

**DRAFT ENVIRONMENTAL ASSESSMENT
WITH
DRAFT FINDING OF NO SIGNIFICANT IMPACT**

**LEVEE REPAIR (P.L. 84-99):
KUHS LEVEE DISTRICT
MISSISSIPPI RIVER MILES 195 to 201
and
MISSOURI RIVER MILES 0 to 3
ST CHARLES COUNTY, MISSOURI**

September 2016



**US Army Corps
of Engineers**
St. Louis District

Prepared by:
Environmental Compliance Section
U.S. Army Corps of Engineers
St. Louis District
1222 Spruce Street
St. Louis Missouri 63103-2833

Table of Contents

1. INTRODUCTION	3
1.1 Project Authorization	3
1.2 Project Location and Scope.....	3
1.3 Project Purpose and Need	5
1.4. Damage Description.....	5
2. ALTERNATIVES	8
2.1. Alternative 1 - No Action (Future without Project).....	8
2.2. Alternative 2 - Nonstructural Measures	8
2.3. Alternative 3 – Structural Repair of Levee with Federal Assistance (Tentatively Selected Plan)	9
3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS.....	13
3.1. Physical Resources	13
3.2. Biological Resources.....	14
3.3. Socioeconomic Resources.....	20
3.4. Summary Comparison of Project Alternatives.....	23
4. CUMULATIVE IMPACTS	25
5. RELATIONSHIP OF TENTATIVELY SELECTED PLAN TO ENVIRONMENTAL REQUIREMENTS	25
6. COORDINATION, PUBLIC VIEWS, AND RESPONSES.....	27
7. ENVIRONMENTAL ASSESSMENT PREPARERS	29
8. REFERENCES.....	30

List of Figures

Figure 1. General Location Map of the Kuhs Levee District.	4
Figure 2. Map of Damages to the Kuhs levee system as a result of the winter 2015 high water event.	6
Figure 3. Typical cross section for a breach repair.	10
Figure 4. Typical cross section for Type I erosion repair.	10
Figure 5. Typical cross section for Type III erosion repair.	11
Figure 6. Typical cross section for turf repair.	11
Figure 7. Aerial map of Kuhs borrow area.	12

List of Tables

Table 1. List of Federally threatened and endangered species and habitat potentially occurring in St. Charles County, MO.	16
Table 2. Summary of Alternative 1 - “No Action” and Alternative 3 - Structural Repair of Levee with Federal Assistance (Tentatively Selected Plan) with respect to physical, biological, and socioeconomic resources.....	24
Table 3. Relationship of the tentatively selected plan to environmental requirements, environmental acts, and /or executive orders.	26

DRAFT

1. INTRODUCTION

This document is a Draft Environmental Assessment (EA) with an attached unsigned Finding of No Significant Impact (FONSI) for levee repairs to the Kuhs Levee District. The purpose of this EA is to evaluate potential environmental impacts of proposed levee repairs, determine if the environmental impacts rise to the level of significant, and to serve as a record of interagency coordination for the emergency rehabilitation actions.

1.1 Project Authorization

Emergency actions undertaken by USACE to repair flood control works damaged or destroyed by flooding are authorized by Public Law 84-99, as amended by Section 206 of the Flood Control Act of 1962 (hereafter referred to as P.L. 84-99). USACE regulations covering these and other emergency rehabilitation activities are contained in the Rehabilitation Code 910-300 of ER 500-1-1 (33 C.F.R 203). The Code states that actions taken to *restore facilities to pre-disaster conditions* under P.L. 84-99 will not be construed to be either major federal actions or as having significant effects. However, the effect of rehabilitation on the environment must be considered. This includes the effects of construction on endangered species (P.L. 93-205 and Appendix B of ER 1105-2-50) and archeological and historic properties (Chapter 3 of ER 1105-2-50). Since the Kuhs Levee District is active in the USACE Rehabilitation and Inspection Program, they are eligible for Flood Control and Coastal Emergency funding authorized by P.L. 84-99.

1.2 Project Location and Scope

The Kuhs Levee District is located about 21 miles north of St. Louis, Missouri, in St. Charles County, Missouri (Figure 1). The levee system is adjacent to the right descending bank of the Mississippi River from approximately river mile 195.7 to mile 200.2 above the confluence with the Ohio River and with the Missouri River from the confluence to river mile 3.0. The northern flank of the levee borders the Consolidated North County Levee District and the south flank is adjacent to the left descending bank of the Missouri River.

The Kuhs Levee District is a non-federal levee system that provides flood risk reduction to approximately 1,905 acres of productive agricultural lands and conservation areas from Mississippi River and Missouri River flooding. Approximately 895 acres are used primarily for agricultural land and the remainder comprises the Edward “Ted” and Pat Jones-Confluence Point State Park. The levee system was designed for a 10% (10-year frequency) chance exceedance flood with 2 feet of freeboard. The system is 7.17 miles long and consists of earthen levee with a representative crown width of 10 feet, a representative height of 10 feet, representative

riverside slopes of 1:2, and landside slopes of 1:3½. The system includes seven gravity drains. Numerous oil/gas pipelines pass below the base of the levee.

1.3 Project Purpose and Need

The Kuhs levee system sustained damages as a result of high water events during the summer and winter of 2015. The levee district repaired the damages resulting from the summer 2015 high water event without federal assistance under P.L. 84-99. Thus, the purpose of this federal action is to restore the level of flood protection to that which existed prior to the winter 2015 flood event. There is a need for repairs, because damages reduced flood protection provided by the levee, making the district vulnerable to more frequent flooding. Without federal involvement through the P.L. 84-99 program, it is unlikely that the Kuhs Levee District has the financial ability to restore the level of protection according to Corps of Engineers' standards.

1.4. Damage Description

Damages sustained by the Kuhs levee as a result of the winter 2015 high water event on the Mississippi and Missouri Rivers consist of three breaches, erosion type I, erosion type III, and turf damage. Damage locations are shown in Figure 2.

1.4.1. Damage Classification

- Breach - A rupture, break, or gap in the levee system, measured in cubic yards. Breaches are repaired by stripping, preparing, placing embankment, and compacting in lifts.
- Erosion Type I - Wave wash / minor erosion less than 12 inches deep, measured in linear feet. Erosion Type I is repaired by disking and seeding.
- Erosion Type III - Major erosion greater than 18 inches deep, measured in cubic yards. Erosion Type II is repaired by stripping, preparing, placing embankment, and compacting in lifts.
- Turf Damage - The upper layer of ground made up of grass and plant roots has been damaged due to long-standing water inundation. Turf damage is repaired by disking and seeding.

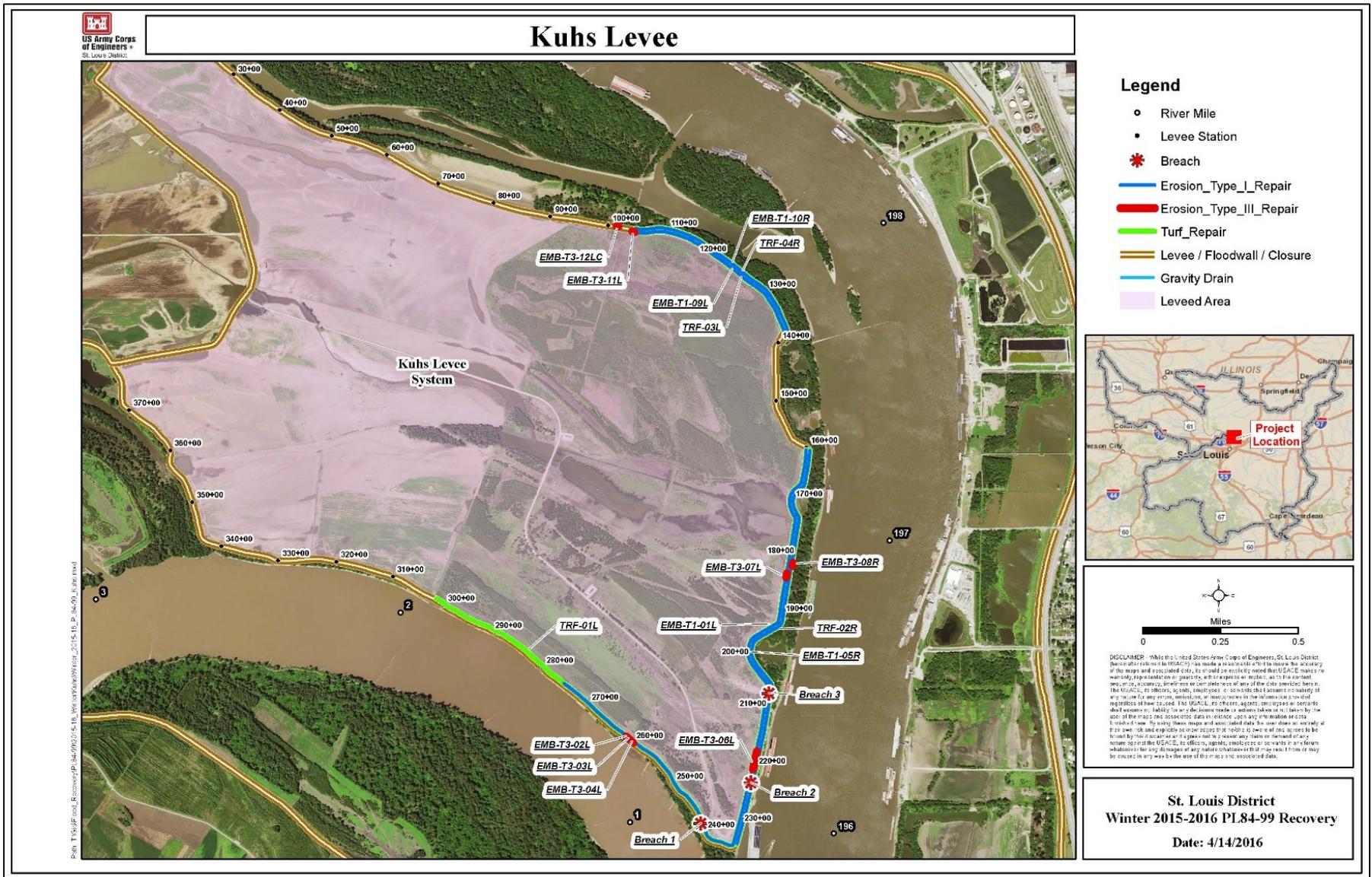


Figure 2. Map of Damages to the Kuhs levee system as a result of the winter 2015 high water event.

1.4.2. Damages

- Breaches - The levee sustained three breaches, one on the Missouri River side and two on the Mississippi River side. The Levee District scraped the sand off of the agricultural fields where it had been deposited by the flood. The levee was restored to its original section and slope within the previous footprint.
- Erosion Type I - There were four areas with Type I erosion damage due to wave wash. The shortest area was 3,300' long and the longest was 11,500' long. All areas were approximately 5' wide.
- Erosion Type III - There were eight areas of Type III erosion damage. Seven areas were on the landside due to overtopping. The smallest was 5 feet long, 8 feet wide, and 2 feet deep. The longest was 42 feet in length; however, the largest was 20 feet long, 15 feet wide, and 5 feet deep. One site also included damage to the levee crown. The one area of Type III erosion damage on the riverside occurred due to high river levels. It measured 15 feet long, 10 feet wide, and approximately 2 feet deep. In total, an estimated 226 cubic yards of borrow material would be required to repair the Type III erosion and restore the levee to its original grade and section.
- Turf Damage - There were four areas of turf damage. Two areas of turf damage occurred on the leveed side and were due to the leveed area being inundated with water for an extended period of time. The turf damages are 14,150' long by 45' wide and 3,300' long by 45' wide respectively. Additionally, two areas of turf damage occurred on the riverside and were due to high river levels. One area is 7,300' long and varies in width from 15-45' wide, while the other is 3,300' long and 45' wide.

The levee is authorized to provide a 10-year chance exceedance flood level of flood risk reduction; however, given the nature of the damages, the levee currently provides an estimated 2-year chance exceedance flood level of flood risk reduction. If not repaired, the damages could lead to further degradation of the levee further reducing the level of flood risk reduction.

2. ALTERNATIVES

This section describes and compares the alternatives based on their environmental impact and achievement of project objectives for the damaged levee district. NEPA requires that in analyzing alternatives to a proposed action, a federal agency must consider an alternative of “No Action”. Likewise, Section 73 of the WRDA of 1974 (P.L. 93-251) requires federal agencies to give consideration to nonstructural measures to reduce or prevent flood damage.

2.1. Alternative 1 - No Action (Future without Project)

Under the No Action Alternative, the federal government would not repair the damages to the Kuhs levee. It is possible that the Levee District would make repairs without federal assistance. Environmental impacts of repairs made by the Levee District would be similar to the tentatively selected alternative, except that the repair duration may differ and the environmental protections may be reduced. However, due to the uncertainty of the Levee District making all necessary repairs, the environmental impacts of allowing the damage to remain unrepaired are regarded as the No Action Alternative. This would presumably perpetuate a state of reduced levee structural integrity. The levee would be susceptible to further erosion at the damaged sites. The current damages would decrease flood protection, thereby increasing risks to individuals, structures, businesses, and agricultural activities within the leveed areas.

2.2. Alternative 2 - Nonstructural Measures

Section 73 of the WRDA of 1974 (P.L. 93-251) requires federal agencies to give consideration to non-structural measures to reduce or prevent flood damage. Nonstructural measures reduce flood damages without significantly altering the nature or extent of flooding. Damage reduction from nonstructural measures is accomplished by changing the land use within the floodplains, or by accommodating existing uses to the flood hazard. Examples include flood proofing, relocation of structures such as levees, flood warning and preparedness systems, and regulation of floodplain uses. A flood warning system would do little to reduce structural and agricultural damages. Flood proofing or relocation is not desirable to the Kuhs Levee District, would have large costs, and result in loss of numerous acres of prime farmland.

Under P.L. 84-99, the Corps has the authority to pursue a non-structural alternative only if the project sponsor requests such an alternative.

“There is hereby authorized an emergency fund to be expended in preparation for emergency response to any natural disaster, in flood fighting and rescue operations, or in the repair or restoration of any flood control work threatened or destroyed by flood,

*including the strengthening, raising, extending, or other modification thereof as may be necessary in the discretion of the Chief of Engineers for the adequate functioning of the work for flood control, or in implementation of **nonstructural alternatives to the repair or restoration of such flood control work if requested by the non-federal sponsor.***

The Kuhs Levee District declined to request the pursuit of a non-structural alternative; therefore, this alternative was eliminated from further consideration.

2.3. Alternative 3 – Structural Repair of Levee with Federal Assistance (Tentatively Selected Plan)

Under this alternative, at the request of the Kuhs Levee District, the federal government would reconstruct the levee to pre-flood section and grade at the location of the three breaches as well as the other 16 areas with turf, Type I, and Type III erosion damage. Since the Kuhs Levee District is active in the USACE Rehabilitation and Inspection Program, it is eligible for Flood Control and Coastal Emergency funding authorized by P.L. 84-99.

2.3.1. Erosion Repair

The damaged areas of the levee would be reconstructed with suitable semi-compacted impervious material until the original slope and grade of the levee is attained. In areas where filling is required, borrow material would be added to the repair sites to restore areas to pre-flood grade. All repair areas would then be reseeded when conditions are suitable for grass germination to prevent or minimize erosion. Typical cross-sections indicating methods of repair are shown in Figures 3-6.

2.3.2. Borrow Material

Approximately 226 cubic yards of borrow material is required for the proposed levee repairs. The borrow area is a 50 foot strip of land between locations, Latitude 38.832400, Longitude -90.118900 and Latitude 38.832000, Longitude -90.117800 (See Figure 7). The proposed site is a jurisdictional wetland; however, its use as a borrow site is authorized under Nationwide Permit #27 - Aquatic Habitat Restoration, Establishment, and Enhancement Activities. The borrow site was part of the Missouri River Channel adjacent to Mobile Island in 1892, therefore the landform is of modern origin. There would be no significant effect on historic properties. The material is made up of lean clay on the ridge and suitable for use. Before obtaining the borrow material, approximately 2 inches of topsoil will need to be stripped off, stockpiled, and then re-deposited as top dress on the disturbed area. A maximum of 2 feet of borrow material will be taken from beneath the initial topsoil strip.

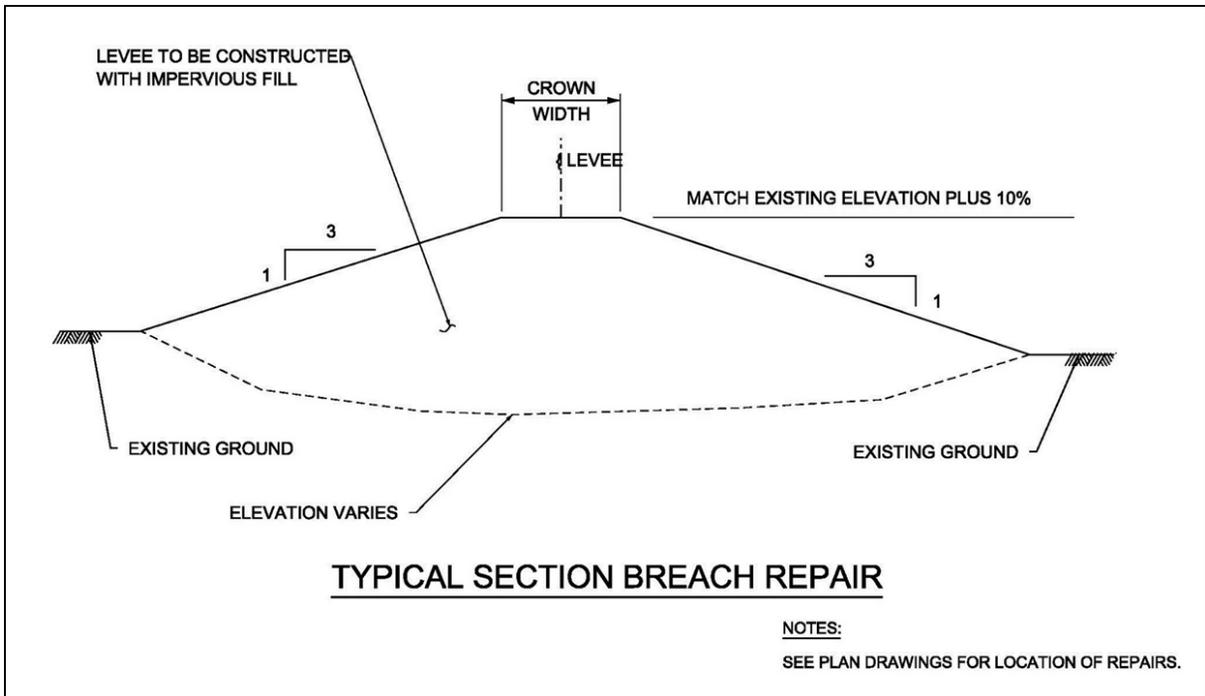


Figure 3. Typical cross section for a breach repair.

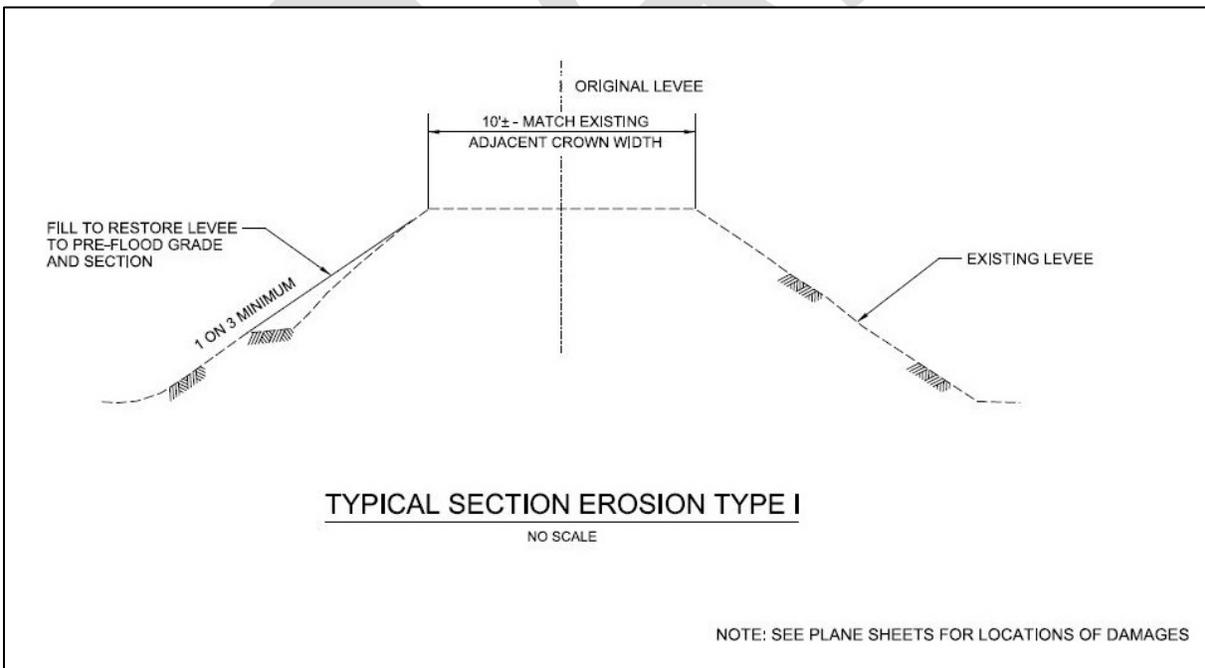


Figure 4. Typical cross section for Type I erosion repair.

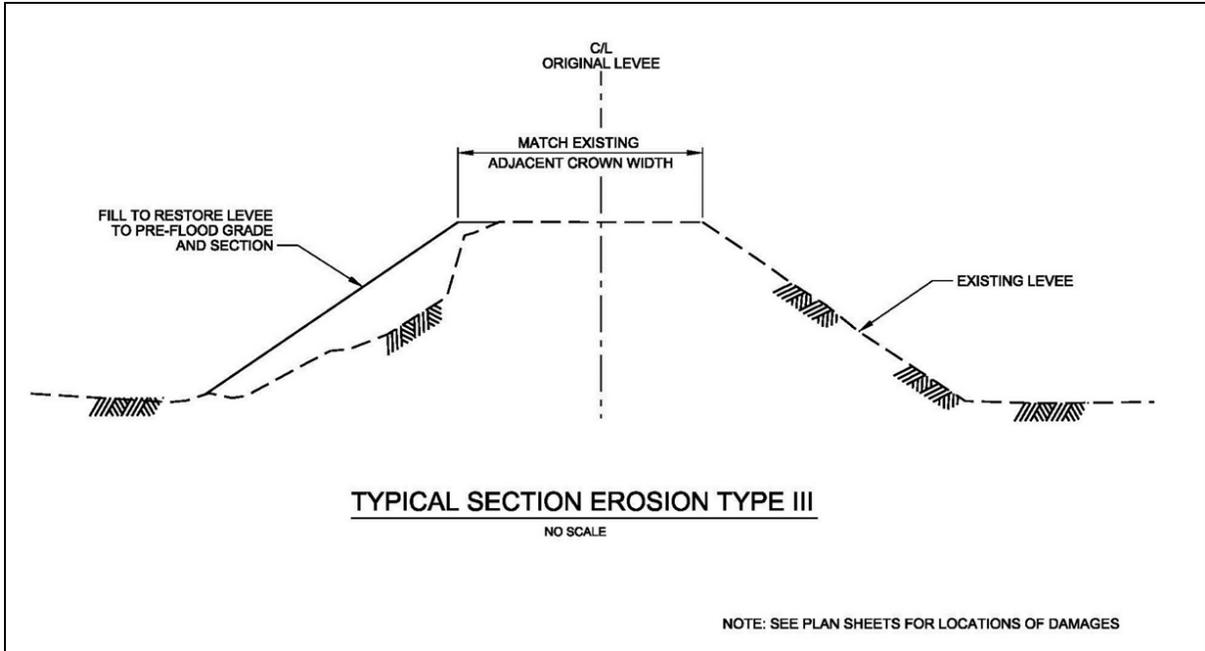


Figure 5. Typical cross section for Type III erosion repair.

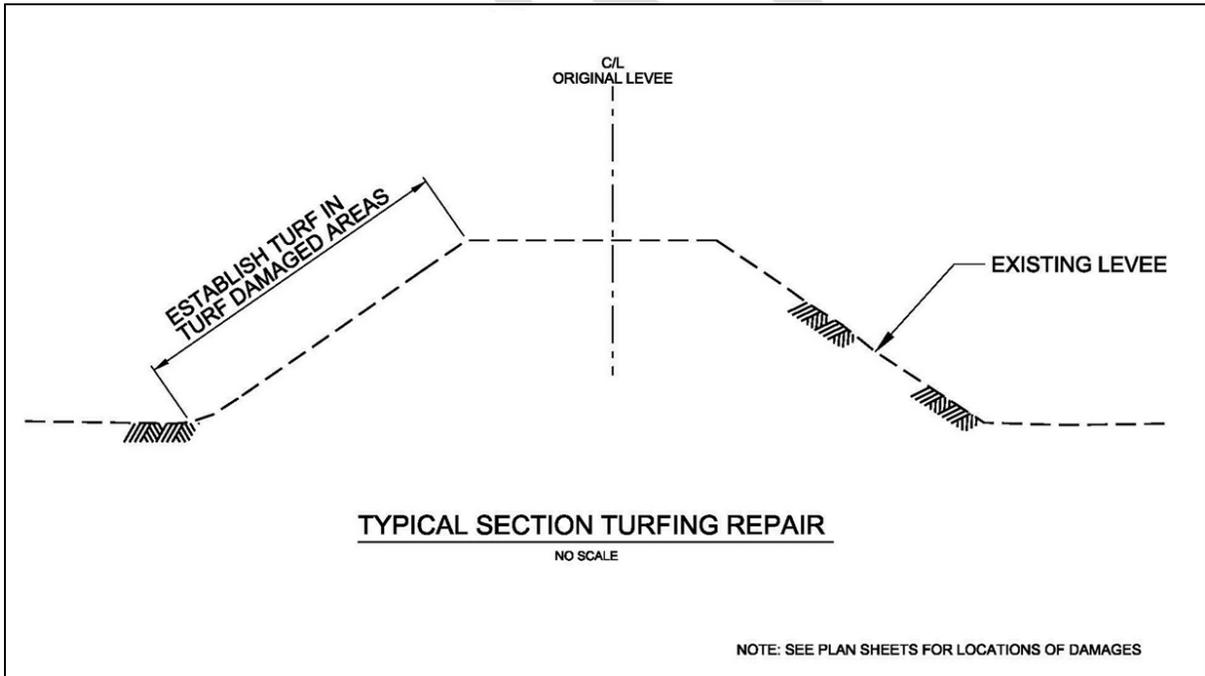


Figure 6. Typical cross section for turf repair.



Figure 7. Aerial map of Kuhs borrow area.

2.3.3. Construction Limits

Construction limits have been established in the immediate vicinity of the erosion and turf repair areas. No emergent or forested wetlands exist within the construction limits.

2.3.4. Access and Staging Areas

Staging areas and access routes to the repair sites would be established to avoid and minimize environmental impacts. Existing access points such as roads, rights of way, and levees located within a reasonable distance to the construction sites would be utilized. Haul road locations and staging areas would be restored to their pre-project condition after project completion.

2.3.5. Final Plans and Specifications

Following review of comments and the signing of the FONSI (should that be the decision), plans and specifications would be finalized for construction. Construction would commence as soon as possible thereafter and is anticipated to be completed within one construction season.

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

3.1. Physical Resources

The levee District is located on the floodplain of the Mississippi and Missouri Rivers. Because of the fertility of the soil and moisture, the land is prized for its agricultural productivity. Levees have been constructed to the federal standard to reduce the likelihood of inundation within the leveed area to a 10-year return period; and, to provide a reasonable amount of certainty of producing crops in most years. Much of the area is considered prime farmland.

St. Charles County, Missouri, is currently a non-attainment area for 8-hour ozone (2008 standard; marginal) and particulate matter-_{2.5} (1997; moderate). The area is in attainment for sulfur dioxide, lead, carbon monoxide, and nitrogen dioxide (USEPA 2016). Ambient noise in the study area is generated by wildlife, human activities, and vehicular traffic and agricultural traffic.

Alternative 1 – No Action (Future without Project) - If the Kuhs levee is not repaired to the federal standard there would be an increased flood risk and more physical damages could potentially occur within the Kuhs Levee District, such as erosion and sedimentation. The area would remain unprotected during high water events. Debris, and deposition of unsuitable materials could enter farm fields creating less than desirable agricultural conditions and hinder future farming productivity. Flooding from Bob's Creek could also inundate some local residences. Air quality and noise pollution are not anticipated to be altered by this alternative.

Alternative 3 – Repair of Levees with Federal Assistance - The proposed project would be expected to temporarily increase noise levels near the repair and associated worksites. The U.S. Environmental Protection Agency has set a limit of 85 decibels on the A scale (the most widely used sound level filter) for eight hours of continuous exposure to protect against permanent hearing loss. Based upon similar construction activities conducted in the past, noise above this level would not be expected to occur for periods longer than eight hours. Noise levels would return to normal after construction completion.

Construction activities would cause a slight increase in suspended particulates (i.e., dust). Emissions from construction equipment may minimally increase ozone, carbon monoxide and carbon dioxide levels in the vicinity of the construction site. Due to the extremely limited levee repairs required, the expected increases would be very negligible and would cease after construction. EPA has set *de minimis* emission levels beneath which conformity to the state implementation plan (SIP) does not need to be demonstrated. Due to the relatively small scale of the project, emissions of PM are clearly *de minimis*, therefore an emissions analysis was not performed

Construction activities would occur on the mowed grass levee berms adjacent to streams and water areas. Levee repairs could cause a short-term increase in turbidity in the waterways at the immediate construction sites if flooding or heavy rains occurred during construction. However, the Contractor shall comply with all applicable federal, state, and local laws and regulations. The Contractor shall provide environmental protective measures and procedures to prevent and control pollution, limit habitat disruption, and correct environmental damage that occurs during construction. All disturbed areas would be reseeded following construction to reduce the potential for erosion.

3.2. Biological Resources

3.2.1. Fish and Wildlife

Fish and wildlife habitats located in the vicinity of the leveed area include permanent water, temporary water, emergent wetlands, bottomland forest, old fields, and agricultural cropland. These habitats provide food and cover for a variety of fish and wildlife, including Largemouth Bass, Bluegill, Carp, Crappie, Warmouth, Channel Catfish, Bullfrog, Snapping Turtle, Muskrat, Rabbits, Squirrel, Red Fox, White-Tailed Deer, and Beaver. Common birds in the area include Great Blue Herons, Bald Eagles, Geese, Gulls, Pelicans and many species of waterfowl, other shorebirds, and songbirds. Typical tree species include pecan, eastern cottonwood, American elm, box-elder, silver maple, pin oak, shagbark hickory, and river birch. The levees are mowed grass areas that are managed to prevent shrub and tree growth and animal damage.

Alternative 1 – No Action (Future without Project) – If the Kuhs Levee District levee is not repaired to the federal standard, the levee system would have less stability and there is an increased probability of future flooding. If that flooding were to occur then a more diverse and dynamic terrestrial and aquatic habitat may develop if the levee system were to remain unrepaired. The terrestrial habitat could be inundated by high water more frequently, and the vegetative composition may be altered. During high water events, water could pond on the landside of the levee and deposit sediment, decreasing flood water turbidity, filling wetlands, and killing vegetation as flood water ponds on typically historical wetland areas that are currently dominated by agriculture. However over time, wetland vegetation would become reestablished. During high water events, terrestrial fauna would be displaced as their habitat is inundated. Conversely, fishes and other aquatic organisms would gain access to a large area of floodplain habitat, which could benefit the spawning and rearing of many fish species.

Alternative 3 – Repair of Levees with Federal Assistance – If heavy rain occurs during levee repair, washing soil into the river and other waterways, there could be a short-term increase in turbidity

in the immediate area, possibly displacing fish and other mobile organisms temporarily. Following construction, any displaced mobile aquatic species would be expected to return rapidly. However, the Contractor is required to comply with all applicable federal, state, and local laws and regulations. The Contractor is required to provide environmental protective measures and procedures to prevent and control pollution. This includes the condition that the Contractor shall keep construction activities under surveillance, management and control to minimize interference with, disturbance to, and damage of, fish and wildlife. Therefore, no more than short-term limited impacts to fish and wildlife resources are anticipated.

3.2.2. Bald Eagle

Although the Bald Eagle (*Haliaeetus leucocephalus*) was removed from the Federal list of threatened and endangered species in 2007, it continues to be protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act (BGEPA). The BGEPA prohibits unregulated take of bald eagles, including disturbance. The U.S. Fish and Wildlife Service developed the National Bald Eagle Management Guidelines (USFWS 2007, 2007b, 2007c) to provide landowners, land managers, and others with information and recommendations regarding how to minimize potential project impacts to bald eagles, particularly where such impacts may constitute disturbance. On 13 April 2016, USACE biologist Shane Simmons conducted a field investigation and survey of the levee district to determine the presence of bald eagle nests/nesting within the levee district. No bald eagle nests were observed.

Alternative 1 - No Action (Future without Project) - Current status anticipated to remain the same.

Alternative 3 - Repair of Levees with Federal Assistance – Based on the site investigation and survey results showing no nests or eagle in the vicinity of the proposed project, no detrimental impacts on bald eagles or nests are anticipated.

3.2.3. Federal Threatened and Endangered Species Biological Assessment

In compliance with Section 7(c) of the Endangered Species Act of 1973, as amended, a list of species and critical habitat was acquired from the USFWS Information for Planning and Conservation (IPaC) website:

(<https://ecos.fws.gov/ipac/project/ZYN44JVA6VHQBO3UG7VAFW64HE/resources>) on 27 July 2016 for St. Charles County, MO (Table 1). Habitat requirements and impacts of the federal action are also discussed for each species.

Table 1. List of Federally threatened and endangered species and habitat potentially occurring in St. Charles County, MO.

Common Name (Scientific Name)	Classification	Habitat
Indiana Bat (<i>Myotis sodalis</i>)	Endangered	Caves, mines (winter hibernacula); trees (summer roosting); and small stream corridors with well-developed riparian woods; upland forests (foraging).
Gray Bat (<i>Myotis grisescens</i>)	Endangered	Caves year-round (winter hibernacula and summer roosting). In the summer gray bats forage along rivers lakes, and creeks, and may roost under bridges.
Northern Long-Eared Bat (<i>Myotis septentrionalis</i>)	Threatened	Caves, mines; rivers and reservoirs adjacent to forests.
Pallid Sturgeon (<i>Scaphirhynchus albus</i>)	Endangered	Missouri and Mississippi Rivers.
Higgins Eye (pearly mussel) (<i>Lampsilis higginsii</i>)	Endangered	Large rivers with deep water and moderate currents, and sand & gravel substrate.
Decurrent False Aster (<i>Boltonia decurrens</i>)	Threatened	Disturbed alluvial soils.

3.2.3.1. Indiana Bat

The endangered Indiana Bat has been noted as occurring in several Illinois and Missouri counties. Indiana Bats are considered to potentially occur in any area with forested habitat. Indiana Bats migrate seasonally between winter hibernacula and summer roosting habitats. Winter hibernacula includes caves and abandoned mines. Females emerge from hibernation in late March or early April to migrate to summer roosts. Females form nursery colonies under the loose bark of trees (dead or alive) and/or in cavities, where each female gives birth to a single young in June or early July. A maternity colony may include from one to 100 individuals. A single colony may utilize a number of roost trees during the summer, typically a primary roost tree and several alternates. Some males remain in the area near the winter hibernacula during the summer months, but others disperse throughout the range of the species and roost individually or in small numbers in the same types of trees as females. The best available data indicate that the species or size of tree does not appear to influence whether Indiana Bats utilize a tree for roosting

provided the tree exhibits any of the following characteristics: exfoliating bark, cracks, crevices, cavities. Data also indicate that the use of a particular tree is influenced by conditions, such as solar exposure, temperature and precipitation (USFWS 2007a, USFWS 1999).

During the summer, Indiana Bats frequent the corridors of small streams with well-developed riparian woods, as well as mature bottomland and upland forests. They forage for insects along stream corridors, within the canopy of floodplain and upland forests, over clearings with early successional vegetation (old fields), along the borders of croplands, along wooded fence rows, and over farm ponds and in pastures. It has been shown that the foraging range for the bats varies by season, age and sex and ranges up to 81 acres (33 ha). Suitable Indiana Bat summer habitat may be located in the forested areas in and adjacent to the Kuhs Levee District.

Alternative 1 - No Action (Future without Project) - Current status anticipated to remain the same.

Alternative 3 - Repair of Levees with Federal Assistance - The proposed project would not affect any caves or summer roost / foraging habitat (*i.e.*; trees). As currently planned, this project involves no tree clearing. Therefore, the St. Louis District has determined that the Tentatively Selected Plan would have “*no effect*” on the Indiana bat.

3.2.3.2. Gray Bat

The Gray Bat is a species that has a limited range in limestone karst areas of the southeastern United States, including several Illinois and Missouri counties. Gray Bats typically roost in caves year-round. During winter, Gray Bats hibernate in deep, vertical caves, and during summer, Gray Bats generally roost in various caves, but have been documented roosting under bridges and in other structures. Gray Bats forage on a variety of night-flying aquatic and terrestrial insects along rivers, lakes, and creeks.

Gray Bats are endangered largely because of their habitat of living in large numbers in only a few caves, thus, making the species vulnerable to human disturbance and habitat loss or modification. Disturbance of Gray Bats in their caves during their hibernation, can cause them to use their energy reserves and could lead to starvation. Disturbances to their caves during their nursing season (June and July) can frighten females causing them to drop non-volant pups to their death in panic to flee from the intruder. Additionally, many important caves that have been historically used by Gray Bats have been inundated by reservoirs. The commercialization of caves, and alterations of the air flow, temperature, humidity, and amount of light can make the cave unsuitable habitat for Gray Bats and drive bats away.

The fatal bat disease, white-nose syndrome (WNS), has not yet been documented to adversely affect the Gray Bat. However, because Gray Bats are cave obligates, and considering how WNS has decimated other cave-dwelling bat species, WNS could be another significant threat to the gray bat.

Alternative 1 - No Action (Future without Project) - Current status anticipated to remain the same.

Alternative 3 - Repair of Levees with Federal Assistance - The proposed project would not affect any caves or summer roost / foraging habitat (i.e.; caves, forested riparian habitat). Therefore, the St. Louis District has determined that the Tentatively Selected Plan would have “no effect” on the Gray Bat.

3.2.3.3. Northern Long-Eared Bat

The Northern Long-Eared Bat is sparsely found across much of the eastern and north central United States, and all Canadian provinces from the Atlantic Ocean west to the southern Yukon Territory and eastern British Columbia. Northern Long-Eared Bats spend winter hibernating in large caves and mines. During summer, this species roosts singly or in colonies underneath bark, in cavities, in crevices of both live and dead trees, and manmade structures such as barns and culverts. Foraging occurs in interior upland forests. Forest fragmentation, logging and forest conversion are major threats to the species. One of the primary threats to the northern long-eared bat is the fungal disease, white-nose syndrome, which has killed an estimated 5.5 million cave hibernating bats in the Northeast, Southeast, Midwest and Canada. Suitable Northern Long-Eared Bat summer habitat may be located in the forested areas in and adjacent to the Kuhs Levee District.

Alternative 1 - No Action (Future without Project) - Current status anticipated to remain the same.

Alternative 3 - Repair of Levees with Federal Assistance - The proposed project would not affect any caves or summer roost / foraging habitat. As currently planned, this project involves no tree clearing. Therefore, the St. Louis District has determined that the Tentatively Selected Plan would have “no effect” to the northern long-eared bat.

3.2.3.4. Pallid Sturgeon

The Pallid Sturgeon is found in the Mississippi River downstream of its confluence with the Missouri River. Pallid Sturgeon forage for insects, crustaceans, snails, clams, and fish along the bottom of large rivers (USFWS 2016). These fish are most frequently caught over a sand bottom, which is the predominant bottom substrate within the species' range on the Mississippi River.

Tag returns have shown that the species may be using a range of habitats in off-channel areas and tributaries of the Mississippi River.

Alternative 1 - No Action (Future without Project) - Current status anticipated to remain the same.

Alternative 3 -Repair of Levees with Federal Assistance - Levee repairs would take place within the footprint of the levee and designated work areas and would not directly impact any pallid sturgeon habitat. Indirect effects to pallid sturgeon habitat in the form of increased sedimentation of water, would be minimized by the implementation of all contracts to conduct levee repairs would require the implementation of Best Management Practices (BMPs) to minimize indirect effects to Pallid Sturgeon habitat by erosion and runoff into waters. Considering the specific location and nature of work, and provided BMPs would be adhered to, the St. Louis District has determined that the Tentatively Selected Plan “*may affect, but is not likely to adversely affect*” the Pallid Sturgeon.

3.2.3.5. Higgins Eye Pearlymussel

The Higgins eye is a freshwater mussel of large rivers where it inhabits deep water areas with moderate currents suitable sand and gravel substrate. These mussels partially bury themselves into the substrate and feed by filtering in microorganisms such as algae and bacteria from the water. Males release sperm and rely on the current so females can siphon the sperm to fertilize their eggs. After fertilization, the stored developing larvae (glochidia) are expelled back into the current and sometimes attach to the gills of host fish, where they develop further, detach, and settle on the river bottom where they can mature. Known host fish include Sauger, Walleye, Yellow Perch, Largemouth Bass, Smallmouth Bass, and Freshwater Drum. Threats to the Higgins Eye include pollution in the form of excess sedimentation, other contaminants, and increased siltation from dredging that can degrade their required water quality and cover suitable substrate.

Alternative 1 - No Action (Future without Project) - Current status anticipated to remain the same.

Alternative 3 -Repair of Levees with Federal Assistance - Levee repairs would take place within the footprint of the levee and designated work areas and would not impact any Higgins eye habitat. Therefore, St. Louis District has determined that the Tentatively Selected Plan “*may affect, but is not likely to adversely affect*” the Higgins eye Pearlymussel.

3.2.3.6. Decurrent False Aster

The Decurrent False Aster is presently known from scattered localities on the floodplains of the Illinois River, and Mississippi River from its confluence with the Missouri River south to Madison County, Illinois. Decurrent False Aster grows in wetlands, on the borders of marshes and lakes, and on the margins of bottomland oxbows and sloughs. Historically, this plant was found in wet prairies, marshes, and along the shores of some rivers and lakes. The species favors recently disturbed areas and flooding may play a role in maintaining its habitat. Current habitats include riverbanks, old fields, roadsides, mudflats and lake shores. It primarily prefers a moist habitat but can tolerate drought (MDC 2008a). The typical flowering season for Decurrent False Aster is from August through October.

In Missouri, Decurrent False Aster distribution is currently restricted to the Mississippi River floodplain from the Illinois River southward. Current populations are fewer and more isolated than in historical times. Former distribution of this plant included Lincoln, St. Charles, St. Louis, and Cape Girardeau Counties. Presently it is only known to occur in St. Charles County (MDC 2008a).

Alternative 1 - No Action (Future without Project) - Current status anticipated to remain the same.

Alternative 3 - Repair of Levees with Federal Assistance - The project area is within the footprint of the levee, which is planted with grasses and mowed regularly. Therefore the St. Louis District has determined that the Tentatively Selected Plan will have “no effect” on Decurrent False Aster.

3.3. Socioeconomic Resources

3.3.1. Economic

The Kuhs Drainage and Levee District provides a 10% (10-year frequency) chance exceedance flood design level of protection. The levee district is a non-federal levee system that provides flood risk protection to for approximately 1,905 acres of productive agricultural lands and conservation areas from Mississippi River and Missouri River flooding. Approximately 895 acres are used primarily for agricultural land. Based on aerial imagery from 2013 USDA NASS, an estimation of the crop allocation inside the levee district, which was used to determine a distribution of 13% corn, 84% soybean, and 3% wheat. The remainder of land that is protected by the levee system comprises the Edward “Ted” and Pat Jones-Confluence Point State Park. Should the levee remain unrepaired, the stability of the levee system is in question during future flood events.

The Kuhs Drainage and levee District is a non-federal project that is active in the USACE Rehabilitation and Inspection Program (RIP). Therefore, the proposed repair project is eligible for Flood Control and Coastal Emergency (FCCE) funding authorized by P.L. 84-99. Based on an economic analysis of the Kuhs Levee District system, the project average annual benefits are estimated to be \$46,000 with average annual costs of \$29,000, yielding a Benefit to Cost Ratio of 1.6 to 1.

Alternative 1 - No Action (Future without Project) - If the Kuhs Levee District is not repaired to the Federal standard, there would be reduced flood protection due to levee instability during future flood events. The previously leveed area would be subject to a higher probability of flooding, making the area less suitable for reliable agricultural productivity, and may decrease recreational activities, especially under flood conditions. This could result in potential negative economic effects on the Drainage District and the local economy.

Alternative 3 - Repair of Levees with Federal Assistance - Local agricultural, agri-businesses, and visitors to the Edward 'Ted' and Pat Jones-Confluence Point State Park would benefit from levee repair and subsequent flood damage reduction. The proposed levee repairs would not require residential displacement. No adverse impacts to life, health, or safety would result from levee repair.

3.3.2. Cultural Resources

The repair site locations are composed of areas of erosion in recently deposited material or recently-placed levee berm material. There are no recorded archaeological sites in the repair site locations.

Alternative 1 - No Action (Future without Project) - Without flooding, there would be no change from current conditions. With flooding, there is the potential for damage to culturally significant sites protected by the levee.

Alternative 3 - Repair of Levees with Federal Assistance - The proposed repairs to the levee within the Kuhs Levee District would have no effect upon significant historic properties (archaeological remains or standing structures). The repairs would consist of minor earth work and reurfing on the levee itself. The borrow site is described in Section 2.3.2 of this EA. The borrow site was part of the Missouri River channel adjacent to Mobile Island in 1892, therefore the landform is of modern origin. There would be no significant effect to historic properties.

In the unlikely event that earthmoving activities associated with the proposed repairs impact potentially significant archeological/historic remains, all construction activities and earthmoving actions in the immediate vicinity of the remains would be held in abeyance until the potential significance of the remains could be determined. The precise nature of such investigations would be developed by the Saint Louis District in concert with the professional staff of the Missouri State Historic Preservation Office (SHPO).

3.3.3. Tribal Coordination

The St. Louis District consults with 27 tribes that have an interest in projects along all rivers within the District boundaries. Many levees adjacent to the Mississippi River within the U.S. Army Corps of Engineers St. Louis District boundaries were damaged by flooding in 2015.

Alternative 1 - No Action (Future without Project) - Without flooding, there would be no change from current conditions. With flooding, there is the potential for damage to culturally significant sites protected by the levee.

Alternative 3 - Repair of Levees with Federal Assistance - The recovery and repair of these damaged levees, authorized under P.L. 84-99, was coordinated with all tribes in the following manner: An initial letter, dated 10 May 2016, was sent to the tribes. Along with the letter, enclosed maps and tables indicated the Drainage & Levee Districts that incurred damage and had requested assistance. Also enclosed was a summary of the typical repairs that are performed for each type of damage. The letter specifically called out those levees with breaches, including Kuhs. The tribes were requested to contact the USACE if there are known tribal areas of concern in any of the project areas and if they desire further consultation on each or any project. The Eastern Shawnee Tribe of Oklahoma stated in an e-mail, dated 23 May 2016, that they were not currently aware of existing documentation directly linking Shawnee religious, cultural, or historic sites to Madison County, Illinois, and deferred this finding to the Osage Nation. The Quapaw Tribe Historic Preservation Office provided a letter dated 3 June 2016, stating that they wish to be a consulting party and are requesting more information when it becomes available. The USACE would continue the consultation process until the completion of the project.

3.3.4. Environmental Justice

Environmental justice refers to fair treatment of all races, cultures and income levels with respect to development, implementation and enforcement of environmental laws, policies and actions. Environmental justice analysis was developed following the requirements of:

- Executive Order 12898 ("Federal Actions to Address Environmental Justice in Minority Population and Low-Income Populations," 1994)
- "Department of Defense's Strategy on Environmental Justice" (March 24, 1995).

Alternative 1 - No Action (Future without Project) - If the levee is not repaired to the Federal standard, the level of protection would be eliminated (due to the levee breaches) from that provided by the design (pre-2015 winter flood event) levee. This would not disproportionately affect low income or minority populations.

Alternative 3 - Repair of Levees with Federal Assistance - If the Kuhs Levee District levee is repaired to the Federal standard, the level of protection would be that provided by the design (pre-2015 winter flood event) levee. This would not disproportionately affect low income or minority populations.

3.3.5. HTRW

At this time, there are no recognized environmental conditions that would indicate a risk of HTRW contamination within the project area.

Alternative 1 - No Action (Future without Project) - There would be no change from current conditions.

Alternative 3 - Repair of Levees with Federal Assistance - The likelihood of hazardous substances adversely affecting the project area due to the proposed construction activities is very low. The St. Louis District would conduct a modified Phase I assessment including a site investigation prior to construction to ensure that no HTRW contamination exists within the project area.

3.4. Summary Comparison of Project Alternatives

Impacts of the tentatively selected Plan on natural resources, cultural resources, and other aspects and features of the human environment are summarized in Table 2 of this EA.

Table 2. Summary of Alternative 1 - “No Action” and Alternative 3 - Structural Repair of Levee with Federal Assistance (Tentatively Selected Plan) with respect to physical, biological, and socioeconomic resources.

Resources	Alternatives	
	No Action	Tentatively Selected Plan
Physical Resources	Flooding would occur if the levees are not repaired and the levee’s integrity is compromised during a flood.	Erosion repair and turf repairs would meet the Federal standard.
	Increased potential for further erosion of levee and sedimentation within drainage district during flood events.	Temporary minor impacts to water and air quality during construction.
	Does not meet project objective of repairs to Federal standard.	Brings the levee protection level back to pre-2015 flood conditions.
Biological Resources	If levee system is compromised in the future due to levee instability, there is potential for beneficial impacts due to potential increase in floodplain wetland habitat.	Construction would be confined to the levee which may result in minor temporary impacts.
	Federal Threatened and Endangered species are not anticipated to be adversely impacted.	The Tentatively Selected Plan would not result in the removal or alteration of habitat that coincides with the habitat required for the Indiana Bat, Gray Bat, Northern Long-Eared Bat, Pallid Sturgeon, Higgins Eye, or Decurrent False Aster. Therefore, the Tentatively Selected Plan is not anticipated to adversely affect Federally listed species.
	Meets project objective of minimal environmental impacts.	Meets project objective of minimal environmental impacts.
Socioeconomic Resources	The levee district would be susceptible to future floods and potential negative impacts to the	Repair of levee would result in the protection of croplands, businesses and structures from

	levee district and regional economy due to levee damages.	floods up to the design (10-year frequency) of the levee system.
	Does not meet project objective of protecting the socioeconomic value of the levee district.	Meets project objective of protecting the economic value of the levee district.

4. CUMULATIVE IMPACTS

Cumulative effects are defined as *“the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions of what agency (Federal or non-Federal) or person undertakes such actions”* (CEQ 1997; 40 CFR Part 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The majority of the levee systems in the region have been in place for decades. Repairs would involve returning most of the damaged levee sections to the same alignment and level of protection as existed prior to the high water events of 2015. Temporary impacts from noise, air, and increased water sedimentation would occur; however, repair sites are widely scattered throughout the St. Louis District and therefore additive effects of these impacts would be negligible. These repairs are not anticipated to decrease the post-flood productivity of lands riverward or landward of the levee systems. The proposed Kuhs Levee District P.L. 84-99 project along with several other levees will require borrow for levee repairs. Borrow sites have been evaluated during site visits, and examined and selected in order to avoid sensitive areas and resources. Borrow for the majority of these projects would come from agriculture areas, low quality farmed wetlands, and previously used borrow areas. In some cases, P.L. 84-99 projects have sustained damage that was/is infeasible to repair on the original levee alignment. For new levee alignments, some acreage would be removed from agricultural use causing a minor loss to overall farm production and increase in floodplain habitat. The widely scattered nature of repair sites and shallow excavation depth of borrow sites would reduce impacts and no long term adverse cumulative impacts are expected.

5. RELATIONSHIP OF TENTATIVELY SELECTED PLAN TO ENVIRONMENTAL REQUIREMENTS

The relationship of the Tentatively Selected Plan (Alternative 3 – Repair of Levees with Federal Assistance) to environmental requirements, environmental acts, and /or executive orders is shown in Table 3.

Table 3. Relationship of the tentatively selected plan to environmental requirements, environmental acts, and /or executive orders.

Environmental Requirement	Compliance
Bald Eagle Protection Act, 42 USC 4151-4157	FC
Clean Air Act, 42 USC 7401-7542	FC
Clean Water Act, 33 USC 1251-1375	FC
Comprehensive Environmental Response, Compensation, and Liability Act, (HTRW) 42 USC 9601-9675	PC
Endangered Species Act, 16 USC 1531-1543	PC
Farmland Protection Policy Act, 7 (Prime Farmland) USC 4201-4208	FC
Fish and Wildlife Coordination Act, 16 USC 661-666c	PC
Food Security Act of 1985 (Swampbuster), 7 USC varies	FC
Land and Water Conservation Fund Act, (Recreation) 16 USC 460d-4601	FC
National Environmental Policy Act, 42 USC 4321-4347	PC
National Historic Preservation Act, 16 USC 470 et seq.	PC
Noise Control Act of 1972, 42 USC 4901-4918	FC
Resource, Conservation, and Rehabilitation Act, (Solid Waste) 42 USC 6901-6987	FC
Rivers and Harbors Appropriation Act, (Sec. 10) 33 USC 401-413	FC
Water Resources Development Acts of 1986 and 1990 (Sec 906 – Mitigation; Sec 307 - No Net Loss - Wetlands)	FC
Floodplain Management (EO 11988 as amended by EO 12148)	FC
Federal Compliance with Pollution Control Standards (EO 12088)	FC
Protection and Enhancement of Environmental Quality (EIS Preparation) (EO 11991)	FC
Protection and Enhancement of the Cultural Environment (Register Nomination) (EO 11593)	FC
Protection of Wetlands (EO 11990 as amended by EO 12608)	FC

FC = Full Compliance, PC = Partial Compliance (on-going, will be accomplished prior to construction).

6. COORDINATION, PUBLIC VIEWS, AND RESPONSES

Notification of this draft Environmental Assessment and unsigned Finding of No Significant Impact was sent to the officials, agencies, organizations, and individuals listed below for review and comment. Additionally, an electronic copy will be available on the St. Louis District's website at <http://www.mvs.usace.army.mil/Missions/ProgramsProjectManagement/PlansReports.aspx> during the public review period.

Please note that the Finding of No Significant Impact is unsigned. These documents will be signed into effect only after having carefully considered comments received as a result of this public review.

To assure compliance with the National Environmental Policy Act, Endangered Species Act, and other applicable environmental laws and regulations, coordination with these agencies will continue as required throughout the planning and construction phases of the proposed levee repairs.

Notification of this draft Environmental Assessment and unsigned draft Finding of No Significant Impact was sent to the following entities:

Senator Roy Blunt (MO) 260 Russell Senate Office Building Washington, DC 20510	U.S. Environmental Protection Agency, Region 7 Larry Shepard NEPA Team 11201 Renner Blvd. Lenexa, Kansas 66219
Senator Claire McCaskill (MO) 730 Hart Senate Office Building Washington, D.C. 20510	Missouri Department of Natural Resources Sara Parker Pauley, Director P.O. Box 176 Jefferson City, MO 65102
U.S. Rep. Blaine Luetkemeyer U.S. House District 03 (MO) 2440 Rayburn House Office Building Washington, D.C. 20515	Missouri Emergency Management Agency St. Charles Co. Tom Koch 301 N. 2nd. St, Rm 280 St. Charles, MO 63301
Representative Anne Zerr MO House of Representatives, District 065 201 West Capitol Avenue, Room 315 Jefferson City MO 65101	The Nature Conservancy 2816 Sutton Blvd, Ste 2 St. Louis, MO 63143

<p>Matthew Mangan, Acting Field Supervisor U.S. Fish and Wildlife Service Marion Illinois Suboffice (ES) 8588 Route 148 Marion, Illinois 62959</p>	<p>Kathy Andria American Bottoms Conservancy P.O. Box 4242 Fairview Heights, IL 62208</p>
<p>Amy Salveter, Field Supervisor U.S. Fish and Wildlife Service 101 Park DeVille Drive, Suite A Columbia, MO 65203-0057</p>	<p>Robert D. Shepherd Izaak Walton League of America 16 Juliet Ave Romeoville, IL 60446</p>
<p>Janet Sternburg Resource Science Supervisor MO Department of Conservation PO Box 180 Jefferson City, MO 65102</p>	<p>Sierra Club Missouri Chapter 7164 Manchester Avenue Maplewood, MO 63143</p>
<p>Mr. Melvin Neustadt, President Kuhs Levee District 1190 Red School Road West Alton, MO 63386</p>	

DRAFT

7. ENVIRONMENTAL ASSESSMENT PREPARERS

Rick Archeski, Environmental Engineer

Experience: 11 years USFWS, 10 years US Army, 16 years USACE-MVS

Role: Environmental Engineering, HTRW

James E. Barnes, District Archaeologist

Experience: 8 years private sector; 22 years Center of Expertise, Curation and Maintenance of Archaeological Collections

Role: National Historic Preservation Act Analysis and Compliance, Tribal Coordination

Bryan Dirks, P.E.

Experience: 8 years Design Branch, USACE

Role: Technical Engineering Lead

James Gruhala, Biologist

Experience: 7 years USFWS, 3 months USACE MVP@MVS

Role: EA Coordinator, Environmental Impact Analysis, NEPA and Environmental Compliance

Sheila McCarthy, Project Manager

Experience: 7 years USACE-CERL; 8 years NPS, 8 years USACE-MVS

Role: Project Manager

Danny McClendon, Chief Regulatory Branch

Experience: 25 years USACE-MVS Regulatory; 5 years USACE-NWK Planning Division

Role: Section 404/401 permit review; NEPA and Environmental Compliance Coordination

Evan Stewart, Economist

Experience: 3 years USACE-MVN@MVS

Role: Economist

8. REFERENCES

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FINDING OF NO SIGNIFICANT IMPACT

PUBLIC LAW 84-99 KUHS LEVEE DISTRICT ST. CHARLES COUNTY, MISSOURI

1. I have reviewed the documents concerned with the proposed levee repairs to the Kuhs Levee District. The purpose of this project is to repair levee sections damaged by a high water event during the winter of 2015. Repairs would return the levee district to pre-flood conditions in an expedient manner.

2. I have also evaluated pertinent data concerning practicable alternatives relative to my decision on this action. As part of this evaluation, I have considered the following alternatives:

- a. No Action Alternative: Under the no-action alternative, the federal government would not repair the flood damaged levee. It is assumed that, because of the cost of repairs, the levee district would not repair the levee.
- b. Repair of Levees with Federal Assistance (Tentatively Selected Plan): Under this alternative, the federal government would repair the damaged areas to the pre-flood level of protection. Since the Kuhs Levee District is active in the USACE Rehabilitation and Inspection Program, it is eligible for Flood Control and Coastal Emergency funding authorized by P.L. 84-99.

3. The possible consequences of these alternatives have been studied for physical, environmental, cultural, social and economic effect, and engineering feasibility. Major findings of this investigation include the following:

- a. The No Action Alternative was evaluated and subsequently rejected primarily based upon the higher potential for future flooding and damage to area agricultural fields, primary and secondary residences, outbuildings, and infrastructure.
- b. Approximately 226 cubic yards of borrow material would be required for the erosion repairs. The borrow site was inspected by Project Development Team members and has been cleared for use in terms of jurisdictional wetlands, biological, cultural, and tribal impacts. The borrow area is a reasonable and economically feasible haul distance to the levee. Crane mat crossing will be required if pipelines are being crossed to haul material is different levee sections.
- c. No appreciable effects to general environmental conditions (air quality, noise, water quality) are anticipated to result from the Tentatively Selected Plan.
- d. The Tentatively Selected Plan is not anticipated to cause significant adverse impacts to general fish and wildlife resources.

- e. The Tentatively Selected Plan is not anticipated to cause unacceptable adverse impacts to riparian habitat, bottomland hardwood forest, or other jurisdictional wetlands.
- f. No federally endangered or threatened species would be adversely impacted by the Tentatively Selected Plan.
- g. No prime farmland would be adversely impacted as a result of the Tentatively Selected Plan.
- h. No significant impacts to historic properties (cultural resources) are anticipated as a result of the Tentatively Selected Plan.
- i. No significant impacts to tribal resources are anticipated as a result of the Tentatively Selected Plan.
- j. Under the tentatively selected plan, local economies would benefit through an increased labor demand to carry out levee repairs. Agricultural land and structures within the drainage district would be provided with pre-2015 flood risk reduction.
- k. The Contractor shall comply with all applicable federal, state, and local laws and regulations. The Contractor shall provide environmental protective measures and procedures to prevent and control pollution, limit habitat disruption, and correct environmental damage that occurs during construction. All disturbed areas would be reseeded following construction to reduce the potential for erosion.

4. Based upon the Environmental Assessment of the Tentatively Selected Plan, no significant impacts on the environment are anticipated. The proposed action has been coordinated with appropriate resource agencies, and there are no significant unresolved issues. Therefore, an Environmental Impact Statement will not be prepared prior to proceeding with this action.

Date

Anthony P. Mitchell
Colonel, U.S. Army
District Commander