DAQ as the lead agency for enforcing federal laws and regulations dealing with air pollution in North Carolina. The North Carolina Environmental Management Commission (EMC) also adopts most rules dealing with air quality. The NC EMC classifies sources of air pollution under North Carolina Administrative Code (NCAC) 15A 02D .0200. Classifications apply to all air pollution sources, both combustion and non-combustion. The proposed Lumbee Cultural Center Dam repairs would include "Class VI-C" sources of air pollutants, which includes all sources of air pollution using internal combustion engines. Additionally, the NC EMC regulates excess fugitive dust emissions that are generated from activities such as loading and unloading areas, stockpiles, facility parking lots, and roads to a facility under NCAC 15A 02D .0540. Dam improvements proposed may include sources of fugitive dust during ground disturbing activities such as stockpiling, excavation, and grading.

Greenhouse gases (GHGs) are emitted by both natural processes and human activities, and their accumulation in the atmosphere regulates temperature. GHGs include water vapor, carbon dioxide, methane, nitrous oxides, and volatile organic compounds, which include a variety of chemicals that are emitted as gases from certain solids or liquids. In general, volatile organic compounds do not directly act as GHGs, but they do act indirectly by helping to produce ozone via photochemical reactions in the atmosphere. According to current (2016) guidance from the CEQ, federal agencies should consider how GHG emissions from their proposed actions would impact future conditions. The EPA has not adopted quantitative GHG emission thresholds to determine the level of GHG impacts from an individual project. For purposes of this EA, a qualitative discussion related to GHGs and local air quality has been provided.

### **Environmental Consequences**

#### **Environmental Consequences Common to Alternative 1 and the No Action Alternative**

Dam repairs as described under Alternative 1 and soil stabilization as a consequence of the No Action Alternative require the use of common civil site construction equipment. Under Alternative 1, minor, short-term impacts to air quality would only occur during construction activities including employing soil stabilization methods. Emissions from fuel-burning engines could temporarily increase the levels of some pollutants, such as CO, NO<sub>2</sub>, O<sub>3</sub>, and PM<sub>10</sub>. To mitigate these emissions, BMPs would be used such as minimizing equipment run times for fuel burning equipment and properly maintaining

equipment. Due to the magnitude of the dam improvements and the anticipated construction duration of approximately six months, both short and long-term impacts to local air quality from construction equipment would be negligible. No permitting through DAQ or EPA is anticipated. Once repairs to the dam are complete, there would be no harmful gases or emissions associated with the improved dam and restored lake. The construction activities required to properly breach the dam would have no effect on climate change or GHG emissions as negligible impacts to air quality would be temporary in nature.

Fugitive dust generated by construction traffic and ground disturbance of over an acre may occur and can be mitigated by wetting the surface during drier periods. No stockpiling operations are anticipated during the dam repairs proposed and disturbed soil would be required to be temporarily or permanently stabilized in accordance with NC DEQ regulations. BMPs, including erosion and sediment control matting, vegetative cover, mulching, and chemical dust suppressants may be implemented to minimize fugitive dust during grading operations. Short-term impacts to air quality would be negligible through the implementation of BMPs during construction to mitigate fugitive dust.

### **Alternative 2**

Under Alternative 2, no significant impacts to air quality would result from breaching the Lumbee Cultural Center Dam. Emissions from fuel-burning engines (e.g. heavy machinery and earthmoving machinery) would be negligible during construction activities. Emissions from fuel-burning engines could minimally increase the levels of some pollutants, such as CO, NO<sub>2</sub>, O<sub>3</sub>, and PM<sub>10</sub> during construction. To mitigate these emissions, best management practices (BMPs) would be used, such as minimizing run times for fuel burning equipment and properly maintaining equipment. Due to the magnitude of the scope of the dam breach, and the anticipated construction duration of less than six months, both short and long-term impacts to local air quality from construction equipment would be negligible. No permitting through DAQ or EPA is anticipated. The construction activities required to properly breach the dam would have no effect on climate change or GHG emissions as negligible impacts to air quality would be temporary in nature.

Ground disturbance would be minimized during a properly executed breach to avoid avertible erosion. Fugitive dust generated by construction related activities can be mitigated by wetting the surface during drier periods. No major stockpiling operations are anticipated under the Alternative 2. Any ground disturbance would be permanently stabilized in accordance with NC DEQ regulations including the North Carolina Construction Stormwater Program. BMPs, including erosion and sediment control matting, vegetative cover, mulching, and chemical dust suppressants must be implemented to minimize fugitive dust during grading operations. Short-term impacts to air quality as a result of fugitive dust would be negligible through the implementation of BMPs during the dam breach to mitigate fugitive dust and by minimizing ground disturbance and preserving vegetation where practical.

## **4.2 Water Resources**

The Cultural Center Lake dam is approximately 6,000 linear feet earthen embankment within the Lumber River Floodplain. The impoundment area of the dam that creates the lake is approximately 93 acres. The drainage area for the dam is approximately 37.1 square miles (Figure 5). The lake receives water via sheet flow from adjacent properties and the Gum Swamp, Jordan Swamp, and Little Juniper Branch. The Cultural Center Lake dam also has three discharge outlets that flow through un-named tributaries on Tribal property directly into the Lumber River.

### **4.2.1 Water Quality**

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. "Clean Water Act" became the Act's common name with amendments in 1972. Under the CWA, EPA has developed national water quality criteria recommendations for pollutants in surface waters.

NC Division of Water Resources (DWR) enforces and monitors federal and state water quality standards in the state of North Carolina. The EPA has designated the DWR as the lead agency for enforcing federal laws and regulations dealing with water quality in North Carolina. NC Administrative Code section 15A NCAC 02H .0500 and 401 Water Quality Certification (WQC) Rules provide the framework for permitting work in the waters of the state. Additional guidance is further provided in the following sections of the NCAC: 1) 15A NCAC 02B .0100, .0200, .0300 Classifications and Standards; 2) 5A NCAC 02B .0200 (.0211-.0222) Stream Standards; 3) 15A NCAC 02B .0231 Wetlands Standards and; 4) 15A NCAC 02B .0230 Activities deemed to comply with Wetlands Standards. These standards govern acceptable levels of all chemical and organic compounds in waters of the state.

### **Affected Environment**

All surface waters in North Carolina are assigned a primary classification by the DWR. All waters must at least meet the standards for Class C (fishable / swimmable) waters. Other primary classifications provide additional levels of protection for primary water contact recreation (Class B) and drinking water (Water Supply Classes I through V). Additionally, DWR Supplemental Classifications are sometimes added by DWR to the primary classifications to provide additional protection to waters with special uses or values. Gum Swamp, Jordan Swamp, and Little Juniper Branch area assigned a surface water classification of Class C<sup>4</sup>. The Lumber River has a DWR surface water

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<sup>4</sup> Class C (C) – Waters protected for uses such as secondary recreation, fishing, wildlife, fish consumption, aquatic life including propagation, survival and maintenance of biological integrity, and agriculture. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized, or incidental manner.

classification of Class B<sup>5</sup>, Sw<sup>6</sup>, HQW<sup>7</sup>. The most prevalent compounds and potential pollutants associated with this project will be chemical compounds found in fertilizers, pesticides and herbicides as the site and majority of the supply waters are adjacent to agricultural fields and operations. The affected environment for project review includes the construction areas required for dam repair in addition to the Gum Swamp, Jordan Swamp, Little Juniper Branch, and Lumber River watersheds.

### **Environmental Consequences**

#### **Alternative 1**

Temporary/short-term, negligible impacts to water quality are anticipated due to the potential for sediment laden construction runoff prior to final soil stabilization. This impact can be mitigated by implementing a SWPPP, that includes Erosion and Sedimentation Controls measures, in accordance with NCG010000. The use of appropriate BMP's, both during construction and post construction, will prevent degradation of the water quality in any receiving waterbodies. Any repairs made to the existing dam would have minor, long-term/permanent improvements to water quality by providing stormwater impoundment time as further described under Alternative 2.

Alternative 1 would meet the requirements for the High Hazard Classification as outlined by North Carolina Division of Energy, Mineral and Land Resources (NC DEMLR) and North Carolina Dam Safety Unit (NC Dam Safety). The peak flow during a 25-year storm event would be 1,393 cubic feet per second (cfs) and 2,282 cfs during a 100-year storm event (Cultural Center Dam Hydraulic Assessment, Appendix B) similar to conditions prior to Hurricane Matthew. Dam improvements would further alleviate the existing risk of an unforeseen dam breach that would result in moderate impacts to the downstream water quality through deposition of sediment from erosion at and nearby the dam embankment.

#### **Environmental Consequences Common to Alternative 2 and the No Action Alternative**

The No Action Alternative would involve leaving the primary outlet structure gates open and allowing the lake to remain drained. Alternative 2 would involve removing the primary and secondary outlets as well as the concrete spillway. A section of the dam would be breached with an opening large enough (approximately 50-feet) to pass the one percent annual chance storm. The breach would be protected (hard armor) up to the water surface elevation of the 25-year event and can then be stabilized with grass above the hard armor protection. The difference in peak flow between the breach scenario and

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<sup>5</sup> Class B (B) –Waters protected for all Class C uses in addition to primary recreation. Primary recreational activities include swimming, skin diving, water skiing, and similar uses involving human body contact with water where such activities take place in an organized manner or on a frequent basis.

<sup>6</sup> Swamp Waters (Sw) – Supplemental classification intended to recognize those waters which have low velocities and other natural characteristics which are different from adjacent streams.

<sup>7</sup> High Quality Waters (HQW) – Supplemental classification intended to protect waters which are rated excellent based on biological and physical/chemical characteristics through Division monitoring or special studies, primary nursery areas designated by the Marine Fisheries Commission, and other functional nursery areas designated by the Marine Fisheries Commission.

Alternative 1 is insignificant, with a peak flow of 1,399 during a 25-year storm event and 2,292 cfs during a 100-year storm. Although the difference in peak flow rate between an engineered breach and a dam repair scenario is insignificant, there would only be intermittent impoundment upstream of the existing embankment during and directly following rain events in an engineered breach scenario. Following rain events, the stage-storage capacity of the existing embankment would return to zero with a projected invert elevation of 155.5 feet at the primary outlet pipes [Cultural Center Hydraulic Assessment, Table 1: Stage-Storage-Discharge Data (Appendix B)].

Pollutants that affect water quality within the lake and Lumber River watershed are chemical compounds found in fertilizers, pesticides and herbicides as the site and the majority of the supply waters are adjacent to ongoing agricultural operations. Levels of these organic chemicals can be decreased naturally when exposed to sunlight and anerobic bacteria, especially when water is slow moving or in an impoundment scenario such as a lake. An engineered breach would allow continuous flow through perennial channels from upstream tributaries directly into the Lumber River and the lakebed would then return to similar conditions that existed preconstruction over 60 years ago – a low flow swamp system. There would only be intermittent impoundment upstream of the existing embankment during and directly following rain events in the engineered breach scenario. With the conversion back to a natural low flow swamp, the Lumber River watershed will potentially face increases in organic and inorganic pollutants due to a decrease in impoundment area and impoundment time, both factors in the facilitation of natural bacterial remediation, which is beneficial to an area heavily surrounded by agricultural land use. Long-term, minor impacts to water quality may be observed with potential for elevated levels of nitrogen and phosphorus within the downstream watershed due to the loss of impoundment time.

The lake is currently drained for conditions conducive for dam repair and would remain as such under the No Action Alternative. Under Alternative 2 and the No Action Alternative, there would be a potential for short-term minor impacts to water quality, including sedimentation into the downstream stream system prior to final soil stabilization and during removal of in-stream hardened structures. Additionally, the breach of the embankment spillway under Alternative 2 would create an initial, short-term negligible impact to downstream water quality as a result of fine sediment load. Impacts to downstream water resources can be mitigated by implementing a Storm Water Pollution Prevention Plan (SWPPP) during construction activity that includes erosion and sedimentation controls measures in accordance with NCG (NC General Permit) 010000 such as but not limited to: installing silt fencing, temporary and permanent ground cover seeding, pump-around/clean water diversion devices, straw wattles, check dams and diversion ditches.

#### **4.2.2 Wetlands and Waters of the U.S.**

Section 404 of the CWA gives the U.S. EPA and the USACE regulatory and permitting authority regarding discharge of dredged or fill material into “waters of the United States.” The term “waters of the United States” is defined by 33 C.F.R. Part 328 and currently includes: waters used for commerce; interstate waters and wetlands; “other

waters” such as intrastate lakes, rivers, streams, and wetlands; impoundments of waters; tributaries to the above waters; territorial seas; and wetlands adjacent to waters.

The CWA defines wetlands as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils.” Thus, in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual, for an area to be considered a wetland, it must meet all the following criteria, under normal circumstances: wetland hydrology, a dominance of hydrophytic vegetation and hydric soils.

### **Affected Environment**

The USACE Wilmington District issued a Jurisdictional Determination on March 29, 2018 (Appendix D), verifying 1.33 acres of jurisdictional wetland located adjacent to the Lumbee Cultural Center dam and lake. Section 401 of the CWA gives regulatory authority to the NC DWR, making them the state agency responsible for issuing a 401 WQC. When the state issues a 401 WQC (which is required for any federally permitted or licensed activity that may result in a discharge to waters of the U.S.), it certifies that a given project will not degrade Waters of the State or violate State water quality standards.

### **Environmental Consequences**

#### **No Action Alternative**

The No Action Alternative would result in no further impacts to wetlands or waters of the U.S. previously authorized under the scope of work for Hurricane Matthew.

#### **Alternative 1**

The proposed dam repairs will have moderate, permanent and temporary impacts to the adjacent wetlands and waters of the U.S. Dam improvements. Reinforcing the emergency spillway and addressing erosion in the northern portion of the lake will impact approximately 0.09 acre of wetlands including 0.03 temporary impacts and 0.06 permanent impacts. Additionally, a total of 225 linear feet of stream impacts, including 155 linear feet of temporary impacts and 100 linear feet of permanent impacts would be required (Figure 4-1). The Lumbee Tribe submitted a Pre-Construction Notification on May 22, 2018 to USACE and NCDWR for authorization to proceed under NWP 3 and NWP 13 in anticipation of the necessary repairs under Hurricane Matthew. No compensatory mitigation was required for wetland and stream impacts, as proposed under Alternative 1 (SAW-2018-00590, Appendix D).

The Lumbee Tribe has complied with all NWP and WQC conditions during construction activity under the Hurricane Matthew project. In accordance with NWP and WQC permit conditions, the Lumbee Tribe installed erosion and sediment control measures prior to major ground disturbance associated with repairs under Hurricane Matthew. Permit conditions also required that all instream or channel work be conducted in dry conditions. As such the lake was drained. The continued use of appropriate BMPs both during

construction and post construction, such as diversion swales, sumps, and coffer dams, will prevent any unauthorized discharges of fill into the adjacent wetlands and waters of the U.S during construction proposed by Alternative 1. Clearly demarcating limits of disturbance also prevents any unauthorized discharges.

### **Alternative 2**

As previously described, the Lumbee Tribe has drained the lake to eliminate any unforeseen dam failure and in preparation for dam repair and/or improvements in coordination with USACE and NC DWR. Similar to Alternative 1, the Lumbee Tribe will need to consult with USACE and NC DWR and submit a Pre-Construction Notification (PCN) prior to performing any work requiring impacts to wetlands or waters of the U.S. The dam breach, as proposed would require temporary impacts to jurisdictional waters. Additionally, the approximately 50-foot dam breach would permanently impact approximately .06 acre of wetlands (Figure 4-2). Authorization would be required under NWP 3 or 13 and the associated WQC for negligible short-term impacts to waters of the U.S. (including wetlands) required during the decommissioning and removal of dam components associated with Alternative 2.

### **4.2.3 Floodplains**

Executive Order 11988, Floodplain Management, amended January 29, 2015, and as implemented in 44 CFR Part 9, requires federal agencies to “avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.” EAs for actions in the floodplain or affecting wetlands must include the 8-step process (44 CFR, 9.6) in the associated floodplain and/or wetland section of an EA document for projects located in a floodplain. According to the December 6, 2019 FEMA Flood Insurance Rate Map (Panel 3710931400K), the project area is located within the one-percent annual chance floodplain boundaries (Special Flood Hazard Area AE).

On May 18, 2020, FEMA’s notice to the public was posted on the Facebook page for the Lumbee Tribe and flyers were distributed to Lumbee residents. The notice to the public described its intent to reimburse the Lumbee Tribe of North Carolina through North Carolina Emergency Management (NCEM) as a sub- recipient for eligible costs for damages associated with Hurricane Florence under the disaster declaration FEMA DR-4393-NC signed by the President on September 14, 2018. The notice was published in the Robesonian newspaper May 9 and May 10 of 2020 (Appendix E). Comments were also solicited from the local and state agencies, and other interested parties to fully consider and evaluate the impacts of the project alternatives. A total of fourteen were received during the 30-day public comment period – all of which supported the repair of the dam as described under Alternative 1. No comments were received that opposed Alternative 1. The 8-step checklist, public notice, and public comments received have been provided in Appendix E.

### **Affected Environment**

Both Robeson County and the Town of Maxton currently participate in the National Flood Insurance Program that regulates construction within FEMA designated one percent annual chance floodplains. According to the December 6, 2019, Robeson County Flood Insurance Rate Map, Panel Numbers 3710931400K and 3710932400K (Community No. 37020), the project area is located within the one percent annual chance floodplain boundaries (Zone AE). No floodways are designated for the project area/footprint. However, the project area is immediately adjacent to the Lumber River Floodway. Natural and beneficial values provided by floodplains in the project area include, but are not limited to, support of fish and wildlife populations, riparian areas and wetlands, the natural moderation of floods, water quality maintenance, and groundwater recharge. The Lumbee Cultural Center dam, that creates an impoundment area within the Lumber River watershed of approximately 93-acres, provides open water habitat for freshwater aquatic species and wildlife. The existing dam also moderates upstream peak storm discharges from Gum Branch and Little Juniper Swamp that flow into the Lumber River.

### **Environmental Consequences**

#### **Alternative 1**

Alternative 1 would provide additional storage by raising the crest elevation of the dam and would allow for more controlled releases of flood waters through emergency spillways when compared to existing conditions of the dam. To avoid increasing upstream flood levels due to the raised dam embankment, an emergency spillway would be constructed, inclusive of erosion protection measures to ensure its stability. Dam repairs and improvements proposed will regulate the flow of excess flood waters, especially during isolated, extreme weather events.

The proposed repairs and improvements would be constructed under a No-Rise Certification in coordination with the local floodplain administrator (i.e., North Carolina Flood Mapping Program). The No-Rise Certification would verify that the post-repair base flood elevations would not exceed the pre-project elevations. The Floodplain Development Permit from Robeson County, that was obtained on August 29, 2018, is provided in Appendix D. As required, the Lumbee Tribe will provide a Letter of Map Revision (LOMR) following the dam improvements and based on as-built surveys. Alternative 1 would restore the functionality of the existing dam under a No-Rise Certification. As such, Alternative 1 would have no or a negligible impact to the natural and beneficial values of the floodplain adjacent to the Lumber River.

#### **Environmental Consequences Common to the No Action Alternative and Alternative 2**

Alternative 2, as an engineered breach scenario, would alleviate the immediate risk of an unforeseen breach or overtopping during a significant storm event as the dam is currently in disrepair. Once implemented, the dam breach would result in the loss of the Lumbee Cultural Center Lake. There is not a significant safety hazard associated with properly

breaching a dam, because a permanent breach approved by NCDEQ Dam Safety Program has to address all public safety concerns. In accordance with NCDEQ Dam Safety requirements, an intentional breach of a dam is required to pass the one percent annual chance storm event unabated and would thus be considered the design storm for a breach scenario. A breach of the dam during a flood event exceeding the design storm would however present a safety hazard. The No Action Alternative would involve leaving the primary outlet structure gates open and allowing the lake to remain drained with impoundment only occurring during and immediately following precipitation events.

The No Action Alternative and Alternative 2 would have no or a negligible impact to the natural and beneficial values of the floodplain adjacent to the Lumber River. Both the No Action Alternative and Alternative 2 would convert the lake back to a natural low flow successional swamp habitat, which existed over 60-years ago. Although the partially restored swamp following a dam breach may provide suitable habitat for wildlife species, provide water quality benefits, and an opportunity for ground water recharge, it would not equate to an impoundment scenario with an estimated maximum storage capacity of approximately 956 acre-feet as described under Alternative 1. The differences in the projected downstream flood impacts between the action alternatives are minimal. In order to achieve the required outlet capacity for a 1/3 PMP design storm, the emergency spillway will activate in less than the one percent annual chance storm. During the one percent annual chance storm, both the permanent breach and the dam repair alternatives will have the primary outlet, the concrete spillway outlet, and the proposed breach or emergency spillway activated. The difference in the time to peak between the alternatives is approximately 20 minutes, which is insignificant in a watershed with an overall time to peak of 45 hours. Hydraulic modeling results showing the peak flow in the 25-year and the 100-year storm events for a dam breach scenario are provided in the Cultural Center Hydraulic Assessment located in Appendix B (Jewel - LJB, May 2020).

### **4.3 Biological Resources**

#### **4.3.1 Threatened and Endangered Species and Critical Habitat**

The Endangered Species Act (ESA), as amended, addresses actions that could affect species in danger of becoming extinct. Listed species protected under the ESA may be designated as Endangered, which means the species is considered in danger of extinction throughout all or a significant portion of its range, or Threatened, which means the species is considered to likely become endangered within the foreseeable future. For specific areas formally designated by the U.S. Fish and Wildlife Service (USFWS) as critical habitat for species listed under the ESA, Federal agencies must ensure that actions undertaken, funded, or authorized by the agency do not destroy or adversely modify that habitat. The Information for Planning and Consultation (IPaC) is an online tool developed and utilized by the USFWS to assist project proponents in identifying potential species of concern or designated critical habitat that may be present within the project area for any of these species.

### **Affected Environment**

The affected environment for project review includes the construction areas covering the dam embankment, dam shoreline, primary riser/barrel outlet, secondary riser/barrel outlet, and concrete overflow spillway, as well as the planned and actual ground disturbance for the soil borrow pits west of the dam, including temporary haul road for borrow pit access. The environment and habitats of the drained lakebed are also being considered for this project. The aquatic habitats upstream of the present dam and downstream of the current outflow are also considered as part of the affected environment for project review.

The May 10, 2018 IPaC report generated for the project area (Appendix B), identified three federal endangered or threatened species that could occur within the area and should be evaluated for consideration of effects: red-cockaded woodpecker (*Picoides borealis*), wood stork (*Mycteria americana*), and Michaux's sumac (*Rhus michauxii*). A fourth species, American alligator (*Alligator mississippiensis*) may also occur in the area but based on its status as Threatened due to Similarity of Appearance, no effects determination is required. The IPaC report indicated that no critical habitat designated for these species occurs within the project area.

Red-cockaded woodpeckers occur in family groups that nest in cavities excavated in large, living pines generally greater than 60 years in age within pine-dominated habitats. The family groups forage in pine-dominated habitats with pines generally greater than 30 years in age located within 0.5 mile of, and contiguous to, the nesting cavities. USFWS reports that in general, red-cockaded woodpeckers require between 100 and 400 acres of foraging habitat per group. Large pines that are or were present in strips along the former golf course greenways and on the dam embankment may have met size and age criteria for consideration as nesting or foraging habitat, but do not appear to be or have been part of a contiguous, pine-dominated stand providing a sufficient amount of suitable habitat to support a family group of red-cockaded woodpeckers. These project area pines also appear to lack contiguity with suitable nesting or foraging habitat that may be present outside the project area.

Wood storks' nest in groups, called colonies, in trees or woody vegetation emerging from standing water, generally associated either with swamps or lakes in North Carolina. Foraging occurs for fish and other aquatic animals within the shallows of flooded wetland habitats, impoundments, and ditches. Forested wetland habitats within the project evaluation area could provide potentially suitable nesting habitat for wood stork, and shallow flooded areas could provide potentially suitable foraging habitat. The shallow lakeshore edges present before the dam was breached and lake subsequently drained may have provided suitable foraging habitat conditions. The lakebed in its present condition after breaching of the dam may continue to provide suitable foraging habitat conditions within shallow, water-filled depressions and in areas exhibiting shallow flooding after rains.

Michaux's sumac is a small shrub that grows in open areas with well-drained sandy or sandy loam soils. The planned and actual ground disturbance areas for the borrow pits west of the dam appear to have, or had, open habitat conditions, but appear to have, or had, been subject to regularly mowing resulting in maintaining ground cover at low, lawn-like conditions; frequent mowing does not provide conditions conducive to Michaux's sumac.

Review of the North Carolina Natural Heritage Program (NCNHP) files were conducted on March 18, 2020. No federally listed endangered or threatened species, or designated critical habitat for listed species, has been documented from the project area or within 1.0 mile of the project area.

### **Environmental Consequences**

#### **Alternative 1**

FEMA initiated consultation on the proposed undertaking with the USFWS in a letter dated February 25, 2020 (Appendix D), that covered the following project components: earthen embankment, concrete spillway, primary outlet, and emergency spillway. By email response dated February 26, 2020, the USFWS concurred with FEMA's determination that the completed project may affect, but is not likely to adversely affect, red-cockaded woodpecker, wood stork, and Michaux's sumac. Additional activities associated with borrow pits and removal of accumulated sediment from the lakebed are not expected to have adverse impacts on red-cockaded woodpecker, wood stork, or Michaux's sumac based on absence of suitable habitat in these areas.

#### **Environmental Consequences Common to Alternative 2 and the No Action Alternative**

Loss of the shallow lake habitats potentially suitable as wood stork foraging habitat prior to draining the lake would be anticipated to be offset in part by replacement with early successional swamp habitats and eventually regrowth of swamp forest within the present drained lakebed, of which areas containing shallow flooded depressions and areas exhibiting shallow flooding following rains could be potentially suitable as wood stork foraging habitats. Other disturbances associated with Alternative 2 are not expected to affect habitat suitable for, or occupied by, either red-cockaded woodpecker or Michaux's sumac. No or negligible effects to federally listed endangered or threatened species would be expected as a result of Alternative 2 or the No Action Alternative.

#### **4.3.2 Wildlife and Aquatic Resources**

The Fish and Wildlife Coordination Act (FWCA), as amended, addresses actions by a Federal agency, or other entity requiring a Federal permit or funding, that through modification of a stream or waterbody may have effects on the fish and wildlife resources dependent upon the aquatic resource or its associated habitats. Under the FWCA, appropriate steps should be considered to prevent or minimize adverse impacts to these fish and wildlife resources, and when possible, also consider opportunities to improve these resources.

### **Affected Environment**

The affected environment for project review for these resources includes the same areas identified for threatened and endangered species in Section 4.3.1. The current status of the site is that the lake has been drained to facilitate repair work on the dam and to comply with NWP and WQC permit conditions (Section 4.2.2) that require all in-stream or channel work to be completed in dry conditions. The dam that formed the Lumbee Cultural Center Lake, previously known as Country Club Lake and also known as Gum Swamp Lake, was completed in 1961 and the lake has been considered a fishing resource for the Lumbee community. This site had been the site of previous dammed impoundments prior to completion of the current dam in 1961, with historic records documenting a smaller impoundment at this site from as early as 1908 to as late as 1938, when it was known as Townsend Pond, and the site of an even earlier impoundment associated with a grist mill dam circa 1806, when it was known as McNeill's Mill Pond. Information on these earlier impoundments from previous dams is provided in the SHPO coordination letter in Appendix C. Lumbee Cultural Center Lake before breaching would have been considered a warmwater fishery resource, with potential to support recreational fishing opportunities for largemouth bass (*Micropterus salmoides*), various sunfish (*Lepomis* spp.), crappie (*Pomoxis* spp.), and bullhead catfish (*Ameiurus* spp.).

Repair work associated with Hurricane Mathew damage to the dam and remodeling of the dam has resulted in clearing and grubbing of two acres of trees and heavily vegetated area along the dam to the northwest end of the dam and removal of vegetation from approximately 1 acre along the entire length of the dam. Additional clearing and earthwork have occurred for borrow pits located west of the dam, within the area formerly occupied by a golf course. The lawn-like conditions of the former golf course area greens appear to have been regularly maintained, and large trees, primarily pines, appear to have been present in rows separating the greens. The final engineering plans indicate that care was to be exercised not to disturb the stream or to unnecessarily damage existing vegetation beyond that necessary for the project work.

A review of the NCNHP files was conducted on March 18, 2020. No rare animal or plant species tracked by the NCNHP have been documented from the project area. Two rare aquatic species, both fish, have been documented by NCNHP in the Lumber River within 1.0 mile downstream of the project area: ironcolor shiner (*Notropis chalybeus*), and broadtail madtom (*Noturus* sp. 2). Both species are generally found in slow-flowing streams and rivers with sand bottoms, but broadtail madtoms may be found in lake systems as well as streams. Two other rare species, both dragonflies, were identified by NCNHP as having the potential to occur within 1.0 mile of the project area: coppery emerald (*Somatochlora georgiana*) and phantom darner (*Triacanthagyna trifida*). Both these dragonfly species rely on aquatic habitats for breeding, with the coppery emerald relying on slow-flowing acidic streams and phantom darner relying on small, wooded pools near rivers. Natural communities identified by NCNHP downstream from the project area include Blackwater Bottomland Hardwoods (High Subtype) and Cypress-Gum Swamp (Blackwater Subtype) associated with the floodplain of the Lumber River.

Lumbee Cultural Center Lake and streams on the Lumbee Cultural Center property have been sampled by students from the University of North Carolina at Pembroke as part of efforts to document biodiversity on the site. Reported results document a diversity of aquatic insects utilizing waterbodies sampled on the site.

### **Environmental Consequences**

#### **Alternative 1**

Under Alternative 1, the lake would be restored to pre-hurricane pool levels. Because repairing the dam and refilling the lake is expected to increase the number and diversity of warmwater game fish, it is likely to increase traditional recreational fishing opportunities. Alternative 1 would restore lake habitats and associated fishery resource that existed in this location continuously from completion of the current dam in 1961 until the recent intentional draining for hurricane damage repairs, as well as that occurred at various other times prior to the current dam, beginning with a grist mill dam constructed around 1806.

#### **Environmental Consequences Common to Alternative 2 and the No Action Alternative**

Loss of the lake habitats would reduce the diversity and numbers of game fish and fishing opportunities. Although some of the game fish species and other aquatic wildlife that occupied the lake may continue to persist in perennial channels present in the drained lakebed, numbers would be reduced based on the smaller area and reduced carrying capacity of suitable habitat of permanent aquatic habitat present in the channels compared to the previous approximately 93-acre lake. Hydrologic conditions for the drained lakebed outside the channels would likely present a spectrum including: seasonally saturated, but not flooded, habitats occupying topographically higher portions of the area; seasonally flooded and temporarily flooded habitats that flood for relatively short durations in response to seasonally higher water tables and precipitation events, respectively; and semi-permanently to permanently flooded habitats that may be present in depressions within the lakebed and low areas adjacent to the channels. Fish species adapted to the low-flow, low oxygen conditions characterizing these swamp habitats include non-game species such as eastern mudminnow (*Umbra pygmaea*), pirate perch (*Aphredoderus sayanus*), and eastern mosquitofish (*Gambusia holbrooki*) as well as species with limited fishery value, such as pickerel (*Esox* spp.); these species likely occupied the permanently to semi-permanently flooded swamp habitats formed in the headwaters and upstream of the lake prior to recent draining of the lake. Based on continuous existence of the lake from 1961 until breaching for hurricane damage repairs, with at least intermittent presence of an impoundment in this general location going back approximately 200 years, Alternative 2 and the No Action Alternative area likely to decrease traditional recreational fishing opportunities, while increasing non-game fish species populations adapted to swamp habitats.

## 4.4 Cultural Resources

### 4.4.1 Historic Properties

As part of the EA process under NEPA, consideration of impacts to cultural resources (historic properties) is required under Section 106 of the National Historic Preservation Act (NHPA), as amended. NHPA, implemented by 36 CFR Part 800, requires federal agencies to consider the effects of their actions on historic properties. Historic Properties are defined as any prehistoric or historic archaeological sites, districts, buildings, structures, or objects listed in or eligible for listing in the National Register of Historic Places (NRHP) under the criteria for evaluation outlined in 36 CFR 60.4.

This process includes the identification of significant historic properties that may be affected by the Alternatives. As defined in 36 CFR Part 800.16(d), the Area of Potential Effects (APE) is the “geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist.”

In addition to identifying historic properties within the project’s APE, FEMA must also determine, in consultation with the appropriate State Historic Preservation Office (SHPO), tribes, and other consulting parties, what effect, if any, the proposed action would have on historic properties. If the project is found to have adverse effects, FEMA must consult with SHPO and other consulting parties on ways to avoid, minimize, or mitigate adverse effects.

The February 12, 2020 FEMA site visit indicated that the nearly complete excavation of borrow pits had deviated from submitted engineering plans, resulting in direct impacts to the locations depicted in SHPO files for two recorded archaeological sites, and possible impacts to the location depicted for a third archaeological site. Due to the unknown extents and significance of these sites (due to reconnaissance-level investigation during the initial 1986 archaeological survey), the full impacts of the earth removal in the borrow pits was unknown. FEMA initiated consultation on the proposed undertaking with SHPO, the Seminole Nation of Oklahoma, the Catawba Indian Nation, and the Shawnee Tribe, in letters dated March 3, 2020 (Appendix C). FEMA proposed a determination of adverse effects and proposed mitigation efforts. In a letter dated March 31, 2020, the SHPO was not able to concur with this determination of adverse effects to historic properties as none of the sites had been assessed for NRHP eligibility. The SHPO concurred that additional archaeological investigations would be required, which were completed and presented in a summary report dated August 2020. In letters dated August 26 and 27, 2020, FEMA continued consultation on the proposed undertaking with SHPO, the Seminole Nation of Oklahoma, the Catawba Indian Nation, and the Shawnee Tribe based on the results of the additional archaeological investigations for the APE (Appendix C).

Based on the results of the archaeological investigation, no properties listed in or considered eligible for listing in the NRHP were located within the APE of the proposed

undertaking. Therefore, FEMA made a finding of No Historic Properties Affected for this undertaking in accordance with 36 CFR 800.4(d)(1). SHPO concurred via letter dated September 8, 2020 (Appendix C) with the findings and recommendations presented by FEMA based on the additional archaeological investigation. The consulted Tribal Nations either responded with replies of no immediate concerns or did not provide any additional comments.

### **Affected Environment**

**Archaeological Sites.** An archaeological survey conducted in 1986 as part of the development of the North Carolina Indian Cultural Center (NCICC) recorded 47 archaeological sites within the approximately 340-acre property (Mathis and Gardner 1986). Ten archaeological sites were identified within the APE initially considered for the project (SHPO letter in Appendix C); refinement of the APE in coordination with SHPO resulted in reduction of the APE to approximately 100 acres, with the APE containing six previously recorded archaeological sites. Of these six previously recorded archaeological sites located within the approximately 100-acre APE, four of these sites (31RB57-60) were determined to require additional assessment as summarized below in Table 1. The resulting archaeological survey conducted in 2020 revisited and evaluated these four sites and recorded three new archaeological sites (31RB644-646) within the APE that were also evaluated for NRHP eligibility. Based on the results of the additional archaeological investigation undertaken for the project APE, six of the seven evaluated sites are considered not eligible for the NRHP and no further investigation work was recommended; the remaining site, a 19<sup>th</sup> century cemetery, remains unassessed for eligibility for listing in the NRHP and was recommended for preservation by avoidance. More detailed descriptions of each archaeological site can be found in the March 2020 SHPO coordination letter included in Appendix C and in the archaeological survey report completed in August 2020.

**Table 1. Recorded Archaeological Sites within the Project APE**

Site #	Cultural Affiliation	Site Type	NRHP Recommendations
31RB57	Prehistoric - Woodland	Short Term Habitation	Not Eligible; No Further Work
31RB58	Historic - 19 <sup>th</sup> century	Cemetery	Unassessed; Preservation by Avoidance
31RB59	Prehistoric – Lithic (Unknown Subperiod)	Limited Activity	Not Eligible; No Further Work
31RB60	Prehistoric: Lithic (Unknown Subperiod)	Limited Activity	Not Eligible; No Further Work
31RB96	Prehistoric	Isolated Find	Unassessed <sup>8</sup>
31RB97	Prehistoric	Isolated Find	Unassessed <sup>9</sup>

<sup>8</sup> Not recommended by SHPO for additional investigation for current project (SHPO letter dated March 31, 2020 (Appendix C)

<sup>9</sup> Not recommended by SHPO for additional investigation for current project (SHPO letter dated March 31, 2020 (Appendix C)

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Site #	Cultural Affiliation	Site Type	NRHP Recommendations
31RB644	Prehistoric: Lithic (Unknown Subperiod)	Limited Activity	Not Eligible; No Further Work
31RB645	Prehistoric: Lithic (Unknown Subperiod)	Isolated Find	Not Eligible; No Further Work
32RB646	Prehistoric: Lithic (Unknown Subperiod)	Isolated Find	Not Eligible; No Further Work

**Architectural Resources.** None of the standing structures currently on the property, including the earthen dam, are listed, or eligible for listing in the NRHP. There are no historic districts or properties in the vicinity of the current Lumbee Cultural Center. One previously recorded structure is located on the property near the dam. The Henry Berry Lowrie House (ID RB0672) is a replica moved to the NCICC in 1987 from its original location (approximately 7 miles south of its current location). Although the small frame replica house is associated with Henry Berry Lowrie, a significant figure in Lumbee and North Carolina history, a 2014 survey determined the structure to be ineligible for listing on the NRHP.

**Environmental Consequences**

**Alternative 1**

Based on the results of the additional archaeological investigations undertaken in 2020 within the project APE, no properties listed in or considered eligible for listing in the NRHP are located within the APE for this Alternative. FEMA has determined that the proposed undertaking would have No Adverse Effects to Historic Properties.

In addition to proposing the preservation of the 19<sup>th</sup> century McNeill cemetery in-place and avoiding impacts, FEMA has placed the following conditions on future ground-disturbing activities within the project area (refer to Appendix C for detailed conditions):

- Any future ground disturbance associated with construction activities for the proposed undertaking will be monitored by a Secretary of the Interior (SOI) qualified archaeologist;
- If human remains or intact archaeological deposits are uncovered during any future activities, work in the vicinity of the discovery will stop immediately and all reasonable measures to avoid or minimize harm to the finds will be taken;
- Prior to conducting further repairs that require fill, applicant must identify the source and location of fill material that is obtained offsite and provide this information to FEMA and SHPO; and
- Any changes to the approved Scope of Work will require submission to, and evaluation and approval by FEMA, SHPO, and relevant THPOs, prior to initiation of any work, for compliance with Section 106.

### **Environmental Consequences Common to Alternative 2 and the No Action Alternative**

Under these alternatives, the lake would not be refilled. Although the lake is considered an integral part of the Lumbee Cultural Center property and cultural focal point (summarized in Section 4.4.2), the dam has not been listed nor is eligible for listing in the NRHP. Alternative 2 and the No Action Alternative would not affect historic properties.

#### **4.4.2 Native American and Religious Sites**

Executive Order (EO) 13007 requires Federal agencies avoid harming Native American sacred sites to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions. Native American sacred sites are defined under EO 13007 as specific and discrete locations on Federal land that are identified by a Native American tribe as sacred by virtue of their established religious significance to, or ceremonial use by, a Native American religion. The project site is not located on federal lands and EO 13007 would not apply.

However, the NHPA and implementing regulations require consideration of properties of traditional religious and cultural significance or importance. Known as Traditional Cultural Properties, or TCPs, these can be geographic areas, properties, or locations prominent in a particular group's cultural practices, beliefs, or values that: are widely shared within the group; have been passed down through the generations; and have served a recognized role in maintaining the group's cultural identity for at least 50 years. The significance of the historic property is determined by the role the property plays in maintaining a community's identity, beliefs, practices, and customs. The National Park Service (NPS) notes that while the beliefs or practices are important, the TCP, like any other NRHP-listed or eligible property, must be a physical place (i.e., site, object, district, or building). As an example, the NPS lists "a location where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historic identity" (Parker and King 1990).

#### **Affected Environment**

The dam and associated Lumbee Cultural Center Lake have not been formally assessed for their NRHP eligibility under criteria considerations for TCPs; however, the dam is considered a Lumbee Tribe Historical Landmark (internal Lumbee Tribal designation), as the dam structure, resulting Lumbee Cultural Center Lake, and surrounding property have served as a focal point for the community for over 50 years. The dam forming Lumbee Cultural Center Lake was first constructed in 1961 as part of the recreational development of the property for use by local residents during the segregation era. The recreational area included a golf course, amphitheater, pool, playground, campground, canoeing, and fishing. In the decade from 1983–1993, the General Assembly appropriated funds to the Commission of Indian Affairs to purchase land and establish the North Carolina Indian Cultural Center (NCICC). The Lumbee Tribe purchased the NCICC property from the state in 2014 (including the land surrounding the former golf course, dam, and Lumbee Cultural Center Lake), and the property has continued to serve as a recreational, ceremonial, and convening space for the Lumbee, serving an important

role in maintaining the cultural identity of the community. The lake serves as a ceremonial and convening space for the Tribe where members partake in smudging rituals, praying, and singing. Elders lead religious ceremonies at the lake on a quarterly basis in unison with seasonal changes. The lake serves as a centerpiece for the Lumbee Tribe during annual events, such as the Lumbee Spring Powwow, where there are commercial vendors, crafts, children's entertainment, and music.

FEMA initiated consultation on March 3, 2020 regarding the proposed undertaking with three federally recognized Native American tribes: the Seminole Nation of Oklahoma, the Catawba Indian Nation, and the Shawnee Tribe (refer to Section 6.1). No responses were received.

### **Environmental Consequences**

#### **Alternative 1**

Under Alternative 1, the lake, considered an integral part of the Lumbee Cultural Center property and cultural focal point, would be restored to pre-hurricane pool levels. Long-term impacts to the landscape integrity of this location, identified by the Lumbee Tribe as a landmark of historical significance, would result from repairing the dam and refilling the lake.

#### **Environmental Consequences in Common to Alternative 2 and the No Action Alternative**

Under these alternatives, the lake would not be refilled. Alternative 2 would fail to restore the landscape integrity of the Lumbee Cultural Center property that has long standing significance for the Lumbee Tribe.

### **4.5 Socioeconomic Resources**

Robeson County is located in the southern extent of North Carolina. As of the 2010 census, the population of Robeson County was 134,168. Its county seat is Lumberton. The Lumbee Cultural Center dam and lake is primarily surrounded by rural residential and farming areas to the north, south, east, and west.

#### **4.5.1 Environmental Justice**

Environmental justice is a component of Title VI. Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, placed further emphasis on the Title VI protections of race and national origin by requiring federal agencies to identify and address disproportionately high and adverse effects of their actions on minority populations. Executive Order 12898 expanded upon Title VI to include low-income populations and assure greater public participation in the decision-making process. As defined by Executive Order 12898, minority classifications include Black, Hispanic, Asian, American Indian/Alaska Native, and Native Hawaiian or Pacific Islander. Low-income is defined as a person whose median household income is at or below the Department of Health and Human Services poverty guidelines.

### **Affected Environment**

Environmental Justice is a resource area of concern that must be discussed in every FEMA EA. Title VI of the Civil Rights Act of 1964, as amended, is a non-discrimination statute. Specifically, 42 U.S. Code § 2000d states that:

“No person in the United States shall, on the ground of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.”

Socioeconomic and demographic data for the project area were analyzed to determine if a disproportionate number of minority or low-income persons have the potential to be adversely affected by the proposed project. Demographic variables from the U.S. Census Bureau for census blocks and block groups adjacent to the project area were evaluated for this study. County records were also reviewed. Robeson County lies almost entirely within the Lumber River basin and is the seat of the Lumbee Tribe of North Carolina. As of 2019, Robeson County has a declining population of approximately 130,625 people with minority populations accounting for approximately 75-percent of the population estimate. According to the 2010 U.S. Census and County records, the Lumbee community has a population of approximately 55,000. The Lumbee Tribe is the largest state-recognized tribe in North Carolina, the largest state tribe east of the Mississippi River, and the ninth largest non-federally recognized tribe in the United States. Pembroke, North Carolina, is the economic, cultural and political center of the tribe, which is located approximately 1.5 mile southeast of the Lumbee Cultural Center lake. The Town of Pembroke has nearly a 50 percent poverty rate and a median household income of less than \$20,000. As of 2018, the median household income in Robeson County is \$33,679.

### **Environmental Consequences**

#### **Alternative 1**

Members of the Lumbee Tribe would benefit from the improved safety and functionality of the Lumbee Cultural Center dam. The associated lake would be restored to preexisting conditions prior to Hurricane Matthew and Hurricane Florence. Repairing the dam and restoring the Cultural Center lake would not result in disproportionately high or adverse human health or environmental effects on minority or low-income populations. Dam improvements would promote the continued use as well as the economic and cultural benefits of the lake. Dam improvements proposed will not result in further infrastructure upgrades. Based on the review conducted, Alternative 1 would have minor, long-term, positive impacts on minority or low-income populations by restoring the lake for recreational opportunities and fishing for families with limited income. The proposed action would have no negative affect on low income or minority populations. All populations would benefit from the proposed project.

### **Environmental Consequences Common to Alternative 2 and the No Action**

Alternative 2 and the No Action Alternative would not result in disproportionately high or adverse human health or environmental effects on minority or low-income populations. Based on the review conducted, Alternative 2 and the No Action Alternative would have minor, long-term, negative impacts on minority or low-income populations following the removal of the Cultural Center lake due to the loss of associated recreational opportunities, such as canoeing and fishing, for families with limited income.

### **4.5.2 Economic Development**

Under the direction of Presidential Policy Directive (PPD)-8: National Preparedness, NEPA established the National Disaster Recovery Framework (NRDF) with six Recovery Support Functions (RSF) to facilitate coordinated interagency capacities across all disaster-related mission areas. The economic sector RSF is coordinated by the Economic Development Administration.

### **Affected Environment**

The Lumbee Tribe owns the property that contains the project area, including the Lumbee Cultural Center. Lumbee Cultural Center Lake is considered to be an integral part of the Cultural Center and associated cultural landscape. The Lumbee Cultural Center property is utilized by the Lumbee Tribe for events of which some may provide an economic stimulus to local communities based on the influx of travelers to major events held at the facility. Events held at the property are open to the public, however, the project area does not contain areas considered to be primarily for the purposes of economic development. The development of property within the floodplain within the project area, as well as upstream and downstream, is restricted by floodplain development regulations.

### **Environmental Consequences**

#### **Alternative 1**

Under Alternative 1, dam repairs would be undertaken consistent with the work descriptions provided in Alternatives Sections 3.1 and 3.2. Short-term economic benefits would likely result from construction activities associated with the dam repairs; however, these alternatives are not expected to result in long-term significant impacts to economic development in the area.

#### **Environmental Consequences Common to Alternative 2 and the No Action Alternative**

Under Alternative 2, the dam structure would be properly and permanently breached consistent with the work description provided in Alternative Section 3.3. The No Action Alternative would involve having the primary outlet structure gates open and allowing the lake to remain drained. Short-term economic benefits would likely result from construction activities associated with the breaching and stabilizing disturbed areas of the dam; however, this alternative is not expected to result in long-term significant impacts to economic development in the area.

### **4.5.3 Hazardous Materials**

Two primary federal regulations that address hazardous materials are the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Resource Conservation and Recovery Act (RCRA). CERCLA, commonly known as Superfund, has the major objectives to identify sites containing hazardous and toxic material, determine liability, and oversee clean-up. RCRA addresses the handling, disposal, and recycling of debris and solid waste, including hazardous materials. The requirements of RCRA are implemented at the state and local levels and are often included as conditions or best management practices in permits required at those levels.

#### **Affected Environment**

The U.S. Environmental Protection Agency (USEPA) EnviroFacts System Database and the North Carolina Department of Environmental Quality (NCDEQ) Division of Waste Management Site Locator Tool were searched for potential CERCLA and RCRA concerns for the project area or within a 1-mile radius of the project site. The USEPA and NCDEQ database searches did not identify regulated incidents or facilities known to be associated with the project area or along Gum Swamp within 1-mile upstream of the project area.

#### **Environmental Consequences**

##### **Environmental Consequences Common to Alternative 1, Alternative 2, and No Action Alternative**

Under these alternatives, no hazardous materials or waste impacts are anticipated. FEMA requires that construction debris, as well as any potentially hazardous materials encountered during construction, be properly handled and disposed of in accordance with applicable local, state, and federal regulations.

### **4.5.4 Aesthetics**

Assuring aesthetically pleasing surroundings for all Americans is one of the goals identified in Section 101 of NEPA, and visual impacts are included among environmental effects evaluated by federal agencies prior to making decisions.

#### **Affected Environment**

Lumbee Cultural Center Lake, formed by the impoundment by the existing dam, contributes to the aesthetics of the property containing Lumbee Cultural Center. The current status of the site is that the lake has been drained to facilitate repair work on the dam.

#### **Environmental Consequences**

##### **Alternative 1**

Under Alternative 1, repairs and modifications undertaken to the existing dam would restore the lake and not permanently alter the aesthetics of the lake relative to pre-

hurricane conditions for the Lumbee Cultural Center property. Potential aesthetic impacts from removal of trees and dense vegetation from the dam embankment, as required under designation as a High Hazard dam, would not be expected to be significant or adverse over the long-term. Because the lake is considered an integral part of the Lumbee Cultural Center property and cultural focal point, Alternative 1 resulting in restoration of the lake, is expected to result in long-term impacts to aesthetics of the property considered to be significant by the Lumbee Tribe.

#### **Environmental Consequences Common to Alternative 2 and No Action Alternative**

Under these alternatives, the lake would not be refilled. The former lakebed would be expected to begin revegetating with early successional swamp habitats and eventually regrowth of swamp forest habitat. The composition and appearance of the swamp forest habitats would be dependent on part on the mosaic of hydrologic conditions that would be present in the remaining channels and former lakebed, with overall view-scape eventually resembling similar adjacent forested areas. These activities would not permanently restore a cultural focal point that is considered a long-standing component of the Lumbee Cultural Center property and cultural focal point for the Lumbee Tribe.

#### **4.5.5 Public Health and Safety**

Public health and safety have been broken into two categories for this analysis: public safety and occupational health.

#### **Affected Environment**

**Public Safety.** The project is located within the floodplain of the Lumber River. Although lands adjacent to the river are largely unpopulated, flooding can lead to numerous health and safety risks for visitors and nearby residents such as exposure to contaminated water, structural damage, vehicle hazards (such as water on roads and debris), and fast-moving water, which increases the risk for falls, serious injuries, and drowning. Floods may also damage or otherwise close off access routes to hospitals and other emergency resources, causing public safety issues (e.g., I-74 Alternate, Recreation Center Road, and NC Route 74). Damage to the dam caused by sustained flooding of the Lumber River that occurred during Hurricane Matthew and subsequently by Hurricane Florence has resulted in a public safety hazard. Therefore, the Cultural Center Lake was drained in order to proceed with the necessary repairs and structural improvements.

**Occupational Health.** Occupational health risks are defined as risks arising from physical, chemical, and other workplace hazards that interfere with establishing and maintaining a safe and healthy working environment. Hazards could include chemical agents, physical agents (such as loud noise or vibration), physical hazards (such as slip, trip, and fall hazards), electricity, or dangerous machinery, and natural hazards, such as flooding, botanical hazards (poison ivy and thorned plants), or wildlife hazards (stinging insects, poisonous spiders, venomous snakes, and ticks and tickborne pathogens). Safety and occupational health issues include exposure to natural hazards, exposure to asbestos, lead, radiation, chemicals, and other hazardous materials, and injuries or deaths resulting

from a one-time accident. Safety and occupational health concerns could affect personnel working on the dam and in the surrounding area.

**Environmental Consequences**

**Environmental Consequences Common to Alternative 1, Alternative 2 and the No Action**

The project would have a long-term and moderate impact on public health and safety. Improvements to the Lumbee Cultural Center Dam, through an engineered breach or the dam improvements proposed would alleviate the risk of an unforeseen dam breach during a significant storm event. No negative impacts to public safety are anticipated as a result of the proposed Alternative 1, Alternative 2 or No Action Alternative as each approach proposes improvements to the existing dam condition.

Construction activities associated with Alternative 1 and Alternative 2 would have inherent occupational health and safety hazards that would be mitigated through standard worker protection measures. Construction workers and equipment operators would be required to wear appropriate personal protective equipment (PPE) and be properly trained for the work being performed. All solid or hazardous wastes that might be generated during construction would be removed and disposed of at a permitted facility or designated collection point. Throughout construction, the active work area in vicinity of the lake would be closed to the public. The construction contractor would be required to develop and implement a Health and Safety Plan to assure worker safety during construction activities. The contractor would also be required to schedule construction during reasonable weather to avoid risk of flooding or impacts to downstream water quality. All construction areas would be clearly marked with appropriate signage. Construction workers would be required to comply with all applicable Occupational Safety and Health Administration (OSHA) regulations, as well as other applicable regional regulations.

**4.6 Affected Environment and Potential Impact Summary**

The following table summarizes the potential impacts of the No Action Alternative and the proposed Action Alternatives and conditions or mitigation measures to offset those impacts.

**Table 2. Affected Environment and Potential Impact Summary Table.**

Resource Area	Environmental Consequences/Impacts	Proposed Mitigation	Agency Coordination/Permits Required
Air Quality	Alternative (Alt) 1 and Alt 2: There would be short-term, minor impacts to air quality during the active construction period.  No Action: There would be short-term, minimal impacts to	Alt 1 and Alt 2: Construction contractors would be required to water down construction areas when necessary; fuel-burning equipment running times would be kept to a minimum; and engines would be properly maintained.	No regulatory permitting or agency coordination is anticipated.

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	air quality as a result of employing soil stabilization measures.		
Water Quality	<p>Alt 1: There would be no or temporary/short-term, negligible impacts to water quality during active construction.</p> <p>Alt 2: There would be no or temporary/short-term, negligible impacts to water quality during active construction. Moderate downstream impacts are likely following the removal of the lake/area of surface water impoundment.</p> <p>No Action: Moderate downstream impacts are likely following the removal of the lake/area of surface water impoundment or following an inadvertent breach of the dam.</p>	Alt 1 and Alt 2: Implementation of a SWPPP; proper installation and maintenance of appropriate erosion and sediment control devices and permanent soil stabilization measures will minimize impacts to water quality.	The construction contractor will be responsible for implementation of the NPDES Construction Stormwater Program General Permit (NCG010000). Compliance with the applicable CWA Section 401 and Section 404 permit conditions will be required.
Wetlands and Waters of the U.S.	<p>Alt 1 and Alt 2: There would be both permanent and temporary, minor impacts to waters of the U.S. including wetlands.</p> <p>No Action: The No Action would not result in increased impacts to wetlands for waters of the U.S. including wetlands.</p>	<p>Alt 1 and Alt 2: Proper installation and maintenance of erosion and sedimentation control measures during construction and implementation of appropriate BMPs for post construction will minimize impacts to wetlands and waters of the U.S.</p> <p>The Lumbee Tribe will continue implement all conditions of the CWA Section 404 and Section 401 permits obtained for authorized impacts to waters of the U.S. including wetlands. All provisions of the CWA Section 404 and Section 401 Permit will be followed.</p>	Authorization under NWP 3 – Maintenance has been obtained by the Tribe for approximately 0.09 acre of wetland impacts and a total of 225 linear feet of stream impacts in order to proceed with the proposed repair work, as described under Alt 1. The Tribe must coordinate with the NC DWR and the USACE in order to amend or modify the existing permit authorization due to any changes in scope.
Floodplains	Alt 1, Alt 2 and No Action: There would be no or negligible impacts to the natural and beneficial values of the floodplain adjacent to the Lumber river.	None. Refer to coordination and permits required.	Consultation with NC Dam Safety will continue until damages to the dam are remediated. The Floodplain Development Permit from Robeson County, that was obtained on August 29, 2018 for dam repairs as

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			described under Alt 1. As required, the Lumbee Tribe will provide a Letter of Map Revision (LOMR) following the dam improvements and based on as-built surveys. Alt. 2 would require a separate Floodplain Development Permit from Robeson County and LOMR following as-built surveys.
Threatened and Endangered Species and Critical Habitat	Alt 1, Alt 2 and No Action: There would be no, or negligible effects expected to federally listed endangered or threatened species. There would be no effects to critical habitat.	None required.	FEMA initiated consultation on the proposed undertaking with the USFWS February 25, 2020 (Appendix D). By email response dated February 26, 2020, the USFWS concurred with FEMA's determination that the completed project may affect but is not likely to adversely affect Threatened and Endangered Species.
Wildlife and Aquatic Resources	Alt 1: Long-term, impacts to the number and diversity of warmwater game fish as well as associated traditional fishery are likely as a result of repairing the dam and refilling the lake.  Alt 2 and No Action: Based on continuous existence of the lake from 1961 until breaching for hurricane damage repairs, with at least intermittent presence of previous dams in this general location going back approximately 200 years, Alternative 2 and the No Action are likely to decrease traditional recreational fishing opportunities, while increasing non-game fish species populations adapted to swamp habitats.	Alt 1 and Alt 2: The Lumbee Tribe will implement appropriate avoidance, minimization, and mitigation recommendations developed in consultation with the USFWS, as applicable during construction to minimize impacts to wildlife and aquatic resources.	Based on USFWS correspondence received on February 25, 2020 (Appendix D), no further coordination, permitting, or minimization efforts will be required.
Historic Properties	Alt 1, Alt 2, and No Action: Based on results of an archaeological investigation	Alt 1 and Alt 2: Regarding future ground-disturbing activities within the	FEMA initiated consultation on the proposed undertaking

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	<p>undertaken in 2020, no archaeological sites within the APE for these alternatives are considered eligible for listing in the NRHP. None of the standing structures currently on the property, including the earthen dam, are listed, or eligible for listing in the NRHP; therefore, no impacts to historic architecture are anticipated. Therefore, there is a finding of No Historic Properties Affected for this undertaking in accordance with 36 CFR 800.4(d)(1).</p>	<p>project area (see Appendix C for detailed conditions): Avoid impacts to 19<sup>th</sup> century McNeill cemetery through preservation in-place; Any future ground disturbance associated with construction activities for the proposed undertaking will be monitored by a Secretary of the Interior (SOI) qualified archaeologist; If human remains or intact archaeological deposits are uncovered during any future activities, work in the vicinity of the discovery will stop immediately and all reasonable measures to avoid or minimize harm to the finds will be taken; Prior to conducting further repairs that require fill, applicant must identify the source and location of fill material that is obtained offsite and provide this information to FEMA and SHPO; and Any changes to the approved Scope of Work will require submission to, and evaluation and approval by FEMA, SHPO, and relevant THPOs, prior to initiation of any work, for compliance with Section 106.</p>	<p>with SHPO, the Seminole Nation of Oklahoma, the Catawba Indian Nation, and the Shawnee Tribe, in letters dated March 3, 2020 (Appendix C). FEMA continued consultation with the same parties in letters dated August 26 and 27, 2020, based on results of additional archeological investigations undertaken in 2020. By letter dated September 8, 2020, SHPO concurred with FEMA's determination that the proposed undertaking will have no adverse effect on NRHP-eligible historic properties. The consulted Tribal Nations either responded with replies of no immediate concerns or did not provide additional comments.</p>
<p>Native American and Religious Cultural Sites</p>	<p>Alt 1: These activities would restore for long term, a use of a facility that has had a long-standing cultural significance to the Lumbee Tribe.</p> <p>Alt 2 and No Action Alternative: These Alternatives would not restore for long term, a use of a facility that has had a long- standing cultural significance to the Lumbee Tribe.</p>	<p>None required.</p>	<p>FEMA initiated consultation on March 3, 2020, and continued consultation on August 27, 2020, regarding the proposed undertaking with three Native American tribes: the Seminole Nation of Oklahoma, the Catawba Indian Nation, and the Shawnee Tribe (Appendix C). The consulted Tribal Nations either responded with replies of no immediate concerns or did not provide additional comments.</p>
<p>Environmental Justice</p>	<p>Alts 1: There would be moderate, long-term positive impacts on minority or low-</p>	<p>None required.</p>	<p>No regulatory permitting or agency coordination is</p>

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	<p>income populations by restoring the lake for recreational opportunities.</p> <p>Alt 2 and No Action: There would be moderate, long-term negative impacts on minority or low-income populations as a result of removing the lake and associated low-cost recreational opportunities.</p>		<p>anticipated. FEMA will be posting a public notice as required.</p>
Economic Development	<p>Alt 1: The project area does not contain areas considered to be primarily used for the purposes of economic development. Short-term, minor, economic benefits would likely result from construction activities associated with dam repairs. No long-term significant impacts to economic development in the area are anticipated.</p> <p>Alt 2: No adverse, long-term, or significant impacts to economic development in the area is anticipated. Short-term, minor, economic benefits would likely result from construction activities associated with creating the permanent dam breach.</p> <p>No Action: No long-term or short-term impacts to economic development in the area are anticipated as a result of leaving the lake in a drained state.</p>	None required.	<p>No regulatory permitting or agency coordination is anticipated.</p>
Hazardous Materials	<p>Alt 1, Alt 2, and No Action: No hazardous materials or waste impacts are anticipated</p>	None required.	<p>No regulatory permitting or agency coordination is anticipated.</p>
Aesthetics	<p>Alt 1: Restoration of the lake is expected to result in moderate, long-term benefits to aesthetics of the Lumbee property. Potential short-term aesthetic benefits for the tribe during construction activity would be negligible while the lake and dam are being restored.</p> <p>Alt 2 and No Action: A loss of</p>	<p>No mitigation is proposed to address short-term negligible impacts during active construction.</p>	<p>No regulatory permitting or agency coordination is anticipated.</p>

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	lake is expected to result in moderate, long-term, and moderate impacts to aesthetics of the Lumbee property. Potential short-term impacts to aesthetics during construction activity would be negligible.		
Public Health and Safety (Public Safety and Occupational Health)	<p>Alt 1 and Alt 2: There would be minor, long-term, moderate impacts on public health and safety and minor, short-term, negative occupational health impacts.</p> <p>No Action: No short-term or long-term impacts on public health and safety are anticipated as a consequence of the No Action.</p>	<p>Alt 1 and Alt 2: Construction workers and equipment operators will be required to wear appropriate PPE and be properly trained for the work being performed.</p> <p>All solid or hazardous wastes generated during construction will be removed and disposed of at a permitted facility or designated collection point.</p> <p>The construction contractor will be required to develop and implement a Health and Safety Plan to assure worker safety during construction activities.</p> <p>The contractor will schedule construction during reasonable weather to avoid risk of flooding.</p> <p>Workers will be required to comply with applicable OSHA regulations, as well as other applicable regulations.</p> <p>Construction areas will be well-marked and fencing, signage, or barriers will be used to the extent possible to prevent unauthorized access into active work areas.</p>	No regulatory permitting or agency coordination is anticipated.

**5.0 CUMULATIVE IMPACTS**

The Counsel of Environmental Quality (CEQ) regulations for implementing NEPA define cumulative impacts as: “impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).” In accordance with NEPA and to the extent reasonable and practical, this EA considers the effect of the No Action Alternative, Proposed Action (Alternative 1), and Action Alternative 2 (Alternative 2) combined with other actions that have occurred, are currently occurring or are proposed in the future within the vicinity of the Lumbee Cultural Center dam. Robeson County, North Carolina, where the Lumbee tribe resides, shows that there has been a 2.7% decline in population over the past nine years and in recent years, minimal development within the County and in vicinity of the Lumbee Cultural Center. Based on surrounding land use and development trends, environmental

resources within the project vicinity are not particularly vulnerable to cumulative impacts that may result from the dam repairs and improvements proposed.

The Lumbee Cultural Center dam and lake span approximately 93-acres, all of which is surrounded by rural residential and agricultural land use. Based on geospatial parcel data, the project area has seen minimal population growth since 1993. In the mid-nineties, residential development slightly increased and agricultural land-use slightly decreased, which can be attributed to the residential development. The Lumbee Tribe is unaware of any proposed development projects in the area within the reasonably foreseeable future. LJB, on behalf of the Tribe, has contacted the Town of Maxton, Robeson County and NC Department of Transportation to review plans for future development within the vicinity of the dam. Based on discussions with these Local and State Agencies, the Tribe has determined that there are currently no active development projects or roadway improvement projects planned in vicinity of the dam for the reasonably foreseeable future. Recent maintenance activities within the project area have included culvert repair work that was conducted following Hurricane Florence by the CSX Railroad to address a crossing that washed out at Little Juniper Branch. The only reasonably foreseeable future actions within the project area include continued agricultural use, nominal rural residential development, and continued use of the Lumbee Cultural Center by the Lumbee Tribe for recreation, events, and cultural gatherings. In August of 2019, the Lumbee Tribe proposed improvements to the Cultural Center to expand utilization at the lake and Cultural Center. Conceptual plans included additional parking for recreational visits, camp sites and hiking trails that would be consistent with current land use. Funding has not yet been secured for the proposed Cultural Center improvements and are not likely to result in cumulative impacts to any environmental resources when combined with incremental effects of the proposed project.

Alternative 1 would contribute to long-term impacts to aquatic resources by restoring the lake to pre-disaster pool levels. The restored, 93-acre lake would continue to provide surface water impoundment within the Lumber River watershed and natural pollution mitigation by allowing sunlight and bacterial processes sufficient time to breakdown of organic pollutants (e.g., nitrogen and phosphorus). These organic compounds that contribute to nutrient overloading and eutrophication primarily occur within the Lumber River watershed as a result of surface run-off from surrounding agricultural land use. Residential properties may also contribute to a small fraction of the nutrient load within the 37.1 square mile drainage area of the Cultural Center lake. Based no alterations in surrounding land use are anticipated as a direct result of dam repairs. Based on development trends in the region, existing land use, and the historic presence of the lake since 1961, no cumulative impacts to environmental resources are anticipated as a result of Alternative 1.

As described under Alternative 2, a breach of the dam would result in a complete loss of the Lumbee Cultural Center lake. The No Action Alternative would involve terminating construction prior to completing all repairs outstanding under the scope for Hurricane Florence and stabilizing disturbed areas as per the NPDES Construction Stormwater

Program General Permit (NCG010000). Under the No Action Alternative, the primary outlet structure gates would remain open, and the lake would remain drained. The difference in peak flow rate between an engineered breach (Alternative 2) and a dam repair scenario (Alternative 1) would be insignificant (Cultural Center Hydraulic Assessment, Appendix B). However, an engineered breach would allow continuous flow through perennial channels from upstream tributaries directly into the Lumber River and the lakebed would then return to its natural conditions as it existed preconstruction over 60 years ago – a low flow swamp system. There would only be intermittent impoundment upstream of the existing embankment during and directly following rain events in the engineered breach scenario. Pollutants that affect water quality within the lake and Lumber River watershed are chemical compounds found in fertilizers, pesticides and herbicides as the site and the majority of the supply waters are adjacent to ongoing agricultural operations. With the conversion back to a natural low flow swamp, the Lumber River watershed will potentially face increases in organic and inorganic pollutants due to a decrease in impoundment area and impoundment time, both factors in the facilitation of natural bacterial remediation, which is beneficial in an area heavily surrounded by agricultural land use. Essentially this conversion of the lake back to its natural state poses the ramifications of incremental impacts to water quality. These incremental impacts associated with Alternative 2, combined with ongoing and surrounding agricultural practices, may result in cumulative impacts to water quality downstream of the dam. Although an early successional swamp habitat can aide in the recycling of nitrogen and phosphorus and benefit water quality, increases in eutrophication downstream within the Lumbee River are likely following the removal of the lake until regrowth and establishment of the early successional swamp habitat. The timeframe for the regrowth process could take up to five years and is subjective due to environmental and climatological conditions, such as but not limited to: soil types, rainfall, drought and temperature variations.

## **6.0 AGENCY COORDINATION, PERMITS AND PUBLIC INVOLVEMENT**

FEMA is the lead federal agency for conducting the NEPA compliance process for the Lumbee Tribe of North Carolina’s proposed Lumbee Cultural Center dam project. It is the goal of the lead agency to expedite the preparation and review of NEPA documents and to be responsive to the needs of the community and the purpose and need of the proposed action while meeting the intent of NEPA and complying with all NEPA provisions.

### **6.1 Agency Coordination**

The following agencies and organizations were contacted or consulted during the environmental permitting process or during preparation of this EA. Letters and correspondence sent to regulatory agencies, SHPO, and Native American Tribes including responses received to date are provided in Appendix C and Appendix D, respectively.

- Catawba Indian Nation
- Lumbee Tribe of North Carolina

- North Carolina Department of Natural and Cultural Resources, State Historic Preservation Office (SHPO)
- North Carolina Department of Public Safety, Emergency Management
- North Carolina Division of Energy, Mineral and Land Resources, Dam Safety Program
- North Carolina Division of Water Resources
- Seminole Nation of Oklahoma
- Shawnee Tribe
- U.S. Army Corps of Engineers (USACE)
- U.S. Fish and Wildlife Service (USFWS)

Consultations with the USFWS are discussed in Section 4.3, and SHPO and Native American tribes are discussed in Section 4.4.

## 6.2 Public Involvement

As part of NEPA compliance, the Lumbee Tribe will notify the public of the availability of this Draft EA through publication of a public notice in the major local daily published newspaper of general circulation, The Robesonian (refer to Appendix E for draft public notice). FEMA will conduct a 30 calendar-day public comment period starting on the first publication date of the public notice.

Prior to the public notice for the Draft EA, FEMA completed the Eight Step Planning Process for Floodplain/Wetland Management (8-Step Assessment) and sent final public notice to the applicant for posting for 30 calendar days. The 8-Step Assessment was posted on the Lumbee Tribe of North Carolina Facebook Page on May 8, 2020, in The Robesonian on May 9, 2020, and provided to neighboring landowners through fliers. The public comment period ended on July 8, 2020. Twelve comment responses were received. The public comments are compiled and presented in Appendix E. The public comments were unanimously in favor of restoring the dam and lake and dam, and most specifically referenced the FEMA-funded alternative, which was described as Alternative 2 in the notice; the public notice also described Alternative 1 as the No Action Alternative and Alternative 3 as the engineered breach alternative.

Additional public information activities by the Tribe regarding the dam project have included:

- Newspaper Articles:
  - The Robesonian, March 9, 2020 (*Tribe gets \$2M, no-interest loan to keep dam project moving forward*)<sup>10</sup>
  - The Robesonian, December 13, 2019 (*Work ongoing to re-open Cultural Center Lake*)<sup>11</sup>

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<sup>10</sup> <https://www.robsonian.com/news/132667/tribe-gets-2m-no-interest-loan-to-keep-dam-project-moving-forward>

<sup>11</sup> <https://www.robsonian.com/news/129978/work-ongoing-to-reopen-cultural-center-lake>

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- The Robesonian, August 15, 2019 (*Tribe gets \$3.2 million for repairs to Cultural Center Dam*)<sup>12</sup>
- Television News Reports:
  - WBTW News, March 7, 2020 (*State funds to help Lumbee Tribe continue dam work*)<sup>13</sup>
  - WPDE News, December 4, 2019 (*Repairs underway on Lumbee Tribe Cultural Center lake in Robeson County*)<sup>14</sup>
  - WMBF News, December 3, 2019 (*Repairs to be made to sacred Lumbee Tribe dam to prevent flooding*)<sup>15</sup>
- Tribal Community Meetings:

Meeting notes provided by Tammy Maynor provide a summary of the tribal community meetings and are provided in Appendix E. In summary, during a series of tribal community meetings following Hurricane Florence, Chairman Harvey Godwin and Dr. Freda Porter described the damage that was done to the Cultural Center, specifically the dam, and how the water overtopped and flooded the entire Cultural Center. Chairman Godwin explained that the Lumbee Tribe was awarded funding through FEWA-PA to address the dam and make it safe for the people downstream and described the relationship between the Lumbee Tribe and Federal Government as a result of the hurricanes. Chairman Godwin encouraged Tribal Members to watch the videos that he was planning to put out that would address the Cultural Center Dam and progress on repairs. Concerns and questions from the public generally were summarized as falling into five general topics: 1) when the Cultural Center would be expected to open; 2) when would they be able to fish again for food; 3) when the dam repairs would begin; 4) what would be different about the dam; and 5) why the process was taking so long. The tribal community meetings were held on the following dates:

  - District 6 Community Meeting, May 9, 2019
  - District 5 Community Meeting, April 25, 2019
  - District 13 Community Meeting, April 11, 2019
  - District 11 Community Meeting, March 26, 2019
  - District 8 Community Meeting, March 18, 2019
  - Community Outreach and Food Insecurity Event, March 16, 2019
  - District 14 Community Meeting, February 28, 2019

<sup>12</sup> <https://www.robsonian.com/news/126306/tribe-gets-3-2-million-for-repairs-to-cultural-center-dam#:~:text=PEMBROKE%20%E2%80%94%20The%20Lumbee%20Tribal%20Council,Tribe%20Cultural%20Center%20in%20Maxton.&text=The%20tribe%20wants%20to%20expand,the%20lake%20and%20Cultural%20Center.>

<sup>13</sup> [https://www.wbtw.com/local-news/state-funds-to-help-lumbee-tribe-continue-dam-work/#:~:text=PEMBROKE%2C%20NC%20\(WBTW\)%20%E2%80%93,Carolina%20continue%20a%20recovery%20project.&text=The%20project%20will%20repair%20damages,in%20an%20additional%20emergency%20spillway.](https://www.wbtw.com/local-news/state-funds-to-help-lumbee-tribe-continue-dam-work/#:~:text=PEMBROKE%2C%20NC%20(WBTW)%20%E2%80%93,Carolina%20continue%20a%20recovery%20project.&text=The%20project%20will%20repair%20damages,in%20an%20additional%20emergency%20spillway.)

<sup>14</sup> [https://wpde.com/news/local/repairs-underway-on-lumbee-tribe-cultural-center-lake-in-robeson-county#:~:text=Repairs%20underway%20on%20Lumbee%20Tribe%20Cultural%20Center%20lake%20in%20Robeson%20County,-by%20Tonya%20Brown&text=ROBESON%20COUNTY%2C%20N.C.%20\(WPDE\),the%20tribe's%20most%20sacred%20places.](https://wpde.com/news/local/repairs-underway-on-lumbee-tribe-cultural-center-lake-in-robeson-county#:~:text=Repairs%20underway%20on%20Lumbee%20Tribe%20Cultural%20Center%20lake%20in%20Robeson%20County,-by%20Tonya%20Brown&text=ROBESON%20COUNTY%2C%20N.C.%20(WPDE),the%20tribe's%20most%20sacred%20places.)

<sup>15</sup> <https://www.wmbfnews.com/2019/12/04/repairs-be-made-sacred-lumbee-tribe-dam-prevent-flooding/>

- District 10 Community Meeting, February 26, 2019
- Lumbee Tribe of North Carolina Website:<sup>16</sup>
  - Lumbee.com, February 15, 2017 (*ATTENTION: Limited Access to the North Carolina Indian Cultural Center Effective Immediately*)<sup>17</sup>
- Lumbee Tribe of North Carolina Facebook Site:<sup>18</sup>
  - Facebook posting, May 8, 2020 (Initial Public Notice of FEMA intent to reimburse Lumbee Tribe of North Carolina through NCEM as a sub-recipient for eligible costs for damages associated with Hurricane Florence under the disaster declaration FEMA DR-4393-NC signed by the President on September 14, 2018)
  - Facebook posting, January 12, 2020 with YouTube video (*Lumbee Tribe Cultural Center Update January 2020*)
  - Facebook posting, December 10, 2019 (link to WMBF News story)
  - Facebook posting, December 10, 2019 (reminder of Lumbee Tribe Cultural Center closure due to dam restoration construction)
  - Facebook posting, December 1, 2019 with YouTube video (*Lumbee Tribe Cultural Center Lake Dam Repair Project*)
  - Facebook posting, November 21, 2019 (notice to Tribal members of Lumbee Tribe Cultural Center closure due to dam restoration construction)
  - Facebook posting, May 15, 2018 (notice of *Cultural Center Discussions at the 2018 Lumbee Nation Economic Summit*)

### 6.3 Permits

In accordance with applicable local, state, and federal regulations, the applicant is responsible for acquiring any legally required and necessary permits prior to commencing construction at the proposed project site. Agency coordination and permit requirements are summarized in Table 2 in Section 4.6.

Permits and approvals applicable to this project, with date received or completed by the applicant include:

- USFWS Concurrence (February 26, 2020)
- NCDEQ Certificate of Approval [Dam Safety] (July 15, 2019)
- NCDEQ Jurisdictional and Hazard Classification Determination (April 16, 2019)
- Robeson County Community Development Permit (August 30, 2018)
- No-Rise Certification (August 10, 2018)
- USACE Section 404 Nationwide Permit (NWP) Number 03 – Maintenance and NWP Number 13 – Bank Stabilization, Pre-construction Notification (May 22, 2018)
- USACE Approved Jurisdictional Determination [Action Id. SAW-2018-00590] (March 29, 2018)

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<sup>16</sup> <https://www.lumbee Tribe.com/>

<sup>17</sup> <https://www.lumbee Tribe.com/single-post/2017/02/15/attention-limited-access-to-the-north-carolina-indian-cultural-center-effective-immediate>

<sup>18</sup> <https://www.facebook.com/lumbee Tribenc/>

Copies of these permits and approvals are provided in Appendix D.

A LOMR will be submitted after construction is complete. The LOMR will use as-built information.

A final EAP will be submitted to NC Dam Safety prior to completion of construction. The approved EAP will be required before authorization to impound water will be provided.

## 7.0 MITIGATION

Mitigation measures or BMPs presented in Section 4.0 Affected Environment and Potential Impacts are summarized in Table 3 below. Mitigation measures presented in this section serve to offset potential impacts to environmental resources that would result from the proposed project.

**Table 3. Mitigation Summary Table.**

Affected Environment	Alternative 1	Alternative 2
Air Quality	Construction contractors would be required to water down construction areas when necessary. Fuel-burning equipment running times would be kept to a minimum; idling of equipment would be minimized. Equipment would be properly maintained.	Same as Alternative 1.
Water Quality	A site-specific SWPPP would be implemented. Appropriate erosion and sediment control devices would be properly installed and maintained during construction and repair activity to minimize impacts to water quality.	Same as Alternative 1.
Wetlands and Waters of the U.S.	Erosion and sediment control measures would be installed during construction to minimize impacts (e.g., sedimentation) to wetlands and downstream waters of the U.S. The Lumbee Tribe would continue to implement all conditions of the applicable CWA Section 404/401 permit obtained for authorized impacts to waters of the U.S. including wetlands. All provisions and special conditions of the CWA Section 404/401 Permit would be abided by.	Same as Alternative 1.
Historic Properties	The 19 <sup>th</sup> century McNeill cemetery would be avoided and preserved in-	Same as Alternative 1.

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	<p>place. Any future ground disturbance associated with construction activities would be monitored by a Secretary of the Interior (SOI) qualified archaeologist. If human remains or intact archaeological deposits are uncovered during any future activities, work in the vicinity of the discovery would stop immediately and all reasonable measures to avoid or minimize harm to the finds will be taken. Prior to conducting further repairs that require fill, the Lumbee Tribe would identify the source and location of fill material that is obtained offsite and provide this information to FEMA and SHPO (as required). Any changes to the FEMA-approved Scope of Work would require submission to, and evaluation and approval by FEMA, SHPO, and relevant THPOs, prior to initiation of any work, for compliance with Section 106.</p>	
<p>Public Health and Safety (Public Safety and Occupational Health)</p>	<p>Construction workers and equipment operators would be required to wear appropriate PPE and be properly trained for the work being performed. All solid or hazardous wastes generated during construction would be removed and disposed of at a permitted facility or designated collection point. The construction contractor would be required to develop and implement a Health and Safety Plan to assure worker safety during construction activities. The contractor would schedule construction during reasonable weather to avoid risk of flooding. Workers would be required to comply with applicable OSHA regulations, as well as other applicable regulations. Construction areas would be well-marked and fencing, signage, or barriers will be used to the extent possible to prevent unauthorized access into active work areas.</p>	<p>Same as Alternative 1.</p>

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## 9.0 LIST OF PREPARERS

**Table 4. List of Preparers**

<b>Name</b>	<b>Organization</b>	<b>Role</b>	<b>Education</b>	<b>Years of Experience</b>
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Kristen Morris	FEMA	Environmental Specialist	B.S. Environmental Sciences, UNC Wilmington	4
Alisa Sauvageot	FEMA	Environmental Floodplain Specialist, CFM	B.A. Environmental Design, Architecture (BEDA) NC State University	27
Amy Black	LJB Inc.	Water Resources Engineer, P.E.	B.S. Civil Engineering, NC State University	17
Jesse Byrd	LJB Inc.	Project Manager/EA Development	B.A. Environmental Studies, UNC Wilmington	14
Jon Giles	LJB, Inc.	Regulatory and Water Resources	B.A. Geography, UNC Greensboro	21
Kevin Markham	ESI/Terracon	Biological Resources	B.S. Marine Biology, UNC Wilmington	32
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## **Appendix A: Figures and Mapping**

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## **Appendix B: Technical Reports**

## **Appendix C: SHPO and Native American Tribe Consultation**

## **Appendix D: Permitting and Agency Coordination**

## **Appendix E: Public Involvement**

## **Appendix F: Project Planning Documents**