ISSUE DATE: 23 July 2013

US Army Corps of Engineers ®
Memphis District

PUBLIC NOTICE

EXPIRATION DATE: 23 August 2013

NOTICE OF AVAILABILITY

Draft Environmental Assessment (EA), Draft Finding of No Significant Impact (FONSI),
and
404 (b)(1) Evaluation

REPLY TO:
ATTN: Leonard Pitcher
Environmental Section
U.S. ARMY CORPS OF ENGINEERS
167 North Main Street, Room B-202
Memphis, Tennessee 38103-1894
Tele: (901) 544-00705
Fax: (901) 544-3955
E-mail: Leonard.J.Pitcher@USACE.army.mil

TITLE: Dyer County Little Levee Repair

AUTHORITY: The U.S. Army Corps of Engineers (USACE) has authority under Public Law 84-99 (PL 84-99), Flood Control and Coastal Emergencies (FCCE) (33 U.S.C. 701n) (69 Stat. 186) for emergency management activities. Under PL 84-99, the Chief of Engineers, acting for the Secretary of the Army, is authorized to undertake activities, including rehabilitation of flood control works threatened or destroyed by flood. The proposed action is authorized as part of PL 84-99.

LOCATION: The proposed project work is separated into 3 segments along the 20-mile reach of the Dyer County Little Levee in Dyer County, Tennessee (Figure 1). These segments are hereafter referred to as the Northern Levee Realignment (Figures 2 and 3), the Choctaw Levee Realignment (Figure 4), and the Culvert Replacement at the Obion River (Figure 5). The Northern Levee reach of the Dyer County Little Levee is located along Bungie Road immediately north of Interstate-155 (I-155) as it crosses the Mississippi River into Dyer County, Tennessee. The Choctaw Levee reach of the Dyer County Little Levee is located off of Tennessee Highway 104 at the Choctaw Transportation Company in Dyer County, Tennessee. The location of the culvert replacement is within Dyer County Little Levee approximately 300 feet to west of Tennessee Highway 181 where the highway crosses the Obion River in Dyer County, Tennessee.

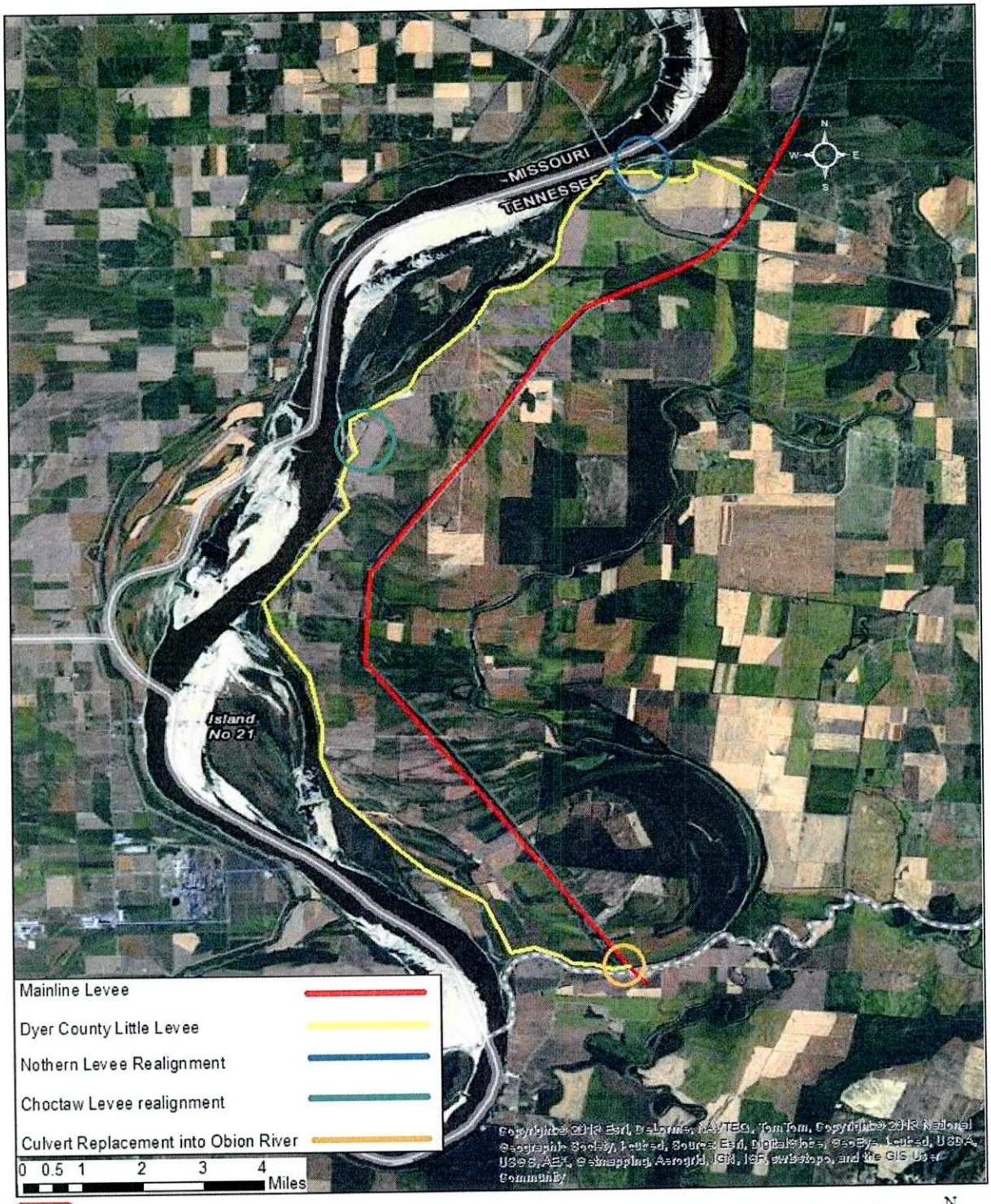

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Figure 1. The three proposed repair locations on the Dyer County Little Levee are shown circled on the map. The existing Dyer County Little Levee alignment is highlighted in yellow. The Mainline Levee is highlighted in red.

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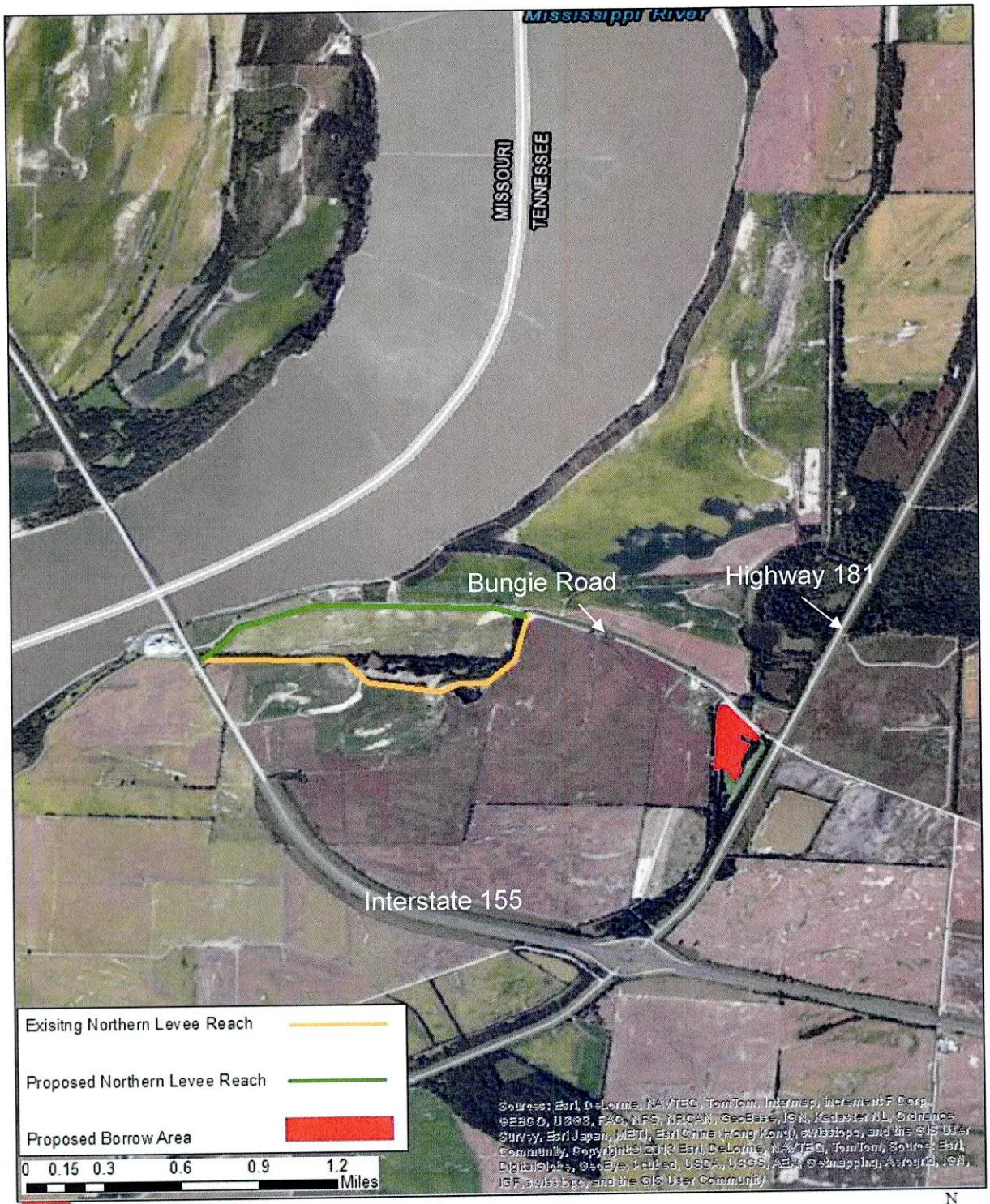

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Figure 2. The existing Northern Levee reach of the Dyer County Little Levee is highlighted in orange on the map. The proposed Northern Levee alignment is highlighted in green. The proposed borrow area for the Northern Levee alignment is highlighted in red.

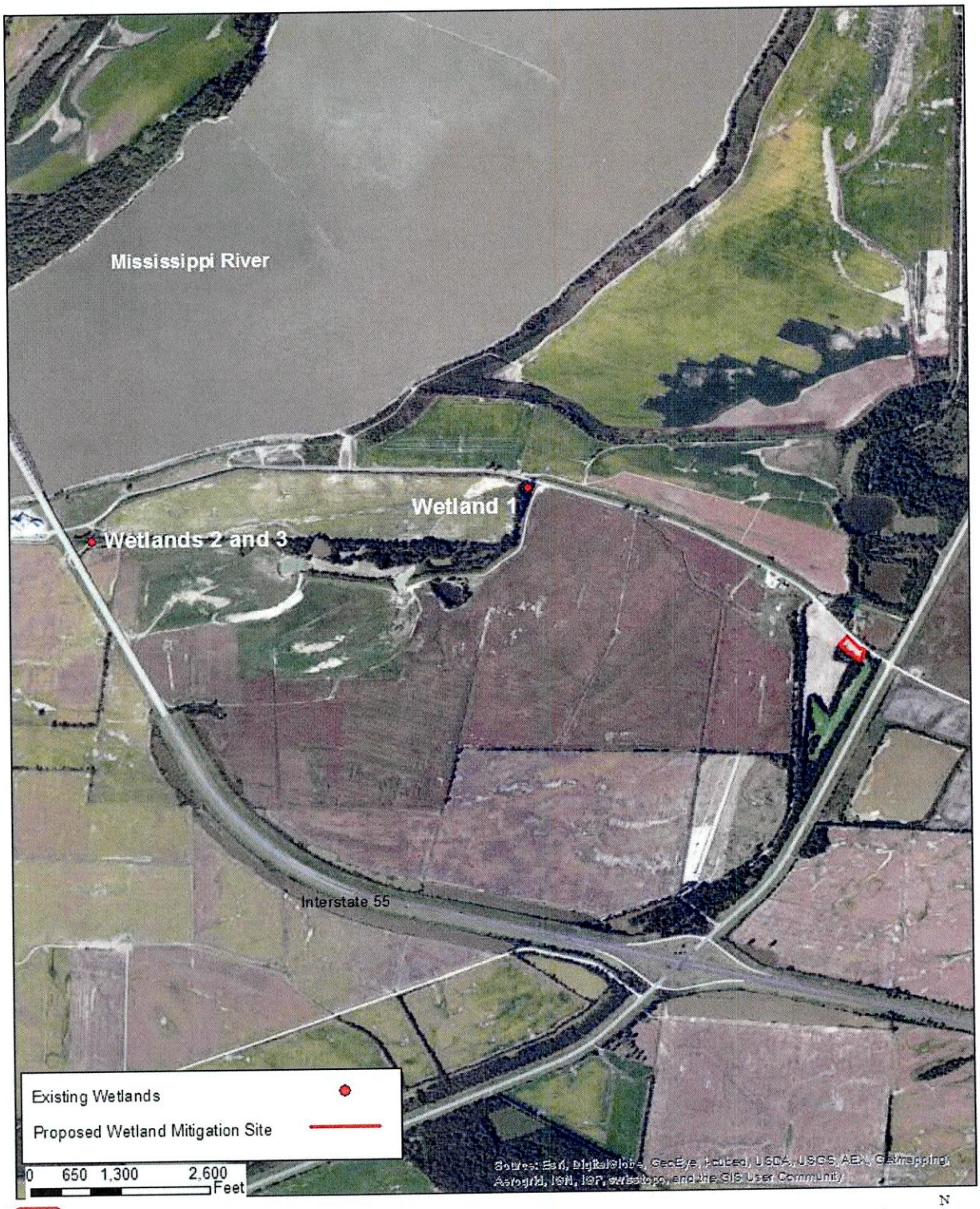

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Figure 3. Wetlands totaling 0.35 acres would be filled in order to realign the Northern Levee reach of the Dyer County Little Levee, Dyer County, TN. The proposed mitigation site is highlighted in red and totals approximately 1.4 acres.

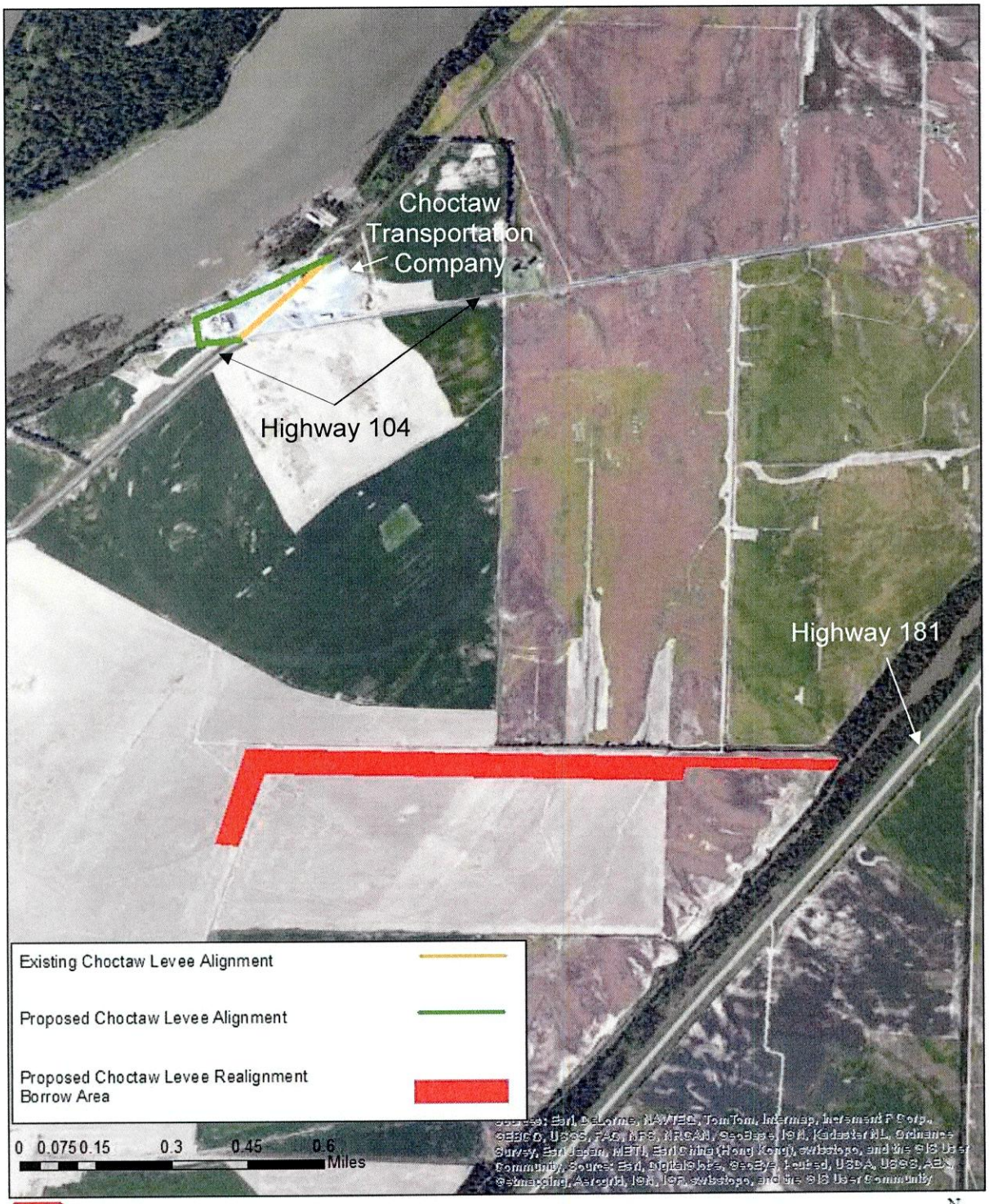

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Figure 4. The existing Choctaw Levee reach of the Dyer County Little Levee is highlighted in orange on the map. The proposed Choctaw Levee alignment is highlighted in green. The proposed borrow area for the Choctaw Levee alignment is highlighted in red.

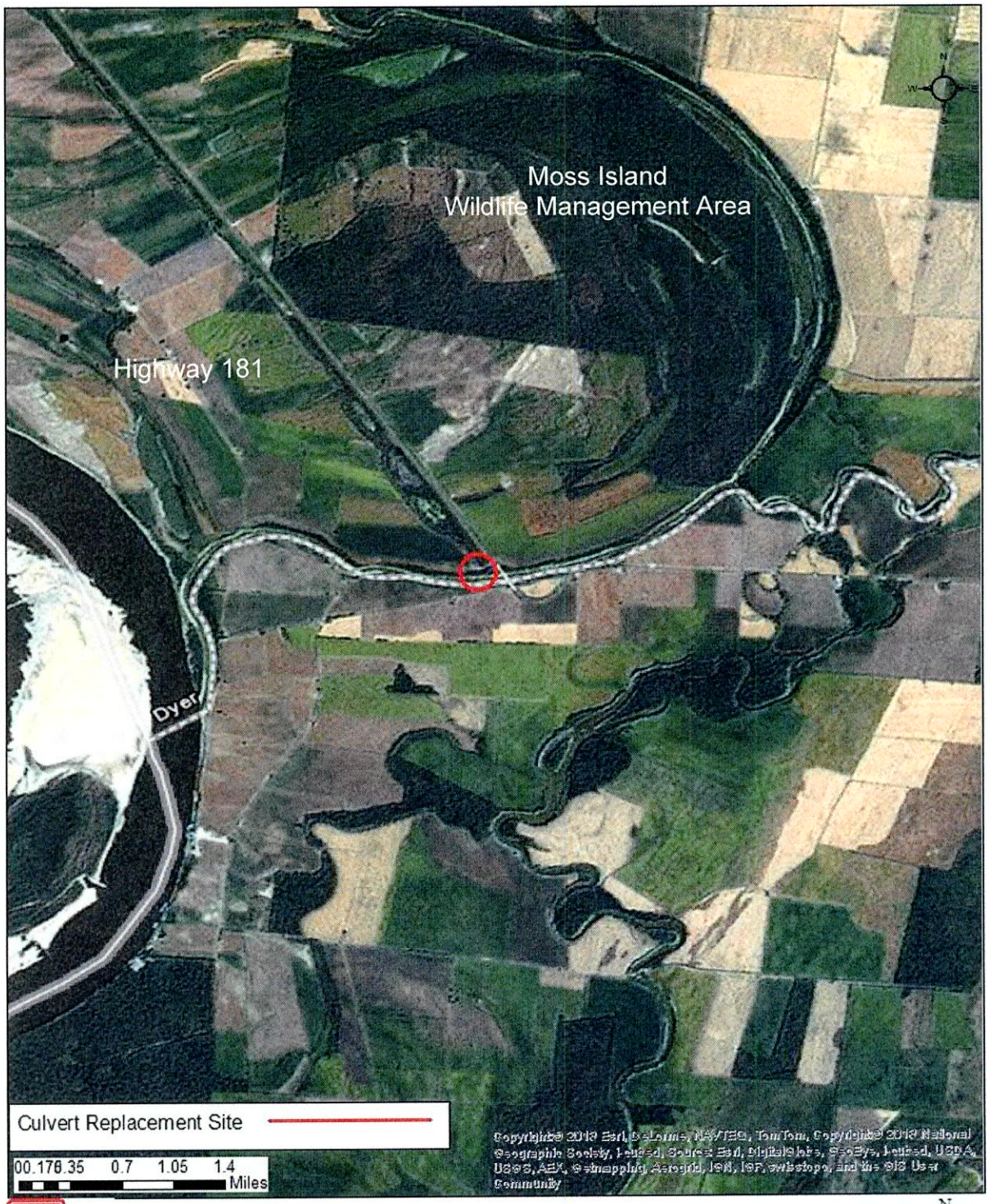

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Figure 5. The proposed culvert replacement location on the Dyer County Little Levee is shown circled on the map.

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TO WHOM IT MAY CONCERN: USACE has authority under Public Law 84-99 (PL 84-99), Flood Control and Coastal Emergencies (FCCE) (33 U.S.C. 701n) (69 Stat. 186) for emergency management activities. Under PL 84-99, the Chief of Engineers, acting for the Secretary of the Army, is authorized to undertake activities, including rehabilitation of flood control works threatened or destroyed by flood. The Dyer County Little Levee Repair project is authorized as part of PL 84-99. Pursuant to the National Environmental Policy Act of 1969, as amended, and the Clean Water Act, the U.S. Army Corps of Engineers, Memphis District is issuing this notice of the intention to repair the Dyer County Little Levee in Dyer County, Tennessee.

PURPOSE: The record flood of 2011 damaged the privately owned Dyer County Little Levee in west Tennessee. This levee protects approximately 12,000 acres of agriculturally developed land, 30 homes, 2 businesses, a church and 41 farm buildings. The total value of the structures is estimated at $2,718,000. It is also estimated that more than 80 people reside within the area. If the levee is not repaired, more damages are expected to agricultural lands creating a strain on the major industry of the area and residential dwellings with the next high water event.

DESCRIPTION OF WORK: The proposed project work is separated into 3 segments along the 20-mile reach of the Dyer County Little Levee in west Tennessee. These segments are hereafter referred to as the Northern Levee Realignment, the Choctaw Levee Realignment, and the Culvert Replacement at the Obion River (Figure 1).

Northern Levee Realignment: The proposed action consists of constructing a levee on a new alignment north and west (riverward) of the existing section of the flood damaged Dyer County Little Levee referred to as the Northern Levee (Figure 2). The new levee alignment would stretch approximately 5,700 linear feet (1.08 miles) and replace the damaged 1.2-mile Northern Levee. The approximately 141,000 cubic yards of earthen material required to construct the new levee would be obtained from excavating the 1.2-mile reach of the existing flood-damaged levee. If additional material is required to complete construction of the proposed levee realignment, an approximately 11.5-acre borrow site within proximity to the construction area would be utilized. The proposed realigned levee would be constructed to a full levee cross section to a 15-foot crown width and 3-foot horizontal to 1-foot vertical (3:1) side slopes.

Approximately 1.25 acres of BLH forest is expected to be permanently impacted by tree clearing due to the Northern Levee realignment. Three wetlands totaling approximately 0.35 acres of permanent impacts to wetlands are included in the 1.25 acres of BLH forest. The wetlands would be filled in order to maintain the structural stability of the proposed levee as the wetland sites are located within low-lying areas of the proposed Northern Levee realignment. The remaining 0.9 acres of BLH forest were determined to be non-wet by representatives from the USACE Regulatory Program.

Previous BLH evaluations conducted by USACE biologists in forests with tree species and forest maturity similar to the proposed project area using the Habitat Evaluation System and the Habitat Evaluation Procedures yielded an average compensatory mitigation ratio of 2.3 acres of mitigation to 1 acre of impacts (2.3:1). Therefore, in-kind compensatory mitigation for adverse

impacts to the 0.9 acres of non-wet BLH forest would be conducted at a site to be determined at a ratio of 2.3:1, resulting in the restoration of approximately 2 acres of cleared land to BLH forest. Site acquisition for the non-wet BLH mitigation would occur concurrently with construction.

During discussions with the TDEC personnel, it was determined that a mitigation ratio of 2 acres of mitigation to 1-acre of impacts (2:1) was appropriate as mitigation would be conducted on prior-converted cropland. In-kind compensatory mitigation to offset adverse impacts to the 0.35 acres of BLH forested wetlands would be conducted at the proposed Northern Levee borrow area at a ratio of 2:1; therefore, approximately 0.7 acres of prior converted cropland would be restored to jurisdictional wetlands. According to the Natural Resources Conservation Service, the proposed Northern Levee borrow site meets the prior converted cropland designation. Tree planting on both mitigation sites would be conducted in the dormant season during the fall/winter of 2013-2014. Hydrologic restoration for the proposed borrow area would occur prior to tree planting.

Choctaw Levee Realignment: A proposed levee alignment of approximately 1,900 linear feet would be constructed to replace a damaged 1,200-foot reach of the Dyer County Little Levee, referred to as Choctaw levee, which currently aligns through the Choctaw Transportation Company facility (Figure 4). Choctaw Levee would be realigned riverward due to scour holes created by the 2011 flood within the original levee alignment. The approximately 24,500 cubic yards of material required to construct the new levee would be obtained from a local spoil area resulting from the restoration and maintenance of a local agriculture field drainage ditch which was filled with alluvial material during the flood of 2011. The new levee would be constructed to a full levee cross section to a 15-ft crown width and 3:1 side slopes. No compensatory mitigation would be required at the Choctaw Levee realignment reach as no impacts to relevant resources are expected.

Culvert Replacement at the Obion River: At the southern end of the project area, four corrugated metal pipes currently run beneath the levee to allow water from a drainage ditch out of the protected area and into the Obion River (Figure 5). The culverts were damaged beyond repair during the 2011 flood and would be replaced by a single 140-foot length of 8-foot high x 8-foot wide (8x8-foot) precast concrete box culvert. The work to replace the culvert consists of 1) digging a new channel to re-direct storm water away from the existing damaged culverts through the new box culvert, 2) demolition of the existing culverts, and 3) re-grading the area to the original levee design. This work would require: clearing trees from approximately 3.5 acres (2.0 acres riverside of the levee and 1.5 acres landside of the levee), approximately 73,000 cubic yards of excavation, installation of 140 feet of 8x8-foot precast box culvert to include two cast-in-place headwalls, a steel catwalk, steel sluice gate and mechanical gate operator, 57,000 cubic yards of embankment placement, demolition of approximately 800 feet of corrugated metal pipes measuring 4-6 feet in diameter, turf establishment, and gravel placement.

Approximately 1.81 acres of non-wet BLH forest on the landside and 1.53 acres of BLH forested wetlands on the riverside of the Dyer County Little Levee would be impacted by tree clearing due to the replacement of the damaged culverts and digging a new channel to redirect storm

water away from the existing damaged culverts through the new box culvert. In-kind compensatory mitigation for adverse impacts to the 1.81 acres of non-wet BLH forest would be conducted at a site to be determined at a ratio of 2.3:1, resulting in approximately 4.2 acres of BLH restoration. In-kind compensatory mitigation for adverse impacts to the 1.53 acres of BLH forested wetlands on the riverside of the levee would be conducted at the proposed Northern Levee borrow site at a ratio of 2:1, resulting in approximately 3.1 acres of BLH forested wetland restoration.

ALTERNATIVES: Three alternatives were considered for the proposed action. These alternatives were: (1) No-action; (2) repair of the Dyer County Little Levee to the original alignments; (3) realignment of the damaged portions of the Dyer County Little Levee and replace the damaged corrugated metal drain pipes with an 8x8-foot concrete box culvert.

2.1 Alternative 1 – No Action. Under the No Action Alternative, the proposed project would not proceed. Alternative 1 would result in not repairing the levee breaches and scour holes, leaving the area behind the damaged levee susceptible to flooding from small to moderate flood events. Increased flooding frequency would reduce the availability of the land for agricultural use, cause property loss, displace residents, and could potentially cause human injuries and/or loss of life. Not replacing the damaged corrugated metal drain pipes would lead to drain pipe failure causing poor drainage during normal conditions and back flooding of the protected area due to high water events in the Obion River. Due to the significant negative consequences of the "No Action" alternative, it was deemed unacceptable.

2.2 Alternative 2.

Northern Levee Reconstruction: This alternative includes repairing the existing 1.2-mile Northern Levee reach of the Dyer County Little Levee to its original pre-flood event condition. The levee would be restored to a 15-ft crown width and 3:1 side slopes on the existing levee alignment. The work would include repairs to levee breaches and scour holes which occurred during the 2011 flood. Repairing scour holes resulting from previous levee breaches may cause increased risk for seepage and subsequent levee failure. Therefore, repairing this reach of levee is not feasible due to the two large levee breaches and scour holes. This alternative would likely lead to a levee failure during a major flood event which would result in property damage and could cause human injuries and/or loss of life. If the seepage problem is not addressed, levee failure resulting in catastrophic impacts would ultimately result.

Choctaw Levee Reconstruction: The 1,200-foot Choctaw Levee reach of the Dyer County Little Levee which aligns through Choctaw Transportation Company would be rebuilt to its original, pre-flood condition. Material for rebuilding this reach of levee would come from a local spoil pile resulting from the maintenance of an agriculture field drainage ditch which was filled with alluvial material during the flood of 2011. The work would include repairs to levee breaches and scour holes which occurred during the 2011 flood. Repairing scour holes resulting from previous levee breaches may cause increased risk for seepage and subsequent levee failure. Relief wells were investigated to capture seepage; however, the cost for construction was not feasible. Therefore, repairing this reach of levee is not feasible due to the two large levee

breaches and scour holes. This alternative would likely lead to a levee failure during a major flood event which would result in property damage and could cause human injuries and/or loss of life. If the seepage problem is not addressed, levee failure resulting in catastrophic impacts would ultimately result.

Culvert Repair at the Obion River: The insertion of a support structure in the existing culverts to provide structural stability and strength was investigated. Further investigation in to the condition of the existing culverts determined that, due to the damage incurred during the flood of 2011, it was not feasible to reuse or repair the culverts.

2.3 Alternative 3.

Northern Levee Realignment: This alternative would realign the existing 1.2-mile Northern Levee reach along a new 5,700-linear foot (1.08 mile) alignment. The proposed Northern Levee alignment would be located riverward of the existing levee alignment, increasing the area protected by the levee by approximately 127 acres. The proposed Northern Levee realignment would avoid significant scour holes existing along the current levee alignment and reduce the risk of seepage and levee failure. This alternative includes constructing a full levee cross section to a 15-ft crown width and 3:1 side slopes along the new alignment. Approximately 1.25 forested acres, including approximately 0.35 acres of forested wetlands, would be cleared for this portion of the project. Material to construct the levee along the new alignment would be obtained by excavating the existing 1.2-mile reach of damaged levee. If necessary, additional borrow material would be obtained from an approximately 11.5-acre borrow site located near the project area.

Choctaw Levee Realignment: This alternative includes the realignment of the Choctaw Levee reach of the Dyer County Little Levee which would restore flood protection within the area to its pre-flood condition. The proposed Choctaw Levee realignment of approximately 1,900 linear feet would be constructed to replace a damaged 1,200-foot reach of the Dyer County Little Levee, which currently aligns through Choctaw Transportation Company facility. Choctaw Levee would be realigned riverward due to scour holes within the original levee alignment created by the 2011 flood. Material for the construction of this reach of levee would come from a local spoil pile which resulted from the restoration and maintenance of an agriculture field drainage ditch that was filled with alluvial material during the flood of 2011.

Culvert Replacement at the Obion River: The four damaged corrugated metal drain pipes would be replaced by a single 140-foot length of 8x8-foot precast concrete box culvert. Replacement of the damaged drain pipes would allow drainage through a ditch from the area protected by the Dyer County Little Levee and also stop back-flooding from the Obion River under high-water conditions. The work to replace the culvert consists of 1) digging a new channel to re-direct storm water away from the existing damaged culverts through the new box culvert, 2) demolition of the existing culverts, and 3) re-grading the area to the original levee design. This work would require: clearing trees from approximately 3.3 acres (1.53 acres of BLH forested wetlands riverside of the levee and 1.81 acres of non-wet BLH forest landside of the levee), approximately 73,000 cubic yards of excavation, installation of the 140-foot length of 8x8-foot precast box

culvert to include two cast-in-place headwalls, a steel catwalk, steel sluice gate and mechanical gate operator, 57,000 cubic yards of embankment placement, demolition of approximately 800 feet of corrugated metal pipes measuring 4-6 feet in diameter, turf establishment, and gravel placement.

If the Northern and Choctaw Levee realignments and the culvert replacement are not completed, more damages to agricultural lands and residential dwellings are expected with the next high water event. Alternative 3 is the preferred alternative as it is the least costly structural alternative and provides the greatest stability during future high water events.

WATER QUALITY CERTIFICATION: An application for aquatic resources alteration permit for state water quality certification was submitted to the Tennessee Department of Environment and Conservation, Division of Water Pollution Control on July 22, 2013. Proposed work would be conducted in accordance with the ARAP permit conditions.

SECTION 404 (b)(1) EVALUATION: The impact of the activity on the public interest has been evaluated in accordance with the Environmental Protection Agency guidelines pursuant to Section 404(b)(1) of the Clean Water Act.

ENDANGERED SPECIES: U.S. Fish and Wildlife Service concurred with the USACE determination by e-mail dated July 19, 2013 that no adverse impacts to threatened and endangered species or their critical habitats are expected.

CULTURAL RESOURCES:

Northern and Choctaw Levee Realignments: There are eight historic properties listed on the National Register of Historic Places (NRHP) in Dyer County, Tennessee. None of these properties fall within the area of potential effect of the proposed project. Previously unrecorded archaeological sites may be present in alluvial landforms such as natural levees. Archaeological reconnaissance surveys were conducted in the spring of 2012 by USACE archaeologists for the Northern Levee realignment and the Choctaw Levee realignment. No significant cultural resources were discovered that could be determined eligible for the NRHP. The Tennessee State Historic Preservation Office (TN SHPO) concurred by letters dated May 29, 2012 (Northern Levee) and July 19, 2012 (Choctaw Levee) that these areas contain no archaeological resources eligible for listing in the NRHP.

Culvert Replacement at the Obion River: USACE archeologists conducted an archaeological reconnaissance survey of the proposed area of potential effect in late March 2013 and found no significant cultural resources. Surface visibility of the proposed ditch on the landward side of the existing farm access road was excellent. Soil exposures in the eroding cut banks adjoining the landward side inlet ditch were carefully inspected with negative results. Severe erosion from floodwaters was observed on the Obion River side where the existing ditch empties flood waters into the river. Steep eroding banks on the Obion River side, located next to the existing pump

outlet and a gravel covered temporary boat ramp, were also carefully inspected. There was no evidence of a buried A horizon or intact cultural features such as hearths or storage pits. Any site that may have been located on the Obion River outlet side would have experienced severe erosion from floodwaters and subsequent loss of integrity. The TN SHPO concurred by letter dated April 17, 2013, that no NRHP listed or eligible properties would be affected by this proposed undertaking.

Finally, the latest engineering design feature calling for the temporary stockpiling of levee soil in an agricultural field should have no effect to known significant cultural resources. The area was inspected by a senior USACE archaeologist on July 11, 2013, with negative results. Pursuant to 36 CFR 800.3 (a)(1) the Memphis District Archaeologist has determined that stockpiling soil is an activity that lacks the potential to cause effects on historic properties (archaeological sites) that may be buried at this location. In this situation, the regulation notes that "the agency has no further obligation under Section 106 or this part (36 CFR 800)."

PUBLIC INTEREST REVIEW: The decision to proceed with this project would be based on an evaluation of the probable impact, including cumulative impacts, of the activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The potential benefits that reasonably may be expected to accrue from the activity must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the activity will be considered, including the cumulative effects thereof; among those are wetlands, aquatic resources/fisheries, bottomland hardwood forests, wildlife, threatened and endangered species, cultural resources, socioeconomic resources, environmental justice, air quality, and hydrology and water quality.

The Corps of Engineers is soliciting comments from the public; federal, state and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of the proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to modify or condition the project. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in preparation of the final environmental assessment and/or draft environmental impact statement pursuant to the National Environmental Policy Act, and are also used to determine the overall public interest of the proposed activity. **The draft EA, draft FONSI, and Section 404(b)(1) Evaluation will be circulated to agencies and any other parties that respond to this notice requesting copies. Copies of these documents have been placed on the District's website at:**

http://www.mvm.usace.army.mil/About/Offices/Regulatory/PublicNotices.aspx

PUBLIC HEARING: Any person may request in writing, within the comment period specified in this notice, that a public hearing be held to consider this proposed project. Requests for a public hearing shall clearly state the reason for holding a public hearing. The District Engineer will determine if the issues raised are substantial and whether a hearing is needed in order to reach a decision on the project.

COMMENTS OR REQUEST FOR ADDITIONAL INFORMATION: The draft EA and associated draft FONSI was prepared by Leonard Pitcher, Fish and Wildlife Biologist, with cultural resources information provided by Dr. Robert Dunn. For additional information contact Leonard Pitcher at (901) 544-0705, or by e-mail at Leonard.J.Pitcher@usace.army.mil, or by mail at USACE Memphis District, Attn: Leonard Pitcher, 167 North Main St., B202, Memphis, TN 38103-1894. **Comments should be forwarded to this office by 23 August 2013.**

Sincerely,

Edward P. Lambert

Edward P. Lambert
Chief, Environmental Compliance Branch

DRAFT
FINDING OF NO SIGNIFICANT IMPACT
Dyer County Little Levee Repair
Dyer County, Tennessee

The U.S. Army Corps of Engineers (USACE), Memphis District (MVM), is proposing to repair damaged portions of the Dyer County Little Levee resulting from Mississippi River flooding in 2011 in Dyer County, Tennessee. The proposed project work is separated into 3 segments along the 20-mile reach of the Dyer County Little Levee in west Tennessee. These segments are hereafter referred to as the Northern Levee Realignment, the Choctaw Levee Realignment, and the Culvert Replacement at the Obion River. The Northern Levee reach of the Dyer County Little Levee is located along Bungie Road immediately north of Interstate-155 (I-155) as it crosses the Mississippi River into Dyer County, Tennessee. The Choctaw Levee reach of the Dyer County Little Levee is located off of Tennessee Highway 104 at the Choctaw Transportation Company in Dyer County, Tennessee. The location of the culvert replacement is within Dyer County Little Levee approximately 300 feet west of Tennessee Highway 181 where the highway crosses the Obion River in Dyer County, Tennessee.

Northern Levee Realignment: The proposed action consists of constructing a levee on a new alignment north and west (riverward) of the existing section of the flood-damaged Dyer County Little Levee referred to as the Northern Levee. The new levee alignment would stretch approximately 5,700 linear feet (1.08 miles) and replace the damaged 1.2-mile Northern Levee. The approximately 141,000 cubic yards of material required to construct the new levee would be obtained from excavating the 1.2-mile reach of the existing flood-damaged levee. If additional material is required to complete construction of the levee realignment, an approximately 11.5-acre borrow site within proximity to the construction area would be utilized. The realigned levee would be constructed with a full levee cross section with a 15-foot crown width and 3-foot horizontal to 1-foot vertical (3:1) side slopes.

Approximately 1.25 acres of bottomland hardwood (BLH) forest is expected to be permanently impacted by tree clearing due to the Northern Levee realignment. Three wetlands totaling approximately 0.35 acres of permanent impacts to wetlands are included in the 1.25 acres of BLH forest. The wetlands would be filled in order to maintain the structural stability of the proposed levee as the wetland sites are located within low-lying areas of the proposed Northern Levee realignment. The remaining 0.9 acres of BLH forest were determined non-wet by representatives from the USACE Regulatory Program.

Previous BLH evaluations conducted by MVM biologists in forests with tree species and forest maturity similar to the proposed project area using the Habitat Evaluation System and the Habitat Evaluation Procedures yielded an average compensatory mitigation ratio of 2.3 acres of mitigation to 1 acre of impacts (2.3:1). Therefore, in-kind compensatory mitigation for adverse impacts to the 0.9 acres of non-wet BLH forest would be conducted at a site to be determined at a ratio of 2.3:1 resulting in an approximately 2-acre requirement. Site acquisition of the non-wet BLH mitigation would occur concurrently with construction.

During discussions with the TDEC personnel, it was determined that a mitigation ratio of 2 acres of mitigation to 1-acre of impacts (2:1) was appropriate as mitigation would be conducted on

prior-converted cropland. In-kind compensatory mitigation to offset adverse impacts to the 0.35 acres of BLH forested wetlands would be conducted at the proposed Northern Levee borrow area at a ratio of 2:1; therefore, approximately 0.7 acres of prior converted cropland would be restored to jurisdictional wetlands. According to the Natural Resources Conservation Service, the proposed Northern Levee borrow site meets the prior converted cropland designation. Tree planting on both mitigation sites would be conducted in the dormant season during the fall/winter of 2013-2014. Hydrologic restoration for the proposed borrow area would occur prior to tree planting.

Choctaw Levee Realignment: A new levee alignment of approximately 1,900 linear feet would be constructed to replace a damaged 1,200-foot reach of the Dyer County Little Levee, referred to as Choctaw levee, which currently aligns through the Choctaw Transportation Company facility. Choctaw Levee would be realigned riverward due to scour holes created by the 2011 flood within the original levee alignment. The approximately 24,500 cubic yards of material required to construct the new levee would be obtained from a local spoil area resulting from the restoration and maintenance of a local agriculture field drainage ditch which was filled with alluvial material during the flood of 2011. The new levee would be constructed to a full levee cross section to a 15-ft crown width and 3:1 side slopes.

Culvert Replacement into the Obion River: At the southern end of the project area, four corrugated metal pipes currently run beneath the levee to allow water from a drainage ditch out of the protected area and into the Obion River (Figure 4). The culverts were damaged beyond repair during the 2011 flood and would be replaced by a single 140-foot length of 8-foot high x 8-foot wide (8x8-foot) precast concrete box culvert. The work to replace the culvert consists of 1) digging a new channel to re-direct storm water away from the existing damaged culverts through the new box culvert, 2) demolition of the existing culverts, and 3) re-grading the area to the original levee design. This work would require: clearing trees from approximately 3.5 acres (2.0 acres riverside of the levee and 1.5 acres landside of the levee), approximately 73,000 cubic yards of excavation, installation of 140 feet of 8x8-foot precast box culvert to include two cast-in-place headwalls, a steel catwalk, steel sluice gate and mechanical gate operator, 57,000 cubic yards of embankment placement, demolition of approximately 800 feet of corrugated metal pipes measuring 4-6 feet in diameter, turf establishment, and gravel placement.

Approximately 1.81 acres of non-wet BLH forest on the landside and 1.53 acres of BLH forested wetlands on the riverside of the Dyer County Little Levee would be impacted by tree clearing due to the replacement of the damaged culverts and digging a new channel to redirect storm water away from the existing damaged culverts through the new box culvert. In-kind compensatory mitigation for adverse impacts to the 1.81 acres of non-wet BLH forest would be conducted at a site to be determined at a ratio of 2.3:1, resulting in approximately 4.2 acres of BLH restoration. In-kind compensatory mitigation for adverse impacts to the 1.53 acres of BLH forested wetlands on the riverside of the levee would be conducted at the proposed Northern Levee borrow site at a ratio of 2:1, resulting in approximately 3.1 acres of BLH forested wetland restoration.

A draft environmental assessment was prepared to determine the potential impacts of the proposed work on terrestrial and wildlife resources, wetlands, aquatic resource/fisheries, BLH, wildlife, threatened and endangered species, cultural resources, socioeconomic resources, environmental justice, air quality, and hydrology and water quality.

Surveys of the proposed project area on July 12 and 13, 2013 by MVM biologists determined that the proposed project is not expected to adversely impact any threatened or endangered species or their critical habitat. U.S. Fish and Wildlife Service concurred with the USACE determination that no adverse impacts to threatened and endangered species or their critical habitats are expected. The Tennessee State Historic Preservation Officer concurred with MVM's determination that the proposed project would have no effect to significant cultural resources.

An application for aquatic resources alteration permit for state water quality certification was submitted to the Tennessee Department of Environment and Conservation, Division of Water Pollution Control on July 22, 2013. To comply with state requirements for the permits, a public notice sign briefly describing the proposed project action was posted on _____ where it is visible and can be read from a public road near the proposed activity, and a public notice was published in the Memphis Business Journal on _____. The Division of Water Pollution Control issued Permit _____ on _____. A Section 404(b)(1) evaluation was prepared and submitted for public review along with the environmental assessment.

Based on a review of the analysis performed in the environmental assessment and supporting documentation, I have determined the proposed action is not a major Federal action significantly affecting the quality of the human environment. Therefore, I have determined that an environmental impact statement is not required.

DRAFT

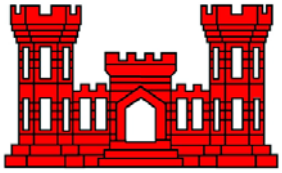
Date

Vernie L. Reichling
Colonel, Corps of Engineers
District Engineer

ENVIRONMENTAL ASSESSMENT

Dyer County Little Levee Rehabilitation

Dyer County, Tennessee



U.S. Army Corps of Engineers
Mississippi Valley Division
Regional Planning and Environmental Division South

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APPENDIXES

ENVIRONMENTAL ASSESSMENT

Dyer County Little Levee Repair

Dyer County, Tennessee

1.0 INTRODUCTION. The U.S. Army Corps of Engineers (USACE) has prepared this environmental assessment (EA) to evaluate the potential impacts of the Dyer County Little Levee Rehabilitation project. This EA has been prepared in accordance with the National Environmental Policy Act of 1969 and the Council on Environmental Quality's Regulations (40 CFR 1500-1508), as reflected in the USACE Engineering Regulation ER 200-2-2. This EA provides sufficient information on the potential adverse and beneficial environmental effects to allow the District Commander, USACE, Memphis District, to make an informed decision on the appropriateness of an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

1.1 Proposed Action**.** The proposed project work is separated into 3 segments along the 20-mile reach of the Dyer County Little Levee in west Tennessee. These segments are hereafter referred to as the Northern Levee Realignment, the Choctaw Levee Realignment, and the Culvert Replacement at the Obion River (Figure 1).

Northern Levee Realignment: The proposed action consists of constructing a levee on a new alignment north and west (riverward) of the existing section of the flood damaged Dyer County Little Levee referred to as the Northern Levee (Figure 2). The new levee alignment would stretch approximately 5,700 linear feet (1.08 miles) and replace the damaged 1.2-mile Northern Levee. The approximately 141,000 cubic yards of earthen material required to construct the new levee would be obtained from excavating the 1.2-mile reach of the existing flood-damaged levee. If additional material is required to complete construction of the proposed levee realignment, an approximately 11.5-acre borrow site within proximity to the construction area would be utilized. The proposed realigned levee would be constructed to a full levee cross section with a 15-foot crown width and 3-foot horizontal to 1-foot vertical (3:1) side slopes.

Approximately 1.25 acres of bottomland hardwood (BLH) forest is expected to be permanently impacted by tree clearing due to the Northern Levee realignment. Three wetlands totaling approximately 0.35 acres of permanent impacts to wetlands are included in the 1.25 acres of BLH forest (Figure 3). The remaining 0.9 acres of BLH forest were determined non-wet by representatives from the USACE Regulatory Program. The wetlands would be filled in order to maintain the structural stability of the proposed levee as the wetland sites are located within low-lying areas of the proposed Northern Levee realignment. Compensatory mitigation for impacts to relevant resources is discussed in the Mitigation Section below.

Choctaw Levee Realignment: A proposed levee alignment of approximately 1,900 linear feet would be constructed to replace a damaged 1,200-foot reach of the Dyer County Little Levee, referred to as Choctaw levee, which currently aligns through the Choctaw Transportation

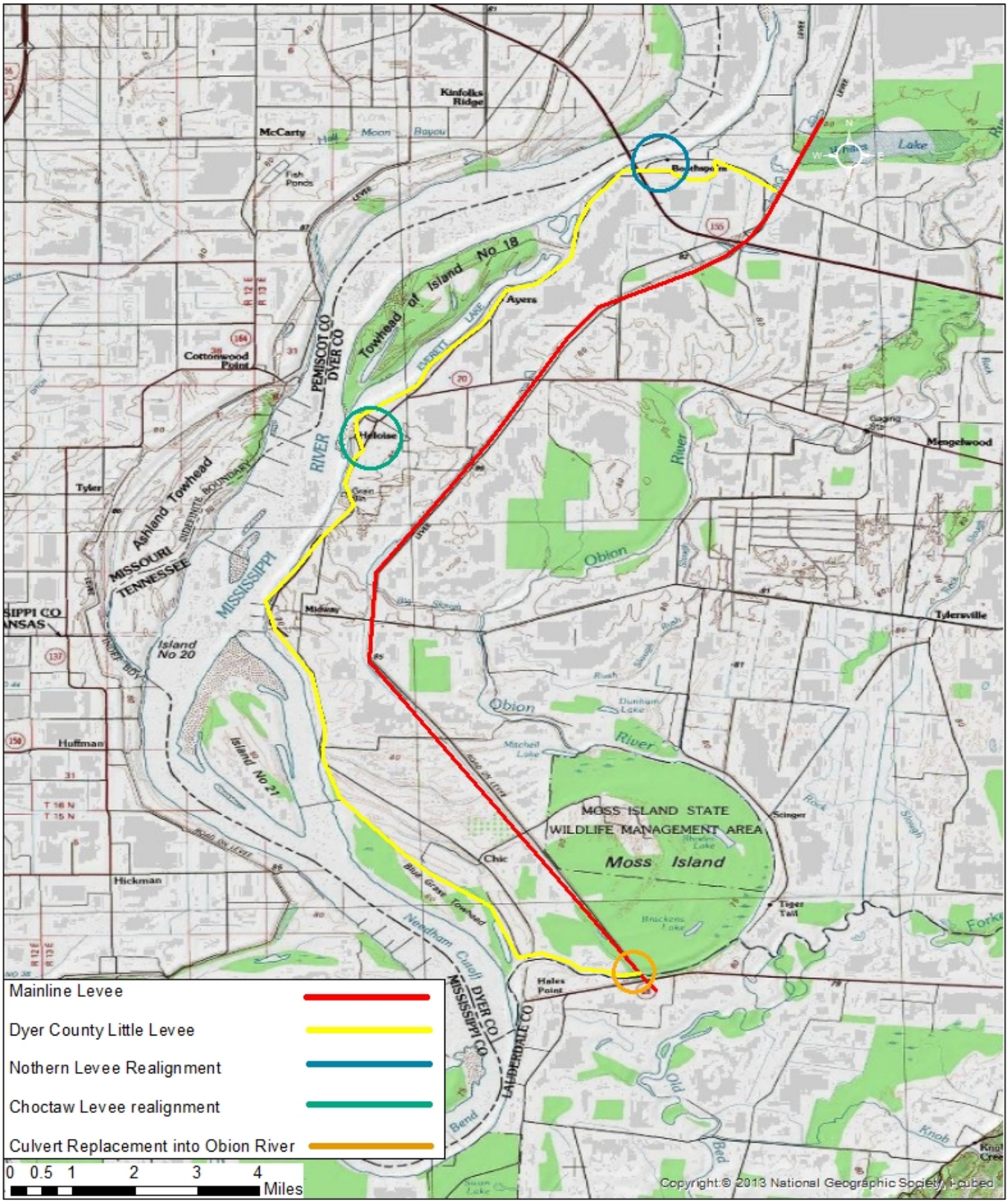

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Figure 1. The three proposed repair locations on the Dyer County Little Levee are shown circled on the map. The existing Dyer County Little Levee alignment is highlighted in yellow. The Mainline Levee is highlighted in red.

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Figure 2. The existing Northern Levee reach of the Dyer County Little Levee is highlighted in orange on the map. The proposed Northern Levee alignment is highlighted in green. The proposed borrow area for the Northern Levee alignment is highlighted in red.

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Figure 3. Wetlands totaling 0.35 acres would be filled in order to realign the Northern Levee reach of the Dyer County Little Levee, Dyer County, TN. The proposed mitigation site is highlighted in red and totals approximately 1.4 acres.

Company facility (Figure 4). Choctaw Levee would be realigned riverward due to scour holes created by the 2011 flood within the original levee alignment. The approximately 24,500 cubic yards of material required to construct the new levee would be obtained from a local spoil area resulting from the restoration and maintenance of a local agriculture field drainage ditch which was filled with alluvial material during the flood of 2011. The new levee would be constructed to a full levee cross section to a 15-ft crown width and 3:1 side slopes.

Culvert Replacement at the Obion River: At the southern end of the project area, four corrugated metal pipes currently run beneath the levee to allow water from a drainage ditch out of the protected area and into the Obion River (Figure 5). The culverts were damaged beyond repair during the 2011 flood and would be replaced by a single 140-foot length of 8-foot high x 8-foot wide (8x8-foot) precast concrete box culvert. The work to replace the culvert consists of 1) digging a new channel to re-direct storm water away from the existing damaged culverts through the new box culvert, 2) demolition of the existing culverts, and 3) re-grading the area to the original levee design. This work would require: clearing trees from approximately 3.3 acres (1.53 acres of BLH forested wetlands riverside of the levee and 1.81 acres of non-wet landside of the levee), approximately 73,000 cubic yards of excavation, installation of 140 feet of 8x8-foot precast box culvert to include two cast-in-place headwalls, a steel catwalk, steel sluice gate and mechanical gate operator, 57,000 cubic yards of embankment placement, demolition of approximately 800 feet of corrugated metal pipes measuring 4-6 feet in diameter, turf establishment, and gravel placement.

1.2 Purpose and Need For The Proposed Action**.** The record flood of 2011 damaged the privately owned Dyer County Little Levee in west Tennessee. This levee protects approximately 12,000 acres of agriculturally developed land, 30 homes, 2 businesses, a church and 41 farm buildings. The total value of the structures is estimated at $2,718,000. It is also estimated that more than 80 people reside within the area. If the levee is not repaired, more damages are expected to agricultural lands creating a strain on the major industry of the area and residential dwellings with the next high water event.

The location of the proposed action is in west Dyer County, Tennessee, along the Dyer County Little Levee alignment. The non-federal Dyer County Little Levee extends along the left descending bank of the Mississippi River; it begins at the Mainline Levee just east of Boothspoint and extends to the Obion River between river miles 820 and 840. At the Obion River, the levee turns eastward along the top bank of the Obion River until it intersects with the Mainline Levee (Figure 1).

Northern Levee Realignment: The purpose of the Northern Levee realignment is to provide continued protection for the approximately 12,000 acres of land protected by the 20-mile stretch of the Dyer County Little Levee in west Tennessee. If the levee is not repaired, additional damages to farmlands and residential dwellings with the next high water event are expected. If the Northern Levee alignment is repaired, the potential for high seepage gradients due to new scour holes would force additional measures to be taken to protect the levee during flood

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Figure 4. The existing Choctaw Levee reach of the Dyer County Little Levee is highlighted in orange on the map. The proposed Choctaw Levee alignment is highlighted in green. The proposed borrow area for the Choctaw Levee alignment is highlighted in red.

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Figure 5. The proposed culvert replacement location on the Dyer County Little Levee is shown circled on the map.

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events in the future. The proposed realignment creates sufficient distance from the existing and historic blue holes (i.e. water-filled scour holes) to avoid jeopardizing the levee in future flood events. The new alignment would protect approximately 127 additional acres of land and provide the greatest stability during future high water events. The Northern Levee realignment portion of the project is located along Bungie Road immediately north of Interstate-155 (I-155) as it crosses the Mississippi River into Dyer County, Tennessee (Figures 1 and 2).

Choctaw Levee Realignment: The purpose of the Choctaw Levee realignment would be to restore the flood protection capability of the Dyer County Little Levee to design condition which would protect valuable structures and farmland. Scour holes created within the existing levee alignment during the flood would need to be avoided due to the potential for high seepage gradients; therefore, the Choctaw Levee would be realigned riverward of the Choctaw Transportation Company facilities. The Choctaw Levee realignment portion of the proposed project is located off of Tennessee Highway 104 at the Choctaw Transportation Company in Dyer County, Tennessee (Figure 4).

Culvert Replacement at the Obion River: Replacing the four damaged corrugated metal drain pipes with one 8x8-foot concrete box culvert would ensure adequate drainage of the area protected by the Dyer County Little Levee, and with the addition of a flap gate on the river end of the culvert, back-flooding from the Obion River would be minimized. The location of the culvert replacement is within Dyer County Little Levee approximately 300 feet to west of Tennessee Highway 181 where the highway crosses the Obion River (Figure 5).

1.3 Authority**.** USACE has authority under Public Law 84-99 (PL 84-99), Flood Control and Coastal Emergencies (FCCE) (33 U.S.C. 701n) (69 Stat. 186) for emergency management activities. Under PL 84-99, the Chief of Engineers, acting for the Secretary of the Army, is authorized to undertake activities, including rehabilitation of flood control works threatened or destroyed by flood. The proposed action is authorized as part of PL 84-99.

2.0 ALTERNATIVES TO THE PROPOSED ACTION

Three alternatives were considered for the proposed action. These alternatives were: (1) No-action; (2) repair of the Dyer County Little Levee to the original alignments; (3) realignment of the damaged portions of the Dyer County Little Levee and replace the damaged corrugated metal drain pipes with an 8x8-foot concrete box culvert.

2.1 Alternative 1 – No Action. Under the No Action Alternative, the proposed project would not proceed. Alternative 1 would result in not repairing the levee breaches and scour holes, leaving the area behind the damaged levee susceptible to flooding from small to moderate flood events. Increased flooding frequency would reduce the availability of the land for agricultural use, cause property loss, displace residents, and could potentially cause human injuries and/or loss of life. Not replacing the damaged corrugated metal drain pipes would lead to drain pipe failure causing poor drainage during normal conditions and back flooding of the protected area due to high water events in the Obion River. Due to the significant negative consequences of the "No Action" alternative, it was deemed unacceptable.

2.2 Alternative 2.

Northern Levee Reconstruction: This alternative includes repairing the existing 1.2-mile Northern Levee reach of the Dyer County Little Levee to its original pre-flood event condition. The levee would be restored to a 15-ft crown width and 3:1 side slopes on the existing levee alignment. The work would include repairs to levee breaches and scour holes which occurred during the 2011 flood. Repairing scour holes resulting from previous levee breaches may cause increased risk for seepage and subsequent levee failure. Therefore, repairing this reach of levee is not feasible due to the two large levee breaches and scour holes. This alternative would likely lead to a levee failure during a major flood event which would result in property damage and could cause human injuries and/or loss of life. If the seepage problem is not addressed, levee failure resulting in catastrophic impacts would ultimately result.

Choctaw Levee Reconstruction: The 1,200-foot Choctaw Levee reach of the Dyer County Little Levee which aligns through Choctaw Transportation Company would be rebuilt to its original, pre-flood condition. Material for rebuilding this reach of levee would come from a local spoil pile resulting from the maintenance of an agriculture field drainage ditch which was filled with alluvial material during the flood of 2011. The work would include repairs to levee breaches and scour holes which occurred during the 2011 flood. Repairing scour holes resulting from previous levee breaches may cause increased risk for seepage and subsequent levee failure. Relief wells were investigated to capture seepage; however, the cost for construction was not feasible. Therefore, repairing this reach of levee is not feasible due to the two large levee breaches and scour holes. This alternative would likely lead to a levee failure during a major flood event which would result in property damage and could cause human injuries and/or loss of life. If the seepage problem is not addressed, levee failure resulting in catastrophic impacts would ultimately result.

Culvert Repair at the Obion River: The insertion of a support structure in the existing culverts to provide structural stability and strength was investigated. Further investigation in to the condition of the existing culverts determined that, due to the damage incurred during the flood of 2011, it was not feasible to reuse or repair the culverts.

2.3 Alternative 3.

Northern Levee Realignment: This alternative would realign the existing 1.2-mile Northern Levee reach along a new 5,700-linear foot (1.08 mile) alignment. The proposed Northern Levee alignment would be located riverward of the existing levee alignment, increasing the area protected by the levee by approximately 127 acres. The proposed Northern Levee realignment would avoid significant scour holes existing along the current levee alignment and reduce the risk of seepage and levee failure. This alternative includes constructing a full levee cross section to a 15-ft crown width and 3:1 side slopes along the new alignment. Approximately 1.25 forested acres, including approximately 0.35 acres of forested wetlands, would be cleared for this portion of the project. Material to construct the levee along the new alignment would be obtained by excavating the existing 1.2-mile reach of damaged levee. If necessary, additional borrow material would be obtained from an approximately 11.5-acre borrow site located near the project area (Figure 2).

Choctaw Levee Realignment: This alternative includes the realignment of the Choctaw Levee reach of the Dyer County Little Levee which would restore flood protection within the area to its pre-flood condition. The proposed Choctaw Levee realignment of approximately 1,900 linear feet would be constructed to replace a damaged 1,200-foot reach of the Dyer County Little Levee, which currently aligns through Choctaw Transportation Company facility. Choctaw Levee would be realigned riverward due to scour holes within the original levee alignment created by the 2011 flood. Material for the construction of this reach of levee would come from a local spoil pile which resulted from the restoration and maintenance of an agriculture field drainage ditch that was filled with alluvial material during the flood of 2011 (Figure 4).

Culvert Replacement at the Obion River: The four damaged corrugated metal drain pipes would be replaced by a single 140-foot length of 8x8-foot precast concrete box culvert. Replacement of the damaged drain pipes would allow drainage through a ditch from the area protected by the Dyer County Little Levee and also stop back-flooding from the Obion River under high-water conditions. The work to replace the culvert consists of 1) digging a new channel to re-direct storm water away from the existing damaged culverts through the new box culvert, 2) demolition of the existing culverts, and 3) re-grading the area to the original levee design. This work would require: clearing trees from approximately clearing trees from approximately 3.3 acres (1.53 acres of BLH forested wetlands riverside of the levee and 1.81 acres of non-wet landside of the levee), approximately 73,000 cubic yards of excavation, installation of the 140-foot length of 8x8-foot precast box culvert to include two cast-in-place headwalls, a steel catwalk, steel sluice gate and mechanical gate operator, 57,000 cubic yards of embankment placement, demolition of approximately 800 feet of corrugated metal pipes measuring 4-6 feet in diameter, turf establishment, and gravel placement.

If the Northern and Choctaw Levee realignments and the culvert replacement are not completed, more damages to agricultural lands and residential dwellings are expected with the next high water event. Alternative 3 is the preferred alternative as it is the least costly structural alternative and provides the greatest stability during future high water events.

3.0 AFFECTED ENVIRONMENT

3.0.1 Environmental Setting

Dyer County Little Levee is located in Dyer County, Tennessee, within the Mississippi River floodplain and is within close proximity to the Mississippi River. The non-federal Dyer County Little Levee extends along the left descending bank of the Mississippi River and is positioned between the federally constructed Mainline Levee and the Mississippi River to protect property and assets riverside of the Mainline Levee. The Dyer County Little Levee begins at the Mainline Levee just east of Boothspoint in Dyer County, Tennessee, and extends to the Obion River, between river miles 820 and 840. The levee is approximately 20 miles in length and ranges from 6 to 12 feet in height. At the Obion River, the levee turns eastward along the top bank of the Obion River until it intersects with the Mainline Levee (Figure 1). Essentially all of the lands within the project work area are in agricultural production.

Northern Levee Realignment: Site visits to the proposed Northern Levee realignment project area were conducted on April 23, 2012 and June 26, 2012. The ditches located within the agriculture fields are dry throughout most of the year, and contain water only during periods of heavy rain or when high water levels in the Mississippi River cause seepage or back-flooding. The ditch along Bungie Road contained standing water during the site visits and appears to convey water during years of normal precipitation. Vegetation within and along this ditch includes Willow trees (*Salix* spp.) and other herbaceous wetland plants. Between the ditch and the agriculture field behind it, an earthen berm stands approximately 5 feet in height and roughly parallels the proposed Northern Levee realignment. The berm appears to be a flood prevention structure constructed by the property owner to reduce flooding during minor flood events. Areas of this berm appear to have been damaged during the flood of 2011, but have recently been repaired.

Approximately 24 acres of BLH forest are present along the riverside of the existing 1.2-mile reach of the Northern Levee. Forest maturity varies from areas dominated by small trees to areas dominated by mature trees greater than 24 inches diameter at breast height (dbh). Tree species commonly occurring include pecan (*Carya illinoinensis*), oak (*Quercus* spp.), hackberry or sugarberry (*Celtis* spp.), walnut (*Juglans nigra*), willow (*Salix* spp.) and maple (*Acer* spp.). Giant cane (*Arundinaria gigantean*) is also scattered throughout the forested area. Understory is dominated by poison ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus quinquefolia*) and an assortment of herbaceous plants.

The proposed approximately 11.5-acre borrow site is located on prior converted cropland that is primarily utilized for grain production. The borrow site is located approximately 1-mile from the Northern Levee realignment. The site is bordered by wetlands and trees on the south and east sides, a forested ditch/road right-of-way on the west side, and Bungie Road on the north side. Approximately 2 acres of the proposed borrow site is classified as farmed wetland by the Natural Resources Conservation Service (NRCS).

Choctaw Levee Realignment: The Choctaw Levee reach of the Dyer County Little Levee is aligned through the Choctaw Transportation Company property and is wholly located within the industrial facility. Multiple industrial buildings are located within close proximity to this levee alignment along with piles of gravel and other assorted sizes of construction material. Other industrial equipment, such as excavators and dump trucks, are commonly seen working in the area. The proposed Choctaw Levee alignment would edge the riverward boundary of the Choctaw Transportation Company property.

The proposed borrow site for repairing the Choctaw Levee is a spoil pile located along a local agriculture field drainage ditch. The spoil pile resulted from restoration and maintenance of the agriculture field ditch which filled with alluvial material during the flood of 2011. Most areas of this ditch and spoil pile have been colonized by noxious weed species such as pigweed (*Amaranthus spp.)*, velvetleaf (*Abutilon theophrasti)*, Johnson grass (*Sorghum halepense)*, and Jimsonweed (*Datura stramonium).* Other areas of the ditch and ditch bank were colonized by horsetail (*Equisetum spp*.), pecan (*Carya illinoiensis)*, and hackberry trees (*Celtis spp*.)

Culvert Replacement at the Obion River: The proposed culvert replacement site is located adjacent to TN-HWY 181 and its bridge over the Obion River at the downstream connection of the Dyer County Little Levee to the Mainline Levee. The riverside of the culvert replacement site is forested and consists of primarily mature cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), and black willow (*Salix niger*) trees. The landside of the culvert replacement site is agriculturally developed land with a forested drainage ditch leading to the existing, damaged culverts. The trees growing along the drainage ditch are primarily composed of medium sized cottonwoods.

3.0.2 DESCRIPTION OF THE WATERSHED

The project area sits in the shared floodplain between the Mississippi and Obion rivers in Dyer County, Tennessee. The watershed for the project area consists mainly of unnamed agricultural drainage ditches and sloughs that flow west, emptying directly into the Mississippi River or flow east toward the Mainline Levee. Waters that flow toward the Mainline Levee are collected into the borrow area at the toe of the levee and then flow south along the levee and drain into the Obion River through the damaged culverts just upstream of the confluence with the Mississippi River. The predominant land use for this area is agricultural row-crop production. Small areas of forest, pond, and wetland exist within the local watershed and exist primarily along the existing levee reach and the banks of the Obion and Mississippi Rivers.

3.0.3 CLIMATE

This section is summarized from Natural Resources Conservation Service National Water and Climate Center, 1971-2000 (http://www.wcc.nrcs.usda.gov/ftpref/support/climate/taps/tn/47045.txt). The average annual temperature for Dyer County is 61 degrees Fahrenheit. The average daily maximum temperature for the area is 70 degrees Fahrenheit with 2 years in every 10 having temperatures greater than 100 degrees Fahrenheit occurring in July. The average daily minimum temperature is 51 degrees Fahrenheit with 2 years in every 10 having temperatures less than 2 degrees Fahrenheit occurring in January. Yearly precipitation averages 51 inches. Rainfall will average less than 35 inches and greater than 58 inches 2 out of every 10 years. The month receiving the most rainfall is December with an average of 5.2 inches and the month receiving the least is September with an average of 2.9 inches. Most precipitation falls in the form of rain; however snow may fall in the months of November through March.

3.0.4 GEOLOGY

The West Tennessee area lies entirely within the east flank of the Upper Mississippi embayment region of the Gulf Coastal Plain and includes part of the Plateau Slope and the Mississippi alluvial plain. This area represents the remnants of an ancient peneplain prior to its dissection by the Prehistoric Mississippi-Ohio River Complex (USACE 1982 B). The soils in the area are comprised of Pleistocene loams, loess, gravels and sand. The area is covered by a blanket of loess which becomes thinner to the east (USACE 1982 A).

3.1 RELEVANT RESOURCES

This section contains a description of relevant resources that could be impacted by the project. The important resources (Table 1) described in this section are those recognized by laws, executive orders, regulations, and other standards of National, state, or regional agencies and organizations; technical or scientific agencies, groups, or individuals; and the general public. The following resources have been examined and found to not be affected by the alternatives under consideration; freshwater marshes, freshwater lakes, state-designated scenic streams, prime and unique farmlands, fisheries, municipal facilities, municipal utilities, roadways, recreation, and aesthetics.

Table 1: Relevant Resources

Resource	Institutionally Important	Technically Important	Publicly Important
Wetlands	Clean Water Act of 1977, as amended; Executive Order 11990 of 1977, Protection of Wetlands; Coastal Zone Management Act of 1972, as amended; and the Estuary Protection Act of 1968., EO 11988, and Fish and Wildlife Coordination Act.	They provide necessary habitat for various species of plants, fish, and wildlife; they serve as ground water recharge areas; they provide storage areas for storm and flood waters; they serve as natural water filtration areas; they provide protection from wave action, erosion, and storm damage; and they provide various consumptive and non-consumptive recreational opportunities.	The high value the public places on the functions and values that wetlands provide. Environmental organizations and the public support the preservation of marshes.
Aquatic Resources/ Fisheries	Fish and Wildlife Coordination Act of 1958, as amended. State policies may apply as well. For example, is the watershed classified by the State of Mississippi as supporting a Fish and Wildlife Classification?	They are a critical element of many valuable freshwater and marine habitats; they are an indicator of the health of the various freshwater and marine habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value.
Bottomland Hardwood Forest	Section 906 of the Water resources Development Act of 1986 and the Fish and Wildlife Coordination Act of 1958, as amended.	Provides necessary habitat for a variety of plant, fish, and wildlife species; it often provides a variety of wetland functions and values; it is an important source of lumber and other commercial forest products; and it provides various consumptive and non-consumptive recreational opportunities.	The high priority that the public places on its esthetic, recreational, and commercial value.
Wildlife	Fish and Wildlife Coordination Act of 1958, as amended and the Migratory Bird Treaty Act of 1918	They are a critical element of many valuable aquatic and terrestrial habitats; they are an indicator of the health of various aquatic and terrestrial habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value.

Table 1: Relevant Resources			
Resource	**Institutionally Important**	**Technically Important**	**Publicly Important**
Threatened and Endangered Species	The Endangered Species Act of 1973, as amended; the Marine Mammal Protection Act of 1972; and the Bald Eagle Protection Act of 1940.	USACE, USFWS, NMFS, NRCS, USEPA, TWRA, and TDEC cooperate to protect these species. The status of such species provides an indication of the overall health of an ecosystem.	The public supports the preservation of rare or declining species and their habitats.
Cultural Resources	National Historic Preservation Act of 1966, as amended; the Native American Graves Protection and Repatriation Act of 1990; and the Archeological Resources Protection Act of 1979	State and Federal agencies document and protect sites. Their association or linkage to past events, to historically important persons, and to design and construction values; and for their ability to yield important information about prehistory and history.	Preservation groups and private individuals support protection and enhancement of historical resources.
Socio-Economic Resources	River and Harbor Flood Control Act of 1970 (PL 91-611).	The social and economic welfare of the nation may be positively or adversely impacted by the proposed action.	Social concerns and items affecting area economy are of significant interest to community.
Environmental Justice	Executive Order 12898 and the Department of Defense's Strategy on Environmental Justice of 1995,	The social and economic welfare of minority and low-income populations may be positively or disproportionately impacted by the tentatively selected plans.	Public concerns about the fair and equitable treatment (fair treatment and meaningful involvement) of all people with respect to environmental and human health consequences of federal laws, regulations, policies, and actions.
Air Quality	Clean Air Act of 1963.	State and Federal agencies recognize the status of ambient air quality in relation to the NAAQS.	Virtually all citizens express a desire for clean air.
Hydrology and Water Quality	Clean Water Act of 1977, Fish and Wildlife Coordination Act,	USACE, USFWS, NMFS, NRCS, USEPA, and TDEC and TWRA recognize value of fisheries and good water quality. the national and state standards established to assess water quality	Environmental organizations and the public support the preservation of water quality and fishery resources and the desire for clean drinking water.

3.1.1 WETLANDS

Existing Conditions

Northern Levee Realignment: Approximately 2 acres of farmed wetland exist in the proposed borrow area, but would not be converted to non-wetlands by proposed construction activities. A total of approximately 0.35 acres of quality forested wetlands exist within the proposed Northern Levee realignment (Figure 3).

Wetland 1 is located on the north end of proposed Northern Levee alignment where it ties into the existing levee reach. The shape and position of the wetland relative to the existing Northern

Levee alignment indicate that the wetland was created by mechanical excavation of material for levee construction or repair and becomes inundated by back-flooding from the Mississippi River during high water events. The approximate size of the wetland is 0.22 acres. No aquatic vegetation is present within the wetland; however, it is bordered by a forested area consisting of large hardwood trees along the riverside of the existing levee, an agriculturally developed field, and the levee (Figure 3).

Wetland 2 is located on the south end of the proposed Northern Levee alignment where it ties into the existing levee reach. The shape and position of the wetland relative to the existing levee and access road indicate that the wetlands were created by mechanical excavation of material for levee or road construction. The approximate size of Wetland 2 is 0.06 acres. No aquatic vegetation is present within the wetland; however, it is bordered by a forested area along the riverside of the existing levee consisting of large hardwood trees. It is also bordered by an agricultural field and the existing levee. The area was recently inundated by back-flooding from the Mississippi River (Figure 3).

Wetland 3 is located within close proximity to Wetland 2 on the south end of the proposed new levee alignment. The shape and position of the wetland relative to the existing levee and access road indicate that the wetlands were created by mechanical excavation of material for road construction since it lies along the existing access road. The approximate size of Wetland 3 is 0.07 acres. No aquatic vegetation is present in the wetland; however, one side of the wetland is forested primarily with small willow trees (*Salix* spp.). The area was recently inundated by back-flooding from the Mississippi River. The wetland is bordered by a levee access road, an agriculture field access road, and an agricultural field (Figure 3).

Choctaw Levee Realignment: No wetlands exist within the Choctaw Levee realignment area. The realignment is located wholly within the industrial area of the Choctaw Transportation Company.

Culvert Replacement at the Obion River: At the culvert repair site, 1.53 acres of BLH forested wetlands exist on the riverside of the Dyer County Little Levee. The riverside of the culvert replacement site is forested and consists of primarily mature cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), and black willow (*Salix niger*) trees.

3.1.2 AQUATIC RESOURCES/FISHERIES

Existing Conditions

Northern Levee Realignment: Ponded areas and blue holes from previous levee breeches currently provide habitat for fish and other aquatic species along the existing Northern Levee reach. On the April 23, 2012 site visit, a USACE biologist observed black bass (*Micropterus* spp.) and aquatic turtles in a large blue hole on the land side of the existing levee. A relic unionid mussel shell was observed on the bank of a blue hole on the riverside of the levee. Approximately 4.8 acres of wetland/blue holes (not including scour holes from the 2011 flood) occur along the existing levee alignment. The proposed realignment runs roughly parallel, within approximately 0.5 to 1-mile, to the Mississippi River.

Choctaw Levee Realignment: The proposed Choctaw Levee realignment runs within approximately 0.2 to 0.5 mile along a side channel to the Mississippi River. No other aquatic resources exist within the proposed project area as it is located within an industrial area.

Culvert Replacement at the Obion River: The culvert replacement site has a large ditch passing through the existing damaged culverts which drain directly into the Obion River. On a June 2013 site visit, only gar were observed feeding in the area; however, these habitats would likely be inhabited by various species of fish, amphibians and aquatic reptiles along with other aquatic life. The Obion and Mississippi rivers are within close proximity to the project area and provide a significant commercial and recreational fishery resource.

3.1.3 BOTTOMLAND HARDWOOD FOREST

Existing Conditions

Northern Levee Realignment: There are approximately 24 acres of BLH forest located along the riverside of the existing 1.2 miles of the Northern Levee reach. Forest maturity varies from areas dominated by small trees to areas dominated by mature trees greater than 24 inches diameter at breast height (dbh). Tree species commonly occurring include pecan (*Carya illinoinensis*), oak (*Quercus* spp.), hackberry or sugarberry (*Celtis* spp.), black walnut (*Juglans nigra*) willow (*Salix* spp.) and maple (*Acer* spp.). Giant cane (*Arundinaria gigantean*) is also scattered throughout the forested area. Understory was dominated by poison ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus quinquefolia*) and an assortment of herbaceous plants. No BLH resources exist within the proposed Northern Levee realignment footprint.

Choctaw Levee Realignment: No BLH resources exist within the existing or proposed Choctaw Levee alignment footprint.

Culvert Replacement at the Obion River: The riverside of the culvert replacement site is BLH forested wetlands and consists primarily of mature cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), and black willow (*Salix niger*) trees. The landward side of the culvert replacement site is agriculturally developed land with a forested drainage ditch leading to the existing, damaged culverts. The trees growing alongside the drainage ditch are primarily composed of immature cottonwoods.

3.1.4 WILDLIFE

Existing Conditions

Northern Levee Realignment: The area surrounding the Northern Levee has been cleared and drained for the purposes of agricultural production; however, some wetland, aquatic, and BLH habitats still exist as described in the sections above. Species commonly found within the BLH forest habitat include white-tailed deer, fox and grey squirrels, songbirds, crows, raptors, raccoons, opossums, snakes, frogs, mice and other rodents. Species likely to be found in the aquatic habitat include great blue herons and other wading birds; aquatic turtles; fish such as

largemouth bass, bluegill and channel catfish; snakes; freshwater mussels; and amphibians such as frogs and toads. Common species found within disturbed habitat, such as agriculture fields, include white-tailed deer, raccoon, opossum, mice, coyotes, songbirds, and snakes.

Choctaw Levee Realignment: Common species that may be found in disturbed areas such as the location of the proposed Choctaw Levee Realignment would include white-tailed deer, raccoon, opossum, mice, coyotes, songbirds, and snakes.

Culvert Replacement at the Obion River: The riverside of the culvert replacement site is forested and provides habitat for species of wildlife including white-tailed deer, fox and grey squirrels, songbirds, crows, raptors, raccoons, opossums, snakes, frogs, mice and other rodents. The landward side of the culvert replacement site is agriculturally developed land with a forested drainage ditch leading to the existing, damaged culverts. Species likely to be found in the aquatic habitat provided by the drainage ditch include great blue herons and other wading birds; aquatic turtles; fish such as largemouth bass, bluegill and channel catfish; snakes; freshwater mussels; and amphibians such as frogs and toads. Common species found within disturbed habitat, such as agriculture fields, include white-tailed deer, raccoon, opossum, mice, coyotes, songbirds, and snakes.

3.1.5 THREATENED AND ENDANGERED SPECIES

Existing Conditions

The U.S. Fish and Wildlife Service (USFWS), Ecological Services Office in Cookeville, Tennessee, indicated that four federally listed species may occur in the area. These include the pallid sturgeon (*Scaphirhynchus albus*), interior least tern (*Sterna antillarum*), fat pocketbook mussel (*Potamilus capax*), and the Indiana bat (*Myotis sodalis*). Of these four species, only the Indiana bat would potentially utilize any habitat within the project area. Least terns nest and roost along isolated river sandbars, while the sturgeon and mussels would likely be found within the Mississippi River. None of these habitats exist within the proposed project area; therefore, no impacts to pallid sturgeon, interior least terns, fat pocketbook mussels or their critical habitats are anticipated to occur.

Northern Levee Realignment: The endangered Indiana bat is known to roost under exfoliating bark of trees and snags. During a site visit conducted on June 7, 2013, USACE biologists observed two potential roost trees within the footprint of the project area; therefore, bottomland hardwood forest existing within the proposed Northern Levee realignment may be used for summer roosting and feeding habitat by Indiana bats. An acoustic survey was conducted by USACE biologists on July 12 and 13, 2013, to determine the potential presence or absence of the Indiana bat. Results showed the probable absence of any Indiana bat populations.

Choctaw Levee Realignment: No forested habitat is located within the proposed Choctaw Levee realignment; therefore, no potential Indiana bat summer roost habitat is expected to be impacted.

Culvert Replacement at the Obion River: The bottomland hardwood forest existing within the proposed culvert replacement site may be used for summer roosting and feeding habitat by

Indiana bats. An acoustic survey was conducted by USACE biologists on July 12 and 13, 2013, to determine the potential presence or absence of the Indiana bat. Results showed the probable absence of any Indiana bat populations.

3.1.6 CULTURAL RESOURCES

Existing Conditions

Northern and Choctaw Levee Realignments: There are eight historic properties listed on the National Register of Historic Places (NRHP) in Dyer County, Tennessee. None of these properties fall within the area of potential effect of the proposed project. Previously unrecorded archaeological sites may be present in alluvial landforms such as natural levees. Archaeological reconnaissance surveys were conducted in the spring of 2012 by USACE archaeologists for the Northern Levee realignment and the Choctaw Levee realignment. No significant cultural resources were discovered that could be determined eligible for the NRHP. The Tennessee State Historic Preservation Office (TN SHPO) concurred by letters dated May 29, 2012 (Northern Levee) and July19, 2012 (Choctaw Levee) that these areas contain no archaeological resources eligible for listing in the NRHP.

Culvert Replacement at the Obion River: USACE archeologists conducted an archaeological reconnaissance survey of the proposed area of potential effect in late March 2013 and found no significant cultural resources. Surface visibility of the proposed ditch on the landward side of the existing farm access road was excellent. Soil exposures in the eroding cut banks adjoining the landward side inlet ditch were carefully inspected with negative results. Severe erosion from floodwaters was observed on the Obion River side where the existing ditch empties flood waters into the river. Steep eroding banks on the Obion River side, located next to the existing pump outlet and a gravel covered temporary boat ramp, were also carefully inspected. There was no evidence of a buried A horizon or intact cultural features such as hearths or storage pits. Any site that may have been located on the Obion River outlet side would have experienced severe erosion from floodwaters and subsequent loss of integrity. The TN SHPO concurred by letter dated April 17, 2013, that no NRHP listed or eligible properties would be affected by this proposed undertaking.

Finally, the latest engineering design feature calling for the temporary stockpiling of levee soil in an agricultural field should have no effect to known significant cultural resources. The area was inspected by a senior USACE archaeologist on July 11, 2013, with negative results. Pursuant to 36 CFR 800.3 (a)(1), the Memphis District Archaeologist has determined that stockpiling soil is an activity that lacks the potential to cause effects on historic properties (archaeological sites) that may be buried at this location. In this situation, the regulation notes that “the agency has no further obligation under Section 106 or this part (36 CFR 800).”

3.1.7 SOCIO-ECONOMIC RESOURCES

Existing Conditions

The Dyer County Little Levee protects approximately 12,000 acres of agriculturally developed land, with agriculture being the major industry within the area. Along with the farmland, thirty homes, two businesses, a church and forty-one farm buildings are located within the area protected by the levee. The total value of the structures is estimated at $2,718,000. It is also estimated that more than eighty people reside within the area. Flooding would displace residents and businesses; increase mental and physical stress of those displaced, and would generally diminish the quality of life and economy of the residents and local communities.

3.1.8 ENVIRONMENTAL JUSTICE

Existing Conditions

The Department of Defense's Strategy on Environmental Justice of 1995, directs Federal agencies to identify and address any disproportionately high adverse human health or environmental effects of Federal actions to minority and/or low-income populations. Minority populations are those persons who identify themselves as Black, Hispanic, Asian American, American Indian/Alaskan Native, and Pacific Islander. A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population.

According to the 2010 U.S. Census Bureau, 19.0% of the residents of Dyer County are minorities. The percentage of people living below the poverty level from 2006 to 2010 was 20.2% (http://quickfacts.census.gov/qfd/states/47/47045.html). Therefore, no adverse impacts to minority or low income communities are expected.

3.1.9 AIR QUALITY

Existing Conditions

In an e-mail response dated June 27, 2013, the TDEC stated that Dyer County is an Attainment Area for all Tennessee state air quality parameters measured in the local area.

3.1.10 WATER QUALITY

Existing Conditions

The project area watershed is divided between two watersheds, with the eastern portion draining into the Obion River and the western portion draining into the Mississippi River. There are no water bodies of significance within the project area, thus no water bodies within the project area have been assessed for water quality. It then drains south along the levee until it pours into the Obion River just upstream of its confluence with the Mississippi River. The western portion of the project area drains into small ditches which empty directly into the Mississippi River. The Obion and Mississippi rivers have been assessed for water quality. According to the TDEC, the Obion and Mississippi rivers in this area are not supporting recreational, fish and wildlife water

quality standards; however, they do support domestic, irrigation, and livestock use water quality standards.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 WETLANDS

Future Conditions with No Action

Without implementation of the proposed action, no existing wetlands are expected to be impacted. However, a major flood event could cause destruction of several acres of wetland habitat.

Future Conditions with the Proposed Action

Northern Levee Realignment: With implementation of the proposed action, 0.35 acres of wetlands would be filled in order to maintain the structural stability of the proposed Northern Levee alignment as the wetland sites are located within low-lying areas of the proposed realignment (Figure 3). Consideration of the objectives of Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands) have been made during the planning and evaluation of this proposed project; however, in order to provide the necessary flood damage reduction measures, the project features must be sited in the floodplain. Methods to avoid or minimize impacts were investigated during project design; however, some impacts were unavoidable. Compensatory mitigation for unavoidable impacts to wetlands has been coordinated with the TDEC and is discussed in detail in the Mitigation Section (6.0) below.

The proposed Northern Levee realignment isolates an additional approximately 127 acres from flooding from the Mississippi River during high-water events and flooding. While most of the area to be protected is used for agricultural production, approximately 15 acres of the isolated area consists of historical blue holes from previous levee breaches and BLH forest. No significant indirect impacts to wetlands due to the proposed project activities are expected as the area has existed for a significant amount of time and is likely recharged from shallow groundwater and precipitation rather than periodic flooding from the Mississippi River; however, monitoring would be conducted for a period of five years to ensure that no significant impacts to wetlands due to the proposed activities occur.

4.2 AQUATIC RESOURCES /FISHERIES

Future Conditions with No Action

Without implementation of the proposed action, no existing aquatic resources/fisheries would be impacted.

Future Conditions with the Proposed Action

Northern Levee Realignment: With implementation of the proposed action, no existing aquatic resources/fisheries are expected to be impacted. Historic blue holes and new scour holes created during the 2011 flood would not be affected by the proposed actions. The proposed Northern Levee realignment isolates an additional approximately 127 acres from flooding from the Mississippi River during high-water events and flooding. While most of the area to be protected is used for agricultural production, approximately 15 acres of the isolated area consists of historical blue holes from previous levee breaches and BLH forest. No significant indirect impacts to aquatic resources/fisheries due to the proposed project activities are expected as the historic blue holes have existed for a significant amount of time and are likely recharged from shallow groundwater and precipitation rather than periodic flooding from the Mississippi River; however, monitoring would be conducted for a period of five years to ensure that no significant impacts to aquatic resources due to the proposed activities occur.

Culvert Replacement at the Obion River: With implementation of the proposed action, a large drainage ditch flowing through the existing damaged culverts would be temporarily impacted due to the replacement of the culverts and filling of the existing ditch to an elevation of approximately 259 survey feet North American Vertical Datum of 1988. The majority of the aquatic species would avoid the proposed project area during construction, although some sessile organisms may be negatively impacted. A new drainage ditch would be constructed to direct the water from the area protected by the Dyer County Little Levee through the proposed 8x8-foot concrete box culvert into the Obion River downstream of the Tennessee Highway 181 Bridge. This ditch would eventually support the same species currently inhabiting the existing drainage ditches. No indirect impacts to the area surrounding the proposed culvert replacement are expected as the same area would be drained in the same manner as in the past, but with a more stable passage through the Dyer County Little Levee into the Obion River.

4.3 BOTTOMLAND HARDWOOD FOREST

Future Conditions with No Action

Without implementation of the proposed action, no existing BLH forest resources would be impacted. However, a major flood event could cause the destruction of several acres of BLH habitat.

Future Conditions with the Proposed Action

Northern Levee Realignment: With implementation of the proposed action, approximately 1.25 acres of BLH are expected to be impacted by tree clearing. Methods to avoid or minimize impacts were investigated during project design; however, some impacts were unavoidable. Compensatory mitigation for unavoidable impacts to BLH forest has been coordinated with the TDEC and is discussed in detail in the Mitigation Section (6.0) below. The proposed Northern Levee realignment isolates an additional approximately 127 acres from flooding from the Mississippi River during high-water events and flooding. While most of the area to be protected is used for agricultural production, approximately 15 acres of the isolated area consists of historical blue holes from previous levee breaches and BLH forest. No significant indirect impacts to BLH forest due to the proposed project activities are expected as the BLH forest has existed for a significant amount of time and is likely recharged from shallow groundwater and

precipitation rather than periodic flooding; however, monitoring would be conducted for a period of five years to ensure that no significant impacts to BLH forest due to the proposed activities occur.

Culvert Replacement at the Obion River: With implementation of the proposed action, a total of approximately 3.3 acres of BLH forest would be cleared of trees and woody vegetation consisting of 1.53 acres of BLH forested wetlands riverside of the levee and 1.81 acres of non-wet BLH landside of the levee. Methods to avoid or minimize impacts were investigated during project design; however, some impacts were unavoidable. No indirect impacts to the area surrounding the proposed culvert replacement are expected as the same area would be drained in the same manner as in the past, but with a more stable passage through the Dyer County Little Levee into the Obion River. Compensatory mitigation for unavoidable impacts to BLH forest has been coordinated with the TDEC and is discussed in detail in the Mitigation Section (6.0) below.

4.4 WILDLIFE

Future Conditions with No Action

Without implementation of the proposed action, no existing wildlife resources would be directly impacted. However, if a levee breach occurs significant adverse impacts would likely affect all wildlife habitat within the approximately12,000 acres protected by the entire Dyer County Little Levee stretch.

Future Conditions with the Proposed Action

Northern Levee Realignment: With implementation of the proposed action, no adverse impacts to wildlife resources are expected. Although approximately 1.25 acres of tree clearing would occur within the proposed realignment similar habitat is available in adjacent areas. No significant indirect impacts to wildlife are expected as wetlands, aquatic resources/fisheries, and BLH are not expected to be significantly impacted.

Culvert Replacement at the Obion River: With implementation of the proposed action, no adverse impacts to wildlife resources are expected. Although approximately 3.3 acres of tree clearing would occur within the proposed culvert replacement site, similar habitat is available in adjacent areas. Aquatic wildlife may be temporarily impacted by the redirection of the existing ditch, discussed previously; however, similar aquatic habitat and species would eventually colonize the proposed ditch. No significant indirect impacts to wildlife are expected as wetlands, aquatic resources/fisheries, and BLH are not expected to be significantly impacted.

4.5 THREATENED AND ENDANGERED SPECIES

Future Conditions with No Action

Without implementation of the proposed action, no threatened or endangered species or their critical habitat would be directly impacted by the proposed actions. However, if a levee breach

occurs significant adverse impacts would likely effect any critical habitat existing within the approximately12,000 acres protected by the entire Dyer County Little Levee stretch.

Future Conditions with the Proposed Action

Northern Levee Realignment: With implementation of the proposed action, no adverse impacts to threatened or endangered species or their critical habitat are expected; however, a total of 1.25 acres of forested habitat would be cleared for the Northern Levee realignment. During a site visit conducted on June 7, 2013, USACE biologists observed two potential roost trees within the footprint of the proposed project area; therefore, bottomland hardwood forest existing within the proposed Northern Levee realignment may be used for summer roosting and feeding habitat by Indiana bats. An acoustic survey was conducted by USACE biologists on July 12 and 13, 2013, to determine the potential presence or absence of the Indiana bat. Results showed the probable absence of Indiana bat populations; however, an emergence survey (i.e. survey conducted from approximately 1-hour before sunset until approximately 1-hour after sunset to visually determine whether or not there is an emergence of bats from potential roost tree/s) will be conducted at the two potential roost trees to ensure that no Indiana bats would be impacted by the cutting of the potential roost trees. USFWS concurred with this proposal by e-mail dated July 19, 2013 (Appendix 1).

Culvert Replacement at the Obion River: With implementation of the proposed action, no adverse impacts to threatened or endangered species or their critical habitat are expected. A total of approximately 3.3 acres of BLH forest would be cleared of trees and woody vegetation. An acoustic survey was conducted by USACE biologists on July 12 and 13, 2013, to determine the potential presence or absence of the Indiana bat. Results showed the probable absence of Indiana bat populations. Proposed measures to minimize potential impacts to Indiana bats would include clearing trees between October 15 and March 31, when Indiana bats would be in the winter hibernacula. USFWS concurred with this proposal by e-mail dated July 19, 2013 (Appendix 1).

4.6 CULTURAL RESOURCES

Future Conditions with No Action

Without implementation of the proposed action, no significant cultural resources would be directly impacted by the proposed actions. However, previously unrecorded sites could be damaged or eroded with the next flood event as the approximately 12,000-acre area would be left unprotected.

Future Conditions with the Proposed Action

With implementation of the proposed action, no significant cultural resources would be directly impacted by the proposed actions. Section 106 consultation is complete as per letters from the TN SHPO dated May 29, 2012 (Northern Levee), July19, 2012 (Choctaw Levee), and April 17, 2013 (culvert replacement) (Appendix 1).

4.7 SOCIO-ECONOMIC RESOURCES

Future Conditions with No Action

Without implementation of the proposed action, the damaged Dyer County Little Levee would allow low to moderate flooding from the Mississippi River to inundate part or all of the protected area behind the levee causing significant economic loss. This levee protects approximately 12,000 acres of agriculturally developed land, 30 homes, 2 businesses, a church, and 41 farm buildings. The total value of the structures is estimated at $2,718,000. It is also estimated that more than eighty people reside within the area. Flooding would displace residents and businesses; increase mental and physical stress of those displaced, and would generally diminish the quality of life and economy of the residents and local communities. If the levee is not repaired, more damages are expected to agricultural lands and residential dwellings with the next high water event.

Future Conditions with the Proposed Action

With implementation of the proposed action, quality of life for the residents and businesses protected by the Dyer County Little Levee would likely return to its pre-flood condition.

4.8 ENVIRONMENTAL JUSTICE

Future Conditions with No Action

Without implementation of the proposed action, no adverse impacts to low-income communities are expected**.** The study area was not identified as a low-income community. If the proposed project features are not constructed, there will be no direct disproportionately high or adverse human health or environmental effects on any minority and/or low-income populations as per E.O. 12898.

Future Conditions with the Proposed Action

With implementation of the proposed action, no adverse impacts to low-income communities are expected**.** The study area was not identified as a low-income community. If the proposed project features are constructed, there will be no direct disproportionately high or adverse human health or environmental effects on any minority and/or low-income populations as per E.O. 12898.

4.9 AIR QUALITY

Future Conditions with No Action

Without implementation of the proposed action, air quality in the area would not change.

Future Conditions with the Proposed Action

With implementation of the proposed action, the project-related construction equipment would produce small amounts of engine exhaust during construction activities. The temporary, minor impacts to air quality would be localized to the project area and would not affect area residents. Tennessee's State Implementation Plan is not expected to be impacted. The TDEC Air Pollution Control Division concurred by e-mail dated June 27, 2013, that the proposed actions would not affect air quality in the area and should not affect Dyer County's current attainment status (Appendix 1).

4.10 WATER QUALITY

Future Conditions with No Action

Without implementation of the proposed action, no significant changes in water quality would be expected. Some increases in turbidity may occur during flooding events due to erosion, but these would be relatively minor and localized.

Future Conditions with the Proposed Action

With implementation of the proposed action, some short-term increases in turbidity would be expected during the replacement of the culvert and realignment of the drainage ditch. However, this disturbance would be limited in duration to the construction period. Best management practices would be utilized throughout construction duration.

4.11 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

The USACE is obligated under Engineer Regulation (ER) 1165-2-132 to assume responsibility for the reasonable identification and evaluation of all hazardous, toxic, and radioactive waste (HTRW) contamination within the vicinity of proposed actions. ER 1165-2-132 identifies that HTRW policy is to avoid the use of project funds for HTRW removal and remediation activities. A record search has been conducted of the Environmental Protection Agency's (EPA) EnviroMapper Web Page (http://maps.epa.gov). The EPA search engine was checked for any superfund sites, toxic releases, or hazardous waste sites within the vicinity of the proposed project. Site inspection of the proposed project area was conducted by USACE personnel on April 23, 2012. An Environmental records search and the site survey conducted did not identify the presence of any hazardous or suspected hazardous wastes in the project area. As a result of these assessments, it was concluded that the probability of encountering HTRW is low. If a recognized environmental condition is identified in relation to the project site, the USACE, Memphis District, would take the necessary measures to avoid the recognized environmental condition so that the probability of encountering or disturbing HTRW would continue to be low. If any HTRW is encountered during construction activities, the proper handling and disposal of these materials would be coordinated with the TDEC.

4.12 CUMULATIVE IMPACTS

The Council on Environmental Quality's (CEQ) regulations (40 CFR 1500-1508) implementing the procedural provisions of the National Environmental Policy Act (NEPA) of 1969, as

amended (42 U.S.C. 4321 et seq.) define cumulative effects as "the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7)". Cumulative Effects can result from individually minor but collectively significant actions taking place over a period of time."

Northern Levee Realignment: The proposed Northern Levee realignment would result in adverse impacts to 0.35 acres of wetlands, 1.25 acres of BLH forest, and wildlife resources. To the extent practical, the proposed project features avoid long- and short-term adverse impacts to wetlands; however, some impacts are unavoidable. Compensatory mitigation for unavoidable impacts has been coordinated with TDEC and is discussed in the Mitigation Section below.

Choctaw Levee Realignment: No impacts to wetlands, BLH forest, wildlife resources, or other relevant resources are expected with the implementation of the proposed Choctaw Levee realignment as the realignment footprint is located entirely within an industrial property.

Culvert Replacement at the Obion River: The proposed culvert replacement would result in temporary impacts to aquatic resources as the existing drainage ditches would be filled and no longer support aquatic life. However, the proposed drainage ditch would eventually support the same species presently found in the existing ditches. Approximately 3.3 acres of BLH forest would be cleared of trees for the realignment of the proposed drainage ditch. Compensatory mitigation for unavoidable impacts to BLH forest has been coordinated with TDEC and is discussed in the Mitigation Section below.

None of the alternatives are expected to have significant adverse cumulative impacts as the area protected by the Dyer County Little Levee has been largely disturbed due to the clearing, levee construction, and introduction of drainage ditches to aid in agricultural production. The direct, indirect, and cumulative impacts associated with the proposed Dyer County Little Levee Project have been assessed in this draft EA.

Overall, the proposed project, in comparison to past, present, and reasonably foreseeable future actions, would not contribute significant impacts to the general project area. The preferred alternative would accomplish flood risk reduction objectives, which are of great importance in the Lower Mississippi Valley. Repairing the extensive damage at Dyer County Little Levee would ensure the ability of the levee to prevent flood damage to the environment on the protected side of the levee. While it is recognized that there would be impacts to wetlands, aquatic resources and BLH forest arising from project construction, those impacts would be compensated by mitigation as described in the Mitigation Section, 6.0, below.

5.0 COORDINATION

Preparation of this draft EA and a draft Finding of No Significant Impact (FONSI) is being coordinated with appropriate Congressional, Federal, state, and local interests, as well as environmental groups and other interested parties. The following agencies, as well as other interested parties, will receive copies of this draft EA and the FONSI:

U.S. Department of Interior, Fish and Wildlife Service
U.S. Environmental Protection Agency, Region IV
Natural Resources Conservation Service, State Conservationist
Tennessee Department of Environmental and Conservation
Tennessee State Historic Preservation Officer
U.S. Fish and Wildlife Service
Tennessee Wildlife Resources Agency

6.0 MITIGATION

The appropriate application of mitigation is to formulate an alternative that first avoids adverse impacts, then minimizes adverse impacts, and lastly, compensates for unavoidable impacts to relevant resources within the proposed project footprint. This draft EA evaluates the potential impacts associated with the realignments of the Northern and Choctaw Levee reaches and the replacement of the damaged culverts through the Dyer County Little Levee in Dyer County, Tennessee.

Northern Levee Realignment: Approximately 1.25 acres of BLH forest is expected to be permanently impacted by tree clearing due to the Northern Levee realignment. Three wetlands totaling approximately 0.35 acres of permanent impacts to wetlands are included in the 1.25 acres of BLH forest. The wetlands would be filled in order to maintain the structural stability of the proposed levee as the wetland sites are located within low-lying areas of the proposed Northern Levee realignment. The remaining 0.9 acres of BLH forest were determined to be non-wet by representatives from the USACE Regulatory Program.

Previous BLH evaluations conducted by USACE biologists in forests with tree species and forest maturity similar to the proposed project area using the Habitat Evaluation System and the Habitat Evaluation Procedures yielded an average compensatory mitigation ratio of 2.3 acres of mitigation to 1 acre of impacts (2.3:1). Therefore, in-kind compensatory mitigation for adverse impacts to the 0.9 acres of non-wet BLH forest would be conducted at a site to be determined at a ratio of 2.3:1, resulting in the restoration of approximately 2 acres of cleared land to BLH forest. Site acquisition for the non-wet BLH mitigation would occur concurrently with construction.

During discussions with the TDEC personnel, it was determined that a mitigation ratio of 2 acres of mitigation to 1-acre of impacts (2:1) was appropriate as mitigation would be conducted on prior-converted cropland. In-kind compensatory mitigation to offset adverse impacts to the 0.35 acres of BLH forested wetlands would be conducted at the proposed Northern Levee borrow area at a ratio of 2:1; therefore, approximately 0.7 acres of prior converted cropland would be restored to jurisdictional wetlands. According to the Natural Resources Conservation Service, the proposed Northern Levee borrow site meets the prior converted cropland designation. Tree planting on both mitigation sites would be conducted in the dormant season during the fall/winter of 2013-2014. Hydrologic restoration for the proposed borrow area would occur prior to tree planting.

Choctaw Levee Realignment: No compensatory mitigation would be required at the Choctaw Levee realignment reach as no impacts to relevant resources are expected.

Culvert Replacement at the Obion River: Approximately 1.81 acres of non-wet BLH forest on the landside and 1.53 acres of BLH forested wetlands on the riverside of the Dyer County Little Levee would be impacted by tree clearing due to the replacement of the damaged culverts and digging a new channel to redirect storm water through the proposed new box culvert. In-kind compensatory mitigation for adverse impacts to the 1.81 acres of non-wet BLH forest would be conducted at a site to be determined at a ratio of 2.3:1, resulting in approximately 4.2 acres of BLH restoration. In-kind compensatory mitigation for adverse impacts to the 1.53 acres of BLH forested wetlands on the riverside of the levee would be conducted at the proposed Northern Levee borrow site at a ratio of 2:1, resulting in approximately 3.1 acres of BLH forested wetland restoration.

7.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Environmental compliance for the proposed action would be achieved upon: coordination of this draft EA and draft FONSI with appropriate agencies, organizations, and individuals for their review and comments; USFWS confirmation that the proposed action would not be likely to adversely affect any endangered or threatened species; receipt of a Water Quality Certificate from the State of Tennessee; public review of the Section 404(b)(1) Public Notice; signature of the Section 404(b)(1) Evaluation; and receipt of the TN SHPO determination of No Affect on cultural resources. The draft FONSI will not be signed until the proposed action achieves environmental compliance with applicable laws and regulations, as described above.

On May 29, 2012, July 19 2012, and April 17, 2013, TN SHPO concurred that no known archaeological sites or historic properties that would be affected by the proposed action.

On July 18, 2013, USFWS concurred that no adverse impacts to threatened and endangered species or their critical habitat due to the proposed actions are likely to occur.

On July 22, 2013, USACE sent application to TDEC-Division of Water Pollution Control for Water Quality Certification. A public notice will be posted in the appropriate public newspaper as well as a public notice sign posted in the vicinity of the proposed project area for the obligatory 30-day public comment period.

8.0 CONCLUSION

The repair of the extensive damage to the Dyer County Little Levee would ensure continued flood protection of the approximately 12,000 acres previously protected by the levee and resolve the risks associated with damage to property and possible human injury or loss of life. This office has assessed the environmental impacts of the project and has determined that the proposed project would result in minor impacts to wetlands, BLH forest, and wildlife resources. No impacts are expected to affect air quality, water quality, HTRW, or socio-economic resources. No significant comments or effects are expected to be identified during the agency

review and public comment period; a draft FONSI has been prepared for signature. Signature of the FONSI will be dependent upon findings of the final EA.

9.0 PREPARED BY

The Dyer County Little Levee draft EA and the associated draft FONSI were prepared by Leonard Pitcher, biologist, with the Cultural Resources Section prepared by Dr. Robert Dunn. The address of the preparers is: U.S. Army Corps of Engineers, 167 North Main, Rm B-202, Memphis, TN 38103-1894.

10.0 REFERENCES

Simon, A., Hupp, C. 1992. Geomorphic and Vegetative Recovery Processes Along Modified Stream Channel of West Tennessee (OFR 91-502). U.S. Geological Survey

U.S. Army Corps of Engineers. 1982. Environmental Impact Statement, Final Supplement West Tennessee Tributaries Project. U.S Army Corps of Engineers, Memphis District. (A)*

U.S. Army Corps of Engineers. 1982. General Design Memorandum West Tennessee Tributaries Project. U.S Army Corps of Engineers, Memphis District. (B)*

U.S. Fish and Wildlife Service. 1980. Habitat Evaluation Procedures (HEP), 102 ESM. U.S. Fish and Wildlife Service, Washington, DC.

U.S. Army Corps of Engineers. 1980. A Habitat Evaluation System for Water Resources Planning. Lower Mississippi Valley Division, Vicksburg, Mississippi. 84 pp. plus appendices.

*References to USACE literature will be specified in the paper using A or B to avoid confusion on which 1982 publication is being referenced.

APPENDIX 1: Coordination

United States Department of the Interior

FISH AND WILDLIFE SERVICE
446 Neal Street
Cookeville, TN 38501

May 8, 2013

Mr. Leonard J. Pitcher
Fishery and Wildlife Biologist
U.S. Army Corps of Engineers, Memphis District
167 North Main Street, Room B-202
Memphis, Tennessee 38103-1894

Subject: FWS # 2013-CPA-0410. Proposed Little Levee Culvert Replacement Project – Indiana Bat Habitat Assessment, Dyer County, Tennessee.

Dear Mr. Pitcher:

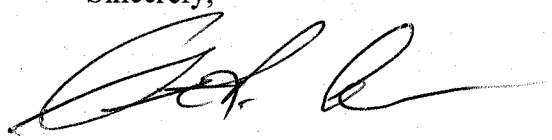
Thank you for your email correspondence of April 9, 2013, concerning the U.S. Army Corps of Engineers, Memphis District proposal to replace existing ageing metal culverts with a new concrete box culvert near the Highway 181 Bridge over the Obion River in Dyer County, Tennessee. Your correspondence includes results of an assessment performed to determine the potential for suitable roosting habitat of the federally endangered Indiana bat (*Myotis sodalis*). U.S. Fish and Wildlife Service personnel have reviewed the information submitted and we offer the following comments.

Your assessment indicates that the proposed site consists of three small wooded areas, totaling 1.8 acres, which may require clearing. Your assessment indicates that 9 live trees (black willows) and one snag (elm) were observed that might provide marginally suitable summer roost habitat for the Indiana bat. You have indicated that abundant suitable roosting habitat exists near the site. In a phone conversation with Robbie Sykes, of my staff, you indicated that it was a possibility that the trees could be removed between October 15 and March 31 when bats would be at their winter hibernacula. Also, with the few number of marginally suitable trees observed at the site, an emergence count at each tree could be conducted at dusk and if no bats are observed, the trees could be felled within 24 hours. Provided one of these options is used, we believe that the likelihood for impacts to this species is discountable and would need no further consultation. If neither of these options is feasible, an acoustic and possible mist net survey may be required. Please coordinate with our office as to which option is feasible.

You have also determined that no bald eagle nests were observed on the project site. Based on this information, we believe the project would have no effect to bald eagles.

Thank you for the opportunity to comment on this proposed action. If you have any questions regarding the information which we have provided, please contact Robbie Sykes of my staff at 931/525-4979.

Sincerely,



For Mary E. Jennings
Field Supervisor

From: David Pelren [david_pelren@fws.gov]
Sent: Friday, July 19, 2013 1:11 PM
To: Pitcher, Leonard MVM
Cc: Carpenter, Andrea MVM; Robbie Sykes; Rob Todd
Subject: RE: results of bat acoustic data analysis for Dyer County Little Levee (UNCLASSIFIED)

Lennie -

I have reviewed your report of bat acoustic survey efforts conducted for the subject project, which you provided by e-mail on July 18, 2013. You indicated that two suitable roost trees will be felled at the site of the Northern alignment and that biologists will conduct evening emergence surveys of these trees in accordance with the specifications that you described in your e-mail. I understand that you will coordinate with us prior to tree removal if bats are observed emerging from the trees. Furthermore, trees at the culvert replacement site will be cleared between October 15 and March 1. Therefore, I agree that the potential for impacts to the Indiana bat and its habitat is minimal.

Based on use of the measures described above, I believe that tree clearing would not likely result in adverse effects to the Indiana bat. The Fish and Wildlife Service concludes that the requirements of the Endangered Species Act (Act) of 1973, as amended, are fulfilled for the Indiana bat and other endangered and threatened species relative to the Little Levee project. You should coordinate further with our office if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

We in the Tennessee Ecological Services Field Office appreciate your efforts to appropriately address the needs of the Indiana bat in this situation. Feel free to contact me with any questions.

David Pelren
Fish and Wildlife Biologist
Ecological Services
U.S. Fish and Wildlife Service
446 Neal St.
Cookeville, TN 38501
office phone: 931-525-4974
cell phone: 931-261-5844

-----Original Message-----
From: Pitcher, Leonard MVM [mailto:Leonard.J.Pitcher@usace.army.mil]
Sent: Thursday, July 18, 2013 5:33 PM
To: David Pelren
Cc: Carpenter, Andrea MVM
Subject: results of bat acoustic data analysis for Dyer County Little

Levee (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi David;

Per our conversation:
On July 12 and 13 the bat acoustic survey was performed for the proposed Dyer County Little Levee repair project as originally proposed. The bat acoustic data analysis indicated that there were grey bats present in the area. Further analysis by USACE ERDC staff Dr. Eric Britzke and Mike Whitby has indicated that the grey bat calls identified by the software are likely not Grey bats but are a result of echoes on some bat calls and the resultant software misidentification. There was one call sequence that was identified as an Indiana bat. Dr. Britzke and Mr. Whitby indicated it may be an Indiana bat or another species of Myotis. This possible Indiana bat call was in the area of the Northern alignment. In this same area we have identified two potential Indiana bat roost trees in the areas proposed for clearing. For these two potential roost trees USACE biologists will conduct emergence surveys in accordance with the Draft Revised Indiana bat summer survey guidelines (May 2013). If emergence survey results are negative the potential roost trees will be cut down within 24 hours after the survey. If emergence survey results are positive USACE will notify the TN USFWS FO of the results the next day. Additionally acoustic recording devices will be installed nearby to possibly identify any bat species that exit the trees during the emergence survey.

For the culvert replacement site winter tree clearing (15 Oct - 1 March) will be implemented in the area that has potential roost trees even though no Indiana bat calls were recorded in the area. Other forested areas that have no potential roost trees at this site and the northern alignment portion of the project may be cleared during the summer months.

Please respond with any questions or concerns about the proposed project and activities to address concerns pertaining to the Indiana bat. Also, for the response to this email please "reply to all" since I will be out of the office tomorrow but my co-worker, Ms. Carpenter, will be and would like to incorporate our conversation into the EA for this project.

Thank you

Lennie

Leonard J. Pitcher
Fishery and Wildlife Biologist
U.S. Army Corps of Engineers, Memphis District
167 North Main, Rm B-202
Clifford Davis/Odell Horton Federal Building Memphis, TN 38103-1894
ph: 901-544-0705
Email: Leonard.J.Pitcher@usace.army.mil

Classification: UNCLASSIFIED
Caveats: NONE

TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

May 29, 2012

Mr. Edward Lambert
United States Army Corps of Engineers
Memphis District
167 North Main Street B-202
Memphis, Tennessee 38103-1894

RE: COE-M, ARCHAEOLOGICAL ASSESSMENT, REALIGN LITTLE LEVEE, BOOTHS POINT, UNINCORPORATED, DYER COUNTY, TN

Dear Mr. Lambert:

At your request, our office has reviewed the above-referenced archaeological survey report in accordance with regulations codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739). Based on the information provided, we concur with your agency that the project area contains no archaeological resources eligible for listing in the National Register of Historic Places.

If project plans are changed or archaeological remains are discovered during construction, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act.

Your cooperation is appreciated.

Sincerely,

E. Patrick McIntyre, Jr.

E. Patrick McIntyre, Jr.
Executive Director and
State Historic Preservation Officer

EPM/jmb

DEPARTMENT OF THE ARMY
MEMPHIS DISTRICT CORPS OF ENGINEERS
167 NORTH MAIN STREET B-202
MEMPHIS, TENNESSEE 38103-1894

Reply to
Attention of:

May 17, 2012

Environmental Compliance Branch

Mr. E. Patrick McIntyre
Executive Director and
State Historic Preservation Officer
Tennessee Historical Commission
2941 Lebanon Road
Nashville, Tennessee 37242-0442

Dear Mr. McIntyre:

The Memphis District, U.S. Army Corps of Engineers, has proposed to realign the Dyer County Little Levee, Booths Point, Dyer County, Tennessee. This action comes as a result of the severe levee scouring caused by the historic 2011 flood. The project location can be found on the enclosedportion (Enclosure 1) of the Caruthersville, SE, MO.—TENN. 7.5 minute quadrangle map. The map shows two areas: Section A, location of existing levee and location of proposed new levee alignment; and, Section B, possible borrow site.

Work will consist of removing the existing levee and rebuilding it south of and parallel to Bunge Road. The levee footprint will be 30 meters or less wide. The old levee will provide the building materials for the new levee. However, if the old levee does not contain enough suitable clay soil to totally rebuild the new levee borrow, materials may be taken from Section B. In the unlikely event that more borrow material is required it will be taken from some place within Section A. Equipment operation and staging will occur in Section A. Sections A & B will be discussed individually below.Thepedestrian survey conducted by Corps staff archaeologists McNeil and Dunn used transects spaced 30 meters apart. Surface visibility in the plowed fields was excellent

Section A. A high private levee defines the eastern and southern limits of this section while a lower private levee parallelsBunge Road and defines the northern limits of the section. Memphis District archeologists conducted a pedestrian survey of the entire area within the levees (Photograph 1-12). Also, a 60 meter swath paralleling the outer edges of the levees was surveyed around the perimeter of Section A. Enclosure 2 is an aerial photograph of the area surveyed both inside and outside the levees. (Note: this aerial photograph was taken before the 2011 flood) Within the levees most of the area had been plowed and visibility was 100%; however, a portion of the southern section had a line of trees and beyond that the land had been heavily eroded by floodwaters. Even with some vegetation in these eroded areas visibility was at least 80%. Five historic scatters were found during the survey of this section.

Scatter A1, consisted of bricks, white ware, bottle parts, clear glass, washing machine (ringer portion), miscellaneous metal parts, plastic, and a few pieces of purple (amethyst) glass

(Photograph 2-39). Washing machines with ringers were used between the 1930's and the 1960's and possibly longer in the country. Shovel tests (Photograph 3-10) indicate that the site has no subsurface deposits and has been heavily disturbed by farming. The site area is not considered significant. The 1971 Caruthersville, SE, MO.—TENN. topographic map shows a structure at this location.

Scatter A2, consists of two discrete concentrations of clear glass, white ware, plastic, and miscellaneous pieces of metal. No diagnostic artifacts were found. The concentrations are approximately 25 meters apart with a light scatter of artifacts linking the two areas. The width of the scatter is overall approximately 15 meters. Shovel tests indicate that the site has nosubsurface integrity and has been heavily disturbed by farming. The scatter area is not considered significant.

Scatter A3 consisted of smaller pieces of clear glass, white ware, and some metal. No diagnostic artifacts were found. No heavier artifact concentrations were found and due to its recent age the area was not considered an archeological site ..

Scatter A4, is a small scatter area with a few pieces of clear glass and a few pieces of white ware. No diagnostic artifacts were found. The scatter is not considered worthy of a site number and is not considered significant.

Shovel tests (Photograph 4-11) over the plowed field indicates that the plow zone is shallow (10-12 centimeters deep) and that the underlying surface is stiff clay (Photograph 5-9). All scatters are strictly surficial with no subsurface integrity. Artifacts at all these scatters are very similar and are probably from the same time period, 1930's –1950's. Thus, none are considered significant and do not require further archaeological investigation.

The 1971 Caruthersville, SE, MO.—TENN. topographic map shows a structure in the lower portion of Section A, just below a smaller levee in the tree line (marked with a "?" on Enclosure 2). This area (Photograph 6-19) was checked for indications of the structure or associated artifacts and none were found. The area has been eroded by flooding and possibly all of the site area has been washed away.

A swath 60 meters wide landward from the levee toe was surveyed on the outer edges of Section A. Only one scatter (A5) was found in this portion of the survey.Scatter A5, is a historic scatter on the northern side of Bunge Road (Photograph 7-7); the structure for this site shows on the 1971 Caruthersville, SE, MO.—TENN. topographic map. Surface artifacts included clear glass, colored glass, ceramics, white ware, and various metal pieces. Like the other scatters this one has no subsurface integrity, has been badly damaged by farming, and is not considered significant. This scatter will be avoided.

At the very northeast corner of the survey area and ou side our 60 meter project area boundary the 1971 Caruthersville, SE, MO.—TENN. topographic map shows a structure (A6). This area was surveyed but no indication of the structure or any associated artifacts was found.

It is unlikely that borrow will be taken from Section A, however, the possibility exists. Trucks

and other equipment will operate within a narrow right of way at the levee construction area and on haul roads.All artifact scatters, except possibly Scatter A2, within Section A can be avoided during construction of the levee.

Section B is located at the junction of Bunge Road and the levee road (Highway 181). The Area of Potential Effect (APE) had been plowed and visibility was 100% (Photograph 8-2). The plow zone was 10-12 centimeters deep and beneath that was thick clay (the reason it was chosen for borrow). The area was surveyed in 30 meter transects. The 1971 Caruthersville, SE, MO.—TENN. topographic map shows two structures in the APE and artifacts were found in those locations. Artifacts included clear glass, colored glass, white wear, various pieces of metal, brick, and plastics. These artifact scatters are designated B1 and B2 (Enclosure 3). Due to the intensive (excessive) farming practices and their complete lack of subsurface integrity neither site is considered significant and no further archeological work is required.

A moderate sized scatter of historic artifacts (B3) was located to the southwest of scatters B1 and B2. Artifacts include glass, metal pipes, recent rubber tires, recent beer cans and bottles, older white ware, various metal parts, plastics, a wide range of recent and older farm related objects. The artifacts in this dump have been mixed and distributed by plowing and other farming practices. The artifact scatter is not considered significant, and based on their mapped presence on the topographic quadrangle, not old enough to be determined an archeological site.

None of the historic scatters described above have subsurface integrity, defining features or artifacts to support a pre-1933 date, the principal criteria used for aTennessee state site number. Due to the complete lack of subsurface integrity and the destructive farming practices none of these artifact scatters are considered significant. My professional staff archaeologists have determined that the proposed work will not affect significant cultural resources and that no further cultural resources work is required for this project. Pursuant to 36 CFR800.4 we request your concurrence with this no effect determination within thirty days.

Should you need further information, contact our DistrictArcheologist, Jimmy McNeil, at 901-544-0710, or by email at Jimmy.D.McNeil@usace.army.mil.

Sincerely,

Edward P. Lambert
Chief Environmental Compliance Branch
Regional Planning and Environmental
Division South

Enclosures

TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

April 17, 2013

Mr. Edward Lambert
United States Army Corps of Engineers
Memphis District
167 North Main Street, B-202
Memphis, Tennessee 38103-1894

RE: COE-M, NEW CULVERTS/CHANNELS/LITTLE LEVEE, UNINCORPORATED, DYER COUNTY

Dear Mr. Lambert:

The Tennessee State Historic Preservation Office has reviewed the above-referenced undertaking received on Thursday, April 4, 2013 for compliance by the participating federal agency or applicant for federal assistance with Section 106 of the National Historic Preservation Act. The Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

After considering the documentation submitted, we concur with your agency that there are no National Register of Historic Places listed or eligible properties affected by this undertaking. This determination is made either because of the location, scope and/or nature of the undertaking, and/or because of the size of the area of potential effect; or because no listed or eligible properties exist in the area of potential effect; or because the undertaking will not alter any characteristics of an identified eligible or listed property that qualify the property for listing in the National Register or alter such property's location, setting or use. Therefore, this office has no objections to your proceeding with the project.

If your agency proposes any modifications in current project plans or discovers any archaeological remains during the ground disturbance or construction phase, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. You may direct questions or comments to Jennifer M. Barnett (615) 741-1588, ext. 105. This office appreciates your cooperation.

Sincerely,

E. Patrick McIntyre, Jr.

E. Patrick McIntyre, Jr.
Executive Director and
State Historic Preservation Officer

EPM/jmb

TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

July 19, 2012

Mr. Edward Lambert
United States Army Corps of Engineers
Memphis District
167 North Main Street B-202
Memphis, Tennessee 38103-1894

RE: COE-M, LEVEE REALIGNMENT/REVISED PLANS, UNINCORPORATED, DYER COUNTY

Dear Mr. Lambert:

The Tennessee State Historic Preservation Office has reviewed the above-referenced undertaking received on Thursday, July 12, 2012 for compliance by the participating federal agency or applicant for federal assistance with Section 106 of the National Historic Preservation Act. The Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

After considering the documentation submitted, we concur with your agency that there are no National Register of Historic Places listed or eligible properties affected by this undertaking. This determination is made either because of the location, scope and/or nature of the undertaking, and/or because of the size of the area of potential effect; or because no listed or eligible properties exist in the area of potential effect; or because the undertaking will not alter any characteristics of an identified eligible or listed property that qualify the property for listing in the National Register or alter such property's location, setting or use. Therefore, this office has no objections to your proceeding with the project.

If your agency proposes any modifications in current project plans or discovers any archaeological remains during the ground disturbance or construction phase, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. You may direct questions or comments to Jennifer M. Barnett (615) 741-1588, ext. 105. This office appreciates your cooperation.

Sincerely,

E. Patrick McIntyre, Jr.
Executive Director and
State Historic Preservation Officer

EPM/jmb

DEPARTMENT OF THE ARMY
MEMPHIS DISTRICT CORPS OF ENGINEERS
167 NORTH MAIN STREET B-202
MEMPHIS, TENNESSEE 38103-1894

Reply to
Attention of:

June 9, 2012

Environmental Compliance Branch

Mr. E. Patrick McIntyre
Executive Director and
State Historic Preservation Officer
Tennessee Historical Commission
2941 Lebanon Road
Nashville, Tennessee 37242-0442

Dear Mr. McIntyre:

The Memphis District, U.S. Army Corps of Engineers, has proposed to realign the Dyer County Little Levee, Booths Point, Dyer County, Tennessee. The project was explained in our letter to you dated May 18, 2012. As part of this project, the Choctaw Gravel Company has requested that the levee also be realigned at their riverside facilities. This action comes as a result of the severe levee scouring caused by the historic 2011 flood. The location for this portion of the project can be found on the enclosed portion (Attachment 1) of the Cottonwood Point TN-AR 7.5 minute quadrangle map.

The realigned portion of the levee would be on ground that is a graveled parking lot that has been heavily eroded by the river and then filled and resurfaced with gravel. No cultural resources exist in this portion of the project. However, building the levee will require fill materials from another location. Attachment 1 shows the proposed borrow area (highlighted in yellow). A spoil pile parallels much of the existing ditch and this material will also be used to rebuild the levee. Should this not be enough building materials, soil from the surrounding fields will be used to complete the project.

Memphis District archeologists conducted a pedestrian survey of the proposed borrow area and one historic loci was found (Attachment 2). Surface artifacts (all small pieces) included broken clear glass, one piece of purple glass, stoneware, metal fragments, ceramics; no bricks or window glass was found. Shovel excavations did not indicate a buried midden. There was nothing to indicate that this was an actual house site. Artifacts could have come from the late 1930's or later. It is possible that this was a dump site scattered by years of farming and the house site is in another location.

State archives did not have a site registered at this location. Neither our older nor more recent maps have a site located here. There is nothing to indicate that this loci was there before 1933; thus, this office will agree with the state registrar that this is a locus and not award it a site number.

Due to the complete lack of subsurface integrity and the destructive farming practices, we consider the artifact scatter as insignificant. My professional staff archaeologists have determined that the proposed work will not affect significant cultural resources and that no further cultural resources work is required for this project. Pursuant to 36 CFR800.4, we request your concurrence with this no effect determination within thirty days.

Should you need further information, contact our district archeologist, Jimmy McNeil, at 901-544-0710, or by email at Jimmy.D.McNeil@usace.army.mil.

Sincerely,

Edward P. Lambert
Chief Environmental Compliance Branch
Regional Planning and Environmental
Division South

Enclosures

From: Brad Garrett [Brad.Garrett@tn.gov]
Sent: Thursday, June 27, 2013 4:32 PM
To: Carpenter, Andrea MVM
Cc: Pitcher, Leonard MVM
Subject: RE: Dyer County Air Quality (UNCLASSIFIED)

Andrea,

Dyer County is considered to be an Attainment Area as far as Air Pollution goes.

The proposed construction as outlined in the June 26, 2013 email, would not adversely affect air quality in the area. It should not affect Dyer County's current attainment status.

I assume that you have contacted other State agencies such as Water Resources (Water Pollution Control) in order to receive their input.

If you a more formal reply or if you need any additional information, just let me know.

Brad Garrett
Environmental Field Office Manager, APC Field Services
1625 Hollywood Drive
Jackson, TN 38305
Office: 731-512-1336
Email: Brad.Garrett@tn.gov

-----Original Message-----
From: Carpenter, Andrea MVM [mailto:Andrea.L.Carpenter@usace.army.mil]
Sent: Wednesday, June 26, 2013 3:39 PM
To: Brad Garrett
Cc: Pitcher, Leonard MVM
Subject: RE: Dyer County Air Quaity (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi Brad,

Can you inform me as to the air quality status in Dyer County, TN? Will the levee repair project described below have any effect on that status? Please 'Reply to All' in case I am in the field.

Proposed Action. The proposed project work is separated into 3 segments along the 20-mile reach of the Little Levee. These segments are hereafter referred to as the Northern Levee Realignment, the Choctaw Levee Realignment, and the Culvert Replacement into the Obion River.

Northern Levee Realignment: The proposed action consists of constructing a levee on a new alignment north and west (riverward) of the existing section of the flood-damaged Little Levee referred to as the Northern Levee. The new levee alignment would stretch approximately 5,700 linear feet (1.08 miles) and replace the damaged 1.2-mile Northern Levee. The approximately 141,000 cubic yards of material required to construct the new levee would be obtained from excavating the 1.2-mile reach of the existing flood-damaged levee. If additional material is required to complete construction of the levee realignment, an approximately 11.5-acre borrow site within proximity to the construction area would be utilized. The realigned levee would be constructed with a full levee cross section with a 15-foot crown width and 3:1 side slopes.

Three wetlands totaling approximately 0.35 acres (0.22 acres, 0.6 acres, and 0.7 acres) would be filled in order to maintain the structural stability of the proposed levee as the wetland sites are located within low-lying areas of the proposed Northern Levee realignment (FIGURE 3). These wetlands have no direct connection to other waterways or ditches but are within the 100-year floodplain and are likely inundated by back-flooding from the Mississippi River. Mitigation for impacts to wetlands is discussed in the Mitigation Section below.

Choctaw Levee Realignment: A new levee alignment of approximately 1,900 linear feet would be constructed to replace a damaged 1,200-foot reach of the Little Levee, referred to as Choctaw levee, which currently aligns through Choctaw Transportation Company facility. Choctaw Levee would be realigned riverward due to scour holes created by the 2011 flood within the original levee alignment. The approximately 24,500 cubic yards of material required to construct the new levee would be obtained from a local spoil area resulting from the restoration and maintenance of a local agriculture field drainage ditch which was filled with alluvial material during the flood of 2011. The new levee would be constructed with a full levee cross section with a 15-ft crown width and 3:1 side slopes.

Culvert Replacement into the Obion River: At the southern end of the project area, four corrugated metal pipes currently run beneath the levee to transfer storm water out of the protected area. The culverts were damaged beyond repair during the 2011 flood and would be replaced by a single 8x8-foot precast concrete box culvert. The work to replace the culvert consists of (1.) digging a new inlet channel to re-direct storm water away from the existing damaged culverts to the new box culvert inlet, (2.) a new outlet channel to convey water away for the box culvert outlet, (3.) demolition of the existing culverts, and (4.) re-grading the area to the original levee design. This work will require: clearing trees from approximately 3.5 acres (consisting of 2.0 acres riverside of the levee and 1.5 acres of tree clearing landside of the levee), approximately 73,000 cubic yards of excavation, installation of 140 feet of 8x8-foot precast box culvert to include two cast-in-place headwalls, a steel catwalk, steel sluice gate, and mechanical gate operator, 57,000 cubic yards of embankment placement, demolition of approximately 800 feet of corrugated metal pipes measuring 4-6 feet in diameter, turf establishment, and gravel placement.

Thank you,
Andrea

Andrea L. Carpenter
Fish and Wildlife Biologist
USACE, Memphis District
167 N. Main St., Rm. B-202
Memphis, TN 38103
Phone: 901-544-0817
Fax: 901-544-3955
Email: Andrea.L.Carpenter@usace.army.mil

Classification: UNCLASSIFIED
Caveats: NONE

404(b)(1) Evaluation
Dyer County Little Levee Repair
Dyer County, Tennessee

I. Project Description

a. Location: The location of the proposed action is in west Dyer County, Tennessee, along the Dyer County Little Levee alignment. The non-federal Dyer County Little Levee extends along the left descending bank of the Mississippi River; it begins at the Mainline Levee just east of Boothspoint and extends to the Obion River between river miles 820 and 840. At the Obion River, the levee turns eastward along the top bank of the Obion River until it intersects with the Mainline Levee (Figure 1).

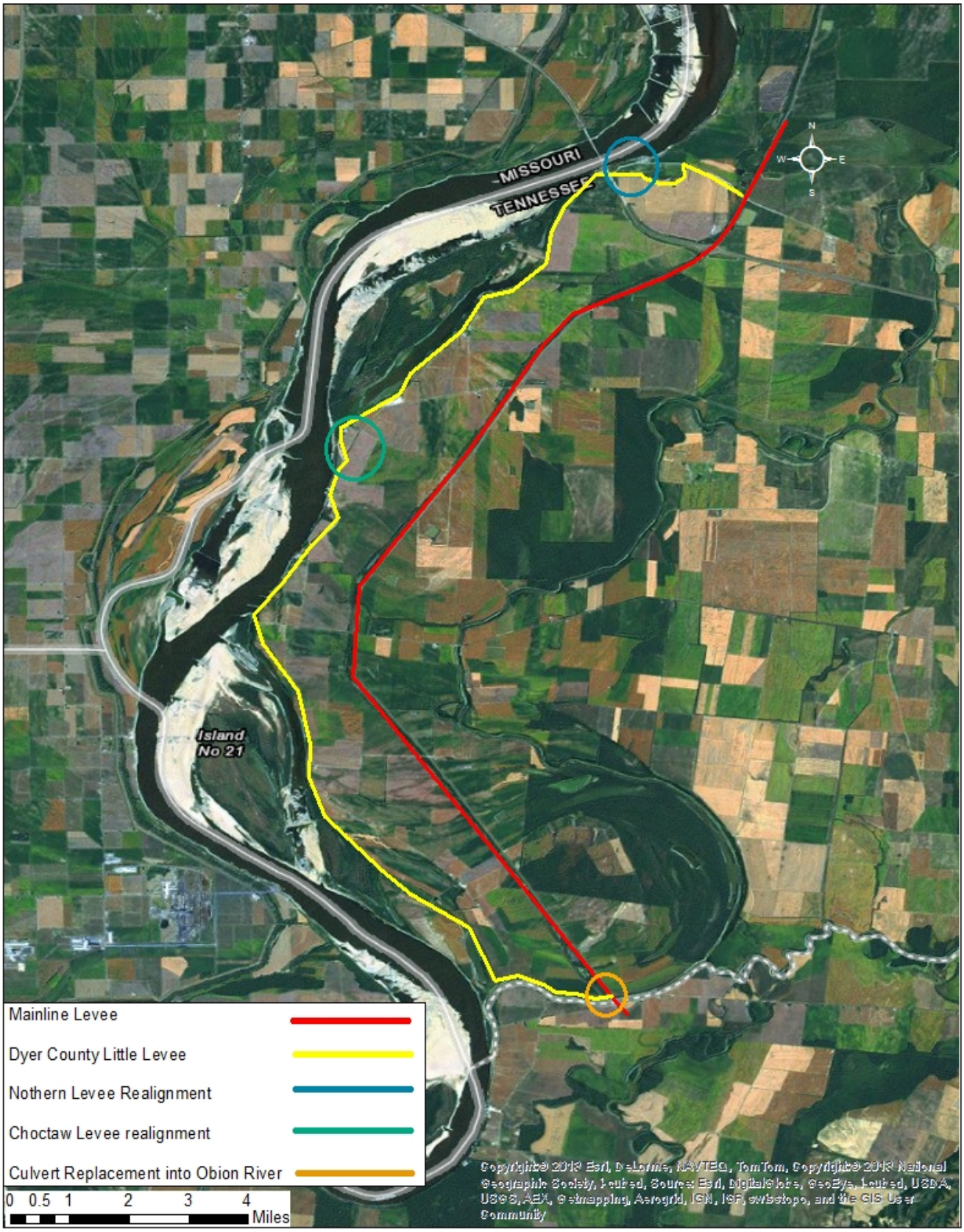
b. General Description: The proposed project work is separated into 3 segments hereafter referred to as the Northern Levee Realignment, the Choctaw Levee Realignment, and the Culvert Replacement at the Obion River (Figure 1).

Northern Levee Realignment: The proposed action consists of constructing a levee on a new alignment north and west (riverward) of the existing section of the flood-damaged Dyer County Little Levee referred to as the Northern Levee (Figure 2). The proposed levee alignment would stretch approximately 5,700 linear feet (1.08 miles) and replace the damaged 1.2-mile Northern Levee. The approximately 141,000 cubic yards of material required to construct the new levee would be obtained from excavating the 1.2-mile reach of the existing flood-damaged levee. If additional material is required to complete construction of the levee realignment, an approximately 11.5-acre borrow site within proximity to the construction area would be utilized (Figure 2). The realigned levee would be constructed with a full levee cross section to a 15-foot crown wide and 3-foot horizontal to 1-foot vertical (3:1) side slopes.

Approximately 1.25 acres of BLH forest is expected to be permanently impacted by tree clearing due to the Northern Levee realignment. Approximately 0.35 acres of permanent impacts to wetlands are included in the 1.25 acres of BLH forest (Figure 3). The three wetlands would be filled in order to maintain the structural stability of the proposed levee as the wetland sites are located within low-lying areas of the proposed Northern Levee realignment.

Choctaw Levee Realignment: A proposed levee alignment of approximately 1,900 linear feet would be constructed to replace a damaged 1,200-foot reach of the Dyer County Little Levee, referred to as Choctaw levee, which currently aligns through the Choctaw Transportation Company facility (Figure 4). Choctaw Levee would be realigned riverward due to scour holes created by the 2011 flood within the original levee alignment. The approximately 24,500 cubic yards of material required to construct the new levee would be obtained from a local spoil area resulting from the restoration and maintenance of a local agriculture field drainage ditch which was filled with alluvial material during the flood of 2011. The new levee would be constructed with a full levee cross section to a 15-ft crown width and 3:1 side slopes.

Culvert Replacement at the Obion River: At the southern end of the project area, four corrugated metal pipes currently run beneath the levee to allow water from a drainage ditch



US Army Corps of Engineers®
Memphis District

Figure 1. The three proposed repair locations on the Dyer County Little Levee are shown circled on the map. The existing Dyer County Little Levee alignment is highlighted in yellow. The Mainline Levee is highlighted in red.

N

US Army Corps of Engineers
Memphis District

Figure 2. The existing Northern Levee reach of the Dyer County Little Levee is highlighted in orange on the map. The proposed Northern Levee alignment is highlighted in green. The proposed borrow area for the Northern Levee alignment is highlighted in red.

US Army Corps of Engineers
Memphis District

Figure 3. Wetlands totaling 0.35 acres would be filled in order to realign the Northern Levee reach of the Dyer County Little Levee, Dyer County, TN. The proposed mitigation site is highlighted in red and totals approximately 1.4 acres.

N

US Army Corps of Engineers®
Memphis District

Figure 4. The existing Choctaw Levee reach of the Dyer County Little Levee is highlighted in orange on the map. The proposed Choctaw Levee alignment is highlighted in green. The proposed borrow area for the Choctaw Levee alignment is highlighted in red.

out of the protected area and into the Obion River (Figure 5). The culverts were damaged beyond repair during the 2011 flood and would be replaced by a single 140-foot length of 8x8-foot precast concrete box culvert. The work to replace the culvert consists of 1) digging a new channel to re-direct storm water away from the existing damaged culverts through the new box culvert, 2) demolition of the existing culverts, and 3) regrading the area to the original levee design. This work would require: clearing trees from approximately 3.3 acres (1.81 acres on the landside of the levee and 1.53 acres of wetlands on the riverside of the levee), approximately 73,000 cubic yards of excavation, installation of 140 feet of 8x8-foot precast box culvert to include two cast-in-place headwalls, a steel catwalk, steel sluice gate and mechanical gate operator, 57,000 cubic yards of embankment placement, demolition of approximately 800 feet of corrugated metal pipes measuring 4-6 feet in diameter, turf establishment, and gravel placement.

c. Authority and Purpose: USACE has authority under Public Law 84-99 (PL 84-99), Flood Control and Coastal Emergencies (FCCE) (33 U.S.C. 701n) (69 Stat. 186) for emergency management activities. Under PL 84-99, the Chief of Engineers, acting for the Secretary of the Army, is authorized to undertake activities, including rehabilitation of flood control works threatened or destroyed by flood. The proposed action is authorized as part of PL 84-99. The record flood of 2011 damaged the privately owned Dyer County Little Levee in west Tennessee. This levee protects approximately 12,000 acres of agriculturally developed land, thirty homes, two businesses, a church and forty one farm buildings. The total value of the structures is estimated at $2,718,000. It is also estimated that more than eighty people reside within the area. If the levee is not repaired, more damages are expected to agricultural lands creating a strain on the major industry of the area and residential dwellings with the next high water event.

d. General Description of Dredged or Fill Material

1) General Characteristics of Fill Material: Material used to fill the three wetlands in order to maintain the structural stability of the proposed levee at the proposed Northern Levee realignment would be composed of earthen material, primarily clay.

2) Quantity of Material: Wetlands would be filled to the existing ground level. The proposed levee would then be constructed atop the filled wetlands. The total estimated quantity of fill is approximately 141,000 cubic yards.

3) Source of Material: The approximately 141,000 cubic yards of earthen material required to construct the new levee would be obtained from excavating the 1.2-mile reach of the existing damaged Northern Levee. If additional material is required to complete construction of the proposed levee realignment, an approximately 11.5-acre borrow site within proximity to the construction area would be utilized (Figures 1 and 2).

e. Description of the Discharge Site(s)

1) Location: The wetlands are located within the Northern Levee reach of the proposed project area. Wetland 1 is located on the north end of proposed Northern Levee

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Figure 5. The proposed culvert replacement location on the Dyer County Little Levee is shown circled on the map.

N

alignment where it ties into the existing levee reach. Wetland 2 is located on the south end of the proposed Northern Levee alignment where it ties into the existing levee reach. Wetland 3 is located within close proximity to Wetland 2 on the south end of the proposed new levee alignment (Figure 3).

2) Size: The earthen material excavated from the existing damaged Northern Levee reach and the proposed borrow site would be discharged into the proposed Northern Levee realignment area. The proposed Northern Levee realignment would stretch approximately 5,700 linear feet (1.08 miles); however, the wetland impact is approximately 0.35 acres.

3) Type of Site: According to information obtained from the Natural Resources Conservation Service (NRCS), areas of farmed wetland exist within a small portion of the project construction limits. Approximately 2 acres of farmed wetland exist in the proposed borrow area, but would not be impacted by proposed construction activities. A total of approximately 0.35 acres of quality forested wetlands exist within the proposed Northern Levee realignment (Figure 3).

   Wetland 1 is located on the north end of proposed Northern Levee alignment where it ties into the existing levee reach. The shape and position of the wetland relative to the existing Northern Levee alignment indicate that the wetland was created by mechanical excavation of material for levee construction or repair and becomes inundated by back-flooding from the Mississippi River during high water events. The approximate size of the wetland is 0.22 acres. No aquatic vegetation is present within the wetland; however, it is bordered by a forested area consisting of large hardwood trees along the riverside of the existing levee, an agriculturally developed field, and the levee (Figure 3).

   Wetland 2 is located on the south end of the proposed Northern Levee alignment where it ties into the existing levee reach. The shape and position of the wetland relative to the existing levee and access road indicate that the wetlands were created by mechanical excavation of material for levee or road construction. The approximate size of Wetland 2 is 0.06 acres. No aquatic vegetation is present within the wetland; however, it is bordered by a forested area along the riverside of the existing levee consisting of large hardwood trees. It is also bordered by an agricultural field and the existing levee. The area was recently inundated by back-flooding from the Mississippi River (Figure 3).

   Wetland 3 is located within close proximity to Wetland 2 on the south end of the proposed new levee alignment. The shape and position of the wetland relative to the existing levee and access road indicate that the wetlands were created by mechanical excavation of material for road construction since it lies along the existing access road. The approximate size of Wetland 3 is 0.07 acres. No aquatic vegetation is present in the wetland; however, one side of the wetland is forested primarily with small willow trees (*Salix* spp.). The area was recently inundated by back-flooding from the Mississippi River. The wetland is bordered by a levee access road, an agriculture field access road, and an agricultural field (Figure 3).

4) Type(s) of Habitat: See description above.

5) Timing and Duration of Discharge: Exact timing is not known at this time and would be determined as resources are available. The entire proposed project is expected to be complete within two years, weather dependant.

f. Description of Disposal Method: Earthen material excavated from the existing damaged Northern Levee reach and the proposed borrow site would be used for construction of the proposed Northern Levee realignment.

II. Factual Determinations (Section 230.11)

a. Physical Substrate Determinations

1) Substrate Elevation and Slope: The proposed realigned levee would be constructed with a full levee cross section to a 15-foot crown width and 3-foot horizontal to 1-foot vertical (3:1) side slopes.

2) Sediment Type: According to the NRCS the soil type existing within and adjacent to the proposed levee construction area consists of alligator clay and Forestdale silt loam. The alligator clay soil type and similar soils constitute most of the area, while Forestdale silt loam and similar soils constitute a small percentage of the soil type. Topography within this area is level to gently undulating with a slope of approximately 0-3 percent. The typical soil profile of alligator clay consists entirely of clay from 0 to 60 inches with clayey alluvium as the parent material. This soil type is commonly found in backswamps of the Mississippi River. The typical soil profile of Forestdale silt loam soils consist of silt loam from 0 to approximately 8 inches, silty clay loam from 8 to 45 inches, and very fine sandy loam from 45 to 51 inches. The parent material consists of clayey alluvium and occurs along natural levees.

The borrow area soil consists of alligator clay, Forestdale silt loam, and Dundee loam. See descriptions above for alligator clay and Forestdale silt loam. Dundee loam has a typical soil profile of loam from 0-6 inches, clay loam from 6 to 36 inches, and loam from 36-54 inches. The parent material is loamy alluvium and usually occurs along natural levees. All soils information was obtained using NRCS Web Soil Survey (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx).

3) Dredged/Fill Material Movement: Materials excavated from the existing Northern Levee alignment would be transported along haul roads to the proposed construction site. Materials excavated from the proposed borrow area would be transported using existing roads, if necessary.

4) Physical Effects on Benthos: As wetlands would be filled, adverse impacts to existing benthos would be expected.

5) Actions Taken to Minimize Impacts (Subpart H): All construction would be performed in accordance with the conditions stated in the Water Quality Certification Permit issued by the TDEC. Best management practices (BMPs) will be exercised throughout construction to minimize silt and runoff impacts. In addition, project activities would be

conducted during dry or low water periods. Storm Water Pollution Prevention Plans (SWPPPs) will be prepared in accordance with good engineering practices emphasizing storm water BMPs.

b. Water Circulation, Fluctuation, and Salinity Determinations

1) Water. Effects on:

a) Salinity: N/A

b) Water Chemistry: No expected change

c) Clarity: N/A

d) Color: No expected change

e) Odor: No expected change

f) Taste: No expected change

g) Dissolved Gas Levels: No expected change

h) Nutrients: No expected change

i) Eutrophication: No expected change

j) Others: No expected change

2) Current Patterns and Circulation

a) Current Patterns and Flow: No expected change.

b) Velocity: No expected change.

c) Stratification: No expected change.

d) Hydrologic Regime: The three wetlands would no longer have periods of inundation as they would be filled to maintain the structural integrity of the proposed levee.

3) Normal Water Level Fluctuations: The three wetlands would no longer have periods of inundation as they would be filled to maintain the structural integrity of the proposed levee.

4) Salinity Gradients: N/A

5) Actions That Will Be Taken to Minimize Impacts: All construction will be performed in accordance with the conditions stated in the Water Quality Certification Permit issued by the TDEC. Use of BMPs would be exercised throughout construction to minimize silt

and runoff impacts. In addition, project activities will be conducted during dry or low water periods. A SWPPP would be prepared in accordance with good engineering practices emphasizing storm water BMPs.

c. Suspended Particulate/Turbidity Determinations

1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site: The three wetlands totaling 0.35 acres would be filled; therefore, suspended particulates and turbidity levels would no longer exist within the area of impact.

2) Effects (degree and duration) on Chemical and Physical Properties of the Water Column:
   a) Light Penetration: N/A. Wetlands would be filled.

   b) Dissolved Oxygen: N/A. Wetlands would be filled.

   c) Toxic Metals and Organics: N/A. Wetlands would be filled.

   d) Pathogens: N/A. Wetlands would be filled.

   e) Aesthetics: Although three small wetlands would be filled and trees cleared, no significant adverse impacts to aesthetics would be expected. The surrounding area is largely in agricultural production and is generally not visited by the public.

   f) Others: None

3) Effects on Biota

   a) Primary Production, Photosynthesis: Trees would be cleared and wetlands would be filled; therefore, minor impacts to photosynthesis would be expected.

   b) Suspension/Filter Feeders: Because the wetlands are ephemeral, no suspension/filter feeding organisms are likely to be present. However, the wetlands would be filled; therefore, adverse impacts to any existing suspension/filter feeders would be expected.

   c) Sight Feeders: Because the wetlands are ephemeral, no sight feeding organism are likely to be present. However, the wetlands would be filled; therefore, adverse impacts to any existing sight feeders would be expected.

4) Actions taken to Minimize Impacts (Subpart H): All construction will be performed in accordance with the conditions stated in the Water Quality Certification Permit issued by the TDEC. Use of BMPs would be exercised throughout construction to minimize silt and runoff impacts. In addition, project activities will be conducted during dry or low water periods. A SWPPP would be prepared in accordance with good engineering practices emphasizing storm water BMPs.

d. Contaminant Determinations: No contaminants are expected to be released during the construction of the action.

e. Aquatic Ecosystem and Organism Determinations

1) Effects on Plankton: Because the wetlands are ephemeral, no plankton is likely to be present. However, the wetlands would be filled; therefore, adverse impacts to any existing sight feeders would be expected.

2) Effects on Benthos: Because the wetlands are ephemeral, no significant benthic population is likely to be present. However, the wetlands would be filled; therefore, adverse impacts to any existing benthos would be expected.

3) Effects on Nekton: Because the wetlands are ephemeral, no nekton is likely to be present. However, the wetlands would be filled; therefore, adverse impacts to any existing nekton would be expected.

4) Effects on Aquatic Food Web: Because the wetlands are ephemeral, no significant impacts to the food web would be expected.

5) Effects on Special Aquatic Sites

   a) Sanctuaries and Refuges: N/A

   b) Wetlands: A total of approximately 0.35 acres of quality forested wetlands within the proposed Northern Levee realignment would be filled to the existing grade (Figure 3). The proposed Northern Levee realignment would then be constructed atop the filled wetlands. At the culvert replacement site, 1.53 acres of wetlands would be impacted by tree clearing.

   c) Mud Flats: N/A

   d) Vegetated Shallows: N/A

   e) Coral Reefs: N/A

   f) Riffle and Pool Complexes: N/A

6) Threatened and Endangered Species: The U.S. Fish and Wildlife Service (USFWS), Ecological Services Office in Cookeville, Tennessee, indicated that four federally listed species may occur in the area. These include the pallid sturgeon (*Scaphirhynchus albus*), interior least tern (*Sterna antillarum*), fat pocketbook mussel (*Potamilus capax*), and the Indiana bat (*Myotis sodalis*). Of these four species, only the Indiana bat would potentially utilize any habitat within the project area. Least terns nest and roost along isolated river sandbars, while the sturgeon and mussels would likely be found within the Mississippi River. None of these habitats exist within the proposed project area; therefore, no impacts to pallid sturgeon, interior least terns, fat pocketbook mussels or their critical habitats are anticipated to occur.

   Northern Levee Realignment: No adverse impacts to threatened or endangered species or their critical habitat are expected; however, a total of 1.25 acres of forested habitat would be cleared for the Northern Levee realignment. During a site visit conducted on June 7, 2013, USACE biologists observed two potential roost trees within the footprint of the proposed project area; therefore, bottomland hardwood forest existing within the

proposed Northern Levee realignment may be used for summer roosting and feeding habitat by Indiana bats. An acoustic survey was conducted by USACE biologists on July 12 and 13, 2013, to determine the potential presence or absence of the Indiana bat. Results showed the probable absence of Indiana bat populations; however, an emergence survey (i.e. survey conducted from approximately 1-hour before sunset until approximately 1-hour after sunset to visually determine whether or not there is an emergence of bats from potential roost tree/s) will be conducted at the two potential roost trees to ensure that no Indiana bats would be impacted by the cutting of the potential roost trees. USFWS concurred with this proposal by e-mail dated July 19, 2013, USFWS concurred with this proposal by e-mail dated July 19, 2013.

Choctaw Levee Realignment: No forested habitat is located within the proposed Choctaw Levee realignment; therefore, no potential Indiana bat summer roost habitat would be impacted.

Culvert Replacement at the Obion River: No adverse impacts to threatened or endangered species or their critical habitat are expected. A total of approximately 1.8 acres of BLH forest and approximately 1.5 acres of BLH forested wetlands on the riverside of the levee would be cleared of trees. An acoustic survey was conducted by USACE biologists on July 12 and 13, 2013, to determine the potential presence or absence of the Indiana bat. Results showed the probable absence of Indiana bat populations. Proposed measures to minimize potential impacts to Indiana bats would include clearing trees between October 15 and March 31, when Indiana bats would be in the winter hibernacula. USFWS concurred with this proposal by e-mail dated July 18, 2013.

7) Other Wildlife:
Northern Levee Realignment: The area surrounding the Northern Levee has been cleared and drained for the purposes of agricultural production; however, some wetland, aquatic, and BLH habitat still exists as described in the sections above. Species commonly found within the BLH forest habitat include white-tailed deer, fox and grey squirrels, songbirds, crows, raptors, raccoons, opossums, snakes, frogs, mice and other rodents. Species likely to be found in the aquatic habitat include great blue herons and other wading birds, aquatic turtles, fish such as largemouth bass, bluegill and channel catfish, snakes, freshwater mussels, and amphibians such as frogs and toads. Common species found within disturbed habitat, such as agriculture fields, include white-tailed deer, raccoon, opossum, mice, coyotes, songbirds, and snakes. With implementation of the proposed action, no adverse impacts to wildlife resources are expected. Although approximately 1.25 acres of tree clearing would occur within the proposed realignment similar habitat is available in adjacent areas.

Choctaw Levee Realignment: Common species that may be found in disturbed areas such as the location of the proposed Choctaw Levee Realignment would include white-tailed deer, raccoon, opossum, mice, coyotes, songbirds, and snakes. No impacts to wildlife are expected with the implementation of proposed activities.

Culvert Replacement at the Obion River: The riverside of the culvert replacement site is forested and provides habitat for species of wildlife including white-tailed deer, fox and grey squirrels, songbirds, crows, raptors, raccoons, opossums, snakes, frogs, mice and other rodents. The landside of the culvert replacement site is agriculturally developed

land with a forested drainage ditch leading to the existing, damaged culverts. Species likely to be found in the aquatic habitat provided by the drainage ditch include great blue herons and other wading birds, aquatic turtles, fish such as largemouth bass, bluegill and channel catfish, snakes, freshwater mussels, and amphibians such as frogs and toads. Common species found within disturbed habitat, such as agriculture fields, include white-tailed deer, raccoon, opossum, mice, coyotes, songbirds, and snakes. With implementation of the proposed action, no adverse impacts to wildlife resources are expected. Although 3.3 acres of tree clearing would occur within the proposed culvert replacement site, similar habitat is available in adjacent areas. Aquatic wildlife may be temporarily impacted by the redirection of the existing ditch, discussed previously; however, aquatic habitat would rapidly recover and species would eventually colonize the proposed ditch.

8) Actions Taken to Minimize Impacts (Subpart H):

Northern Levee Realignment: Approximately 1.25 acres of BLH forest is expected to be permanently impacted by tree clearing due to the Northern Levee realignment. Three wetlands totaling approximately 0.35 acres of permanent impacts to wetlands are included in the 1.25 acres of BLH forest. The wetlands would be filled in order to maintain the structural stability of the proposed levee as the wetland sites are located within low-lying areas of the proposed Northern Levee realignment. The remaining 0.9 acres of BLH forest were determined to be non-wet by representatives from the USACE Regulatory Program.

Previous BLH evaluations conducted by USACE biologists in forests with tree species and forest maturity similar to the proposed project area using the Habitat Evaluation System and the Habitat Evaluation Procedures yielded an average compensatory mitigation ratio of 2.3 acres of mitigation to 1 acre of impacts (2.3:1). Therefore, in-kind compensatory mitigation for adverse impacts to the 0.9 acres of non-wet BLH forest would be conducted at a site to be determined at a ratio of 2.3:1, resulting in the restoration of approximately 2 acres of cleared land to BLH forest. Site acquisition for the non-wet BLH mitigation would occur concurrently with construction.

During discussions with the TDEC personnel, it was determined that a mitigation ratio of 2 acres of mitigation to 1-acre of impacts (2:1) was appropriate as mitigation would be conducted on prior-converted cropland. In-kind compensatory mitigation to offset adverse impacts to the 0.35 acres of BLH forested wetlands would be conducted at the proposed Northern Levee borrow area at a ratio of 2:1; therefore, approximately 0.7 acres of prior converted cropland would be restored to jurisdictional wetlands. According to the Natural Resources Conservation Service, the proposed Northern Levee borrow site meets the prior converted cropland designation. Tree planting on both mitigation sites would be conducted in the dormant season during the fall/winter of 2013-2014. Hydrologic restoration for the proposed borrow area would occur prior to tree planting.

Choctaw Levee Realignment: No compensatory mitigation would be required at the Choctaw Levee realignment reach as no impacts to relevant resources are expected.

Culvert Replacement at the Obion River: Approximately 1.8 acres of non-wet BLH forest on the landside and 1.5 acres of BLH forested wetlands on the riverside of the Dyer County Little Levee would be impacted by tree clearing due to the replacement of the

damaged culverts and digging a new channel to redirect storm water away from the existing damaged culverts through the new box culvert. In-kind compensatory mitigation for adverse impacts to the approximately 1.8 acres of non-wet BLH forest would be conducted at a site to be determined at a ratio of 2.3:1, resulting in approximately 4.2 acres of BLH restoration. In-kind compensatory mitigation for adverse impacts to the 1.53 acres of BLH forested wetlands on the riverside of the levee would be conducted at the proposed Northern Levee borrow site at a ratio of 2:1, resulting in approximately 3.1 acres of BLH forested wetland restoration.

f. Disposal Site Determinations

1) Mixing Zone Determinations: N/A.

2) Determination of Compliance with Applicable Water Quality Standards: All construction would be performed in accordance with the conditions stated in the Water Quality Certification Permit issued by the TDEC.

3) Potential Effects on Human Use Characteristic

a) Municipal and Private Water Supply: N/A

b) Recreational and Commercial Fisheries: N/A

c) Water Related Recreation: N/A

d) Aesthetics: Long term negative impacts to the aesthetic (visual) resources would be minimal.

e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves: N/A.

g. Determination of Cumulative Effects on the Aquatic Ecosystem:
Overall, the action, in comparison to past, present, and reasonably foreseeable future actions, will not incrementally contribute adversely to the general project area. The preferred alternative will accomplish flood risk reduction objectives, which are of great importance in the Lower Mississippi Valley. Repairing the extensive seepage at Dyer County Little Levee would ensure the ability of the levee to prevent flood damage to property and the environment on the protected side of the levee. The cumulative impacts of the action are not expected to result in long-term adverse impacts.

h. Determination of Secondary Effects on the Aquatic Ecosystem: N/A

III. Findings of Compliance or Non-Compliance With the Restriction on Discharge

a. Adaptation of the Section 404(b)(1) Guidelines to this Evaluation: No significant adaptation of the Section 404(b)(1) guidelines were made relative to this evaluation.

b. Evaluation of Availability of Practical Alternatives to the Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem: Three alternatives

were considered for the proposed action. These alternatives were: 1) No-action; 2) repair of the Dyer County Little Levee to the original alignments; 3) realignment of the damaged portions of the Dyer County Little Levee and replace the damaged corrugated metal drain pipes with an approximate 140-foot length of 8x8-foot concrete box culvert. Due to the significant negative consequences of the "No Action" alternative, it was deemed unacceptable. Alternative 2 would likely lead to a levee failure during a major flood event which would result in property damage and could cause human injuries and/or loss of life. If the seepage problem is not addressed, levee failure resulting in catastrophic impacts would ultimately result. Alternative 3 is the preferred alternative as it is the least costly structural alternative and provides the greatest stability during future high water events.

c. Compliance with Applicable State Water Quality Standards: All construction would be performed in accordance with the conditions stated in the Water Quality Certification Permit issued by the TDEC.

d. Compliance with Applicable Toxic Effluent Standard or Prohibition Under Section 307 Of the Clean Air Act: Dyer County, Tennessee, is within ozone attainment status. No lasting impacts on air quality are expected to occur within either parish due to the actions. USACE would follow best management practices to minimize air pollution.

e. Compliance with Endangered Species Act of 1973: Coordination is currently on-going with the U.S. Fish and Wildlife Service to ensure compliance with the Endangered Species Act of 1973.

f. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972: N/A

g. Evaluation of Extent of Degradation of the Waters of the United States

1) Significant Adverse Effects on Human Health and Welfare

a) Municipal and Private Water Supplies: N/A

b) Recreation and Commercial Fisheries: N/A

c) Plankton: Because the wetlands are ephemeral, no Plankton is likely to be present. However, the wetlands would be filled; therefore, adverse impacts to any existing sight feeders would be expected.

d) Fish: Because the wetlands are ephemeral, no suspension/filter feeding organisms are likely to be present. However, the wetlands would be filled; therefore, adverse impacts to any existing suspension/filter feeders would be expected.

e) Shellfish: Because the wetlands are ephemeral, no sight feeding organism are likely to be present. However, the wetlands would be filled; therefore, adverse impacts to any existing sight feeders would be expected.

f) Wildlife: Effects, if any, are expected to be temporary and minor.

g) Special Aquatic Sites: A total of approximately 0.35 acres of quality forested wetlands within the proposed Northern Levee realignment would be filled to the existing grade (Figure 3). The proposed Northern Levee realignment would then be constructed atop the filled wetlands. At the culvert repair site, 1.53 acres of wetlands would be cleared of trees to relocate the drainage ditch through the Dyer County Little Levee.

2) Significant Adverse Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems: None expected.

3) Significant Adverse Effects on Aquatic Ecosystem Diversity, Productivity, and Stability: None expected.

4) Significant Adverse Effects on Recreational, Aesthetic, and Economic Values: None expected

h. Appropriate and Practical Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem: All construction would be performed in accordance with the conditions stated in the Water Quality Certification Permit issued by the TDEC.

i. On the Basis of the Guidelines, the Proposed Disposal Site(s) for the Discharge of Dredged or Fill Material is:

1) _X_ Specified as complying with the requirements of these guidelines; or,

2) __ Specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem; or,

3) __ Specified as failing to comply with the requirements of these guidelines.

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