US Army Corps
of Engineers
St. Louis District

ENVIRONMENTAL ASSESSMENT WITH DRAFT FINDING OF NO SIGNIFICANT IMPACT

LEVEE REPAIR (P.L.-84-99): BREVATOR DRAINAGE DISTRICT LINCOLN COUNTY, MISSOURI MISSISSIPPI RIVER

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INTRODUCTION

This document is an Environmental Assessment (EA) with an attached unsigned Finding of No Significant Impact (FONSI) for levee repairs to the Brevator Drainage 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.

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 Brevator Drainage 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.

Project Location and Scope

The Brevator Drainage District is located in Lincoln County, Missouri, on the right descending bank of the Mississippi River at approximately River Mile (RM) 237 to 239 (Figures 1). It is a non-federal levee system consisting of approximately 5.7 miles of levee that provide protection up to a 14-year flood event. The levee was constructed with an 8-10 foot crown width and 1 on 2.5 side slopes. Five box culverts provide gravity drainage for the levee district. The system encompasses 2,132 acres and protects primarily agricultural lands. The levee system also protects commercial structures, farm structures, residences, farmsteads, homes, roads, ditches, utilities and infrastructure.

Project Purpose and Need

The Brevator levee system sustained damages as a result of high water events during the winter of 2015. The purpose of this federal action is to restore the level of flood protection to that which existed prior to the 2015 flood event. There is a need for repairs, because flood damages eliminated flood protection provided by the levee, making the district vulnerable to frequent flooding. Without federal involvement through the P.L.-84-99 program, it is unlikely that the

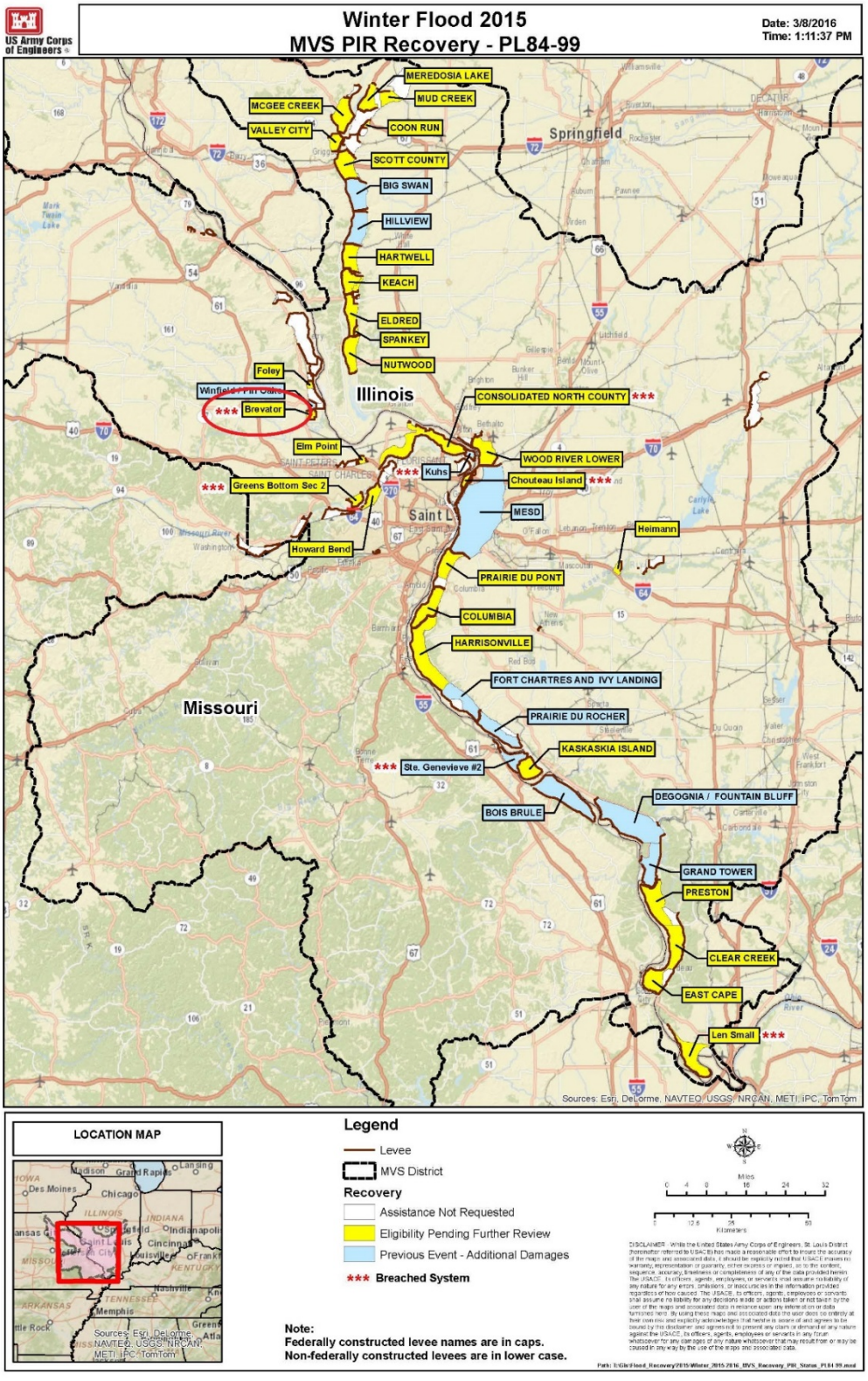

Figure 1: General Location Map of the Brevator Drainage District.

Brevator Drainage District has the financial ability to restore the level of protection according to Corps of Engineers standards.

Damage Description

Damage location sites are shown on Figure 2. Damages consisted of Erosion Types I and II and levee breaches.

Classification of Damage Types.

- Erosion Type I: Wave wash / minor erosion less than 12 inches deep, measured in linear feet. Repaired by disking and compacting.

- Erosion Type II: Moderate erosion between 12 and 18 inches deep, measured in cubic yards. Repaired by stripping, disking, filling, and compacting.

- Breach: A rupture, break, or gap in the levee system, measured in cubic yards. Repaired by stripping, preparing, placing embankment, and compacting in lifts.

Damages.

Area 1: Erosion Type II damages EMB-T2-01L and EMP-T2-02L are located on either side of Keeteman Road as it crosses over the south flank of Brevator. Both measured 50' in length with an average depth of 15 inches caused by overtopping.

Area 2: Erosion Type I damage EMB-T1-01L, EMB-T1-03L, EMB-T1-05L and EMB- T1-06L are located on the landside and EMB-T1-02R, EMB-T1-04R and EMB-T1-07R are located on the riverside of the south flank of Brevator, beginning approximately 0.2 mile east of Glacial Sand Road. Erosion is 2-6 inches in depth located in the top half of the levee slope caused by wave wash. Total length of erosion damages is 13,515'.

Area 3: Breach 1 is located on the south flank of Brevator, approximately .58 mile east of Glacial Sand Road. The breach, measuring 95' in length, was caused by overtopping, which removed the top 2/3 of the levee section. The bottom 1/3, including the levee foundation, remains in place.

Area 4: Overtopping Breach damage EMB-T2-03L is located on the landside of the south flank of Brevator, approximately 0.72 mile east of Glacial Sand Road. The damage was caused by

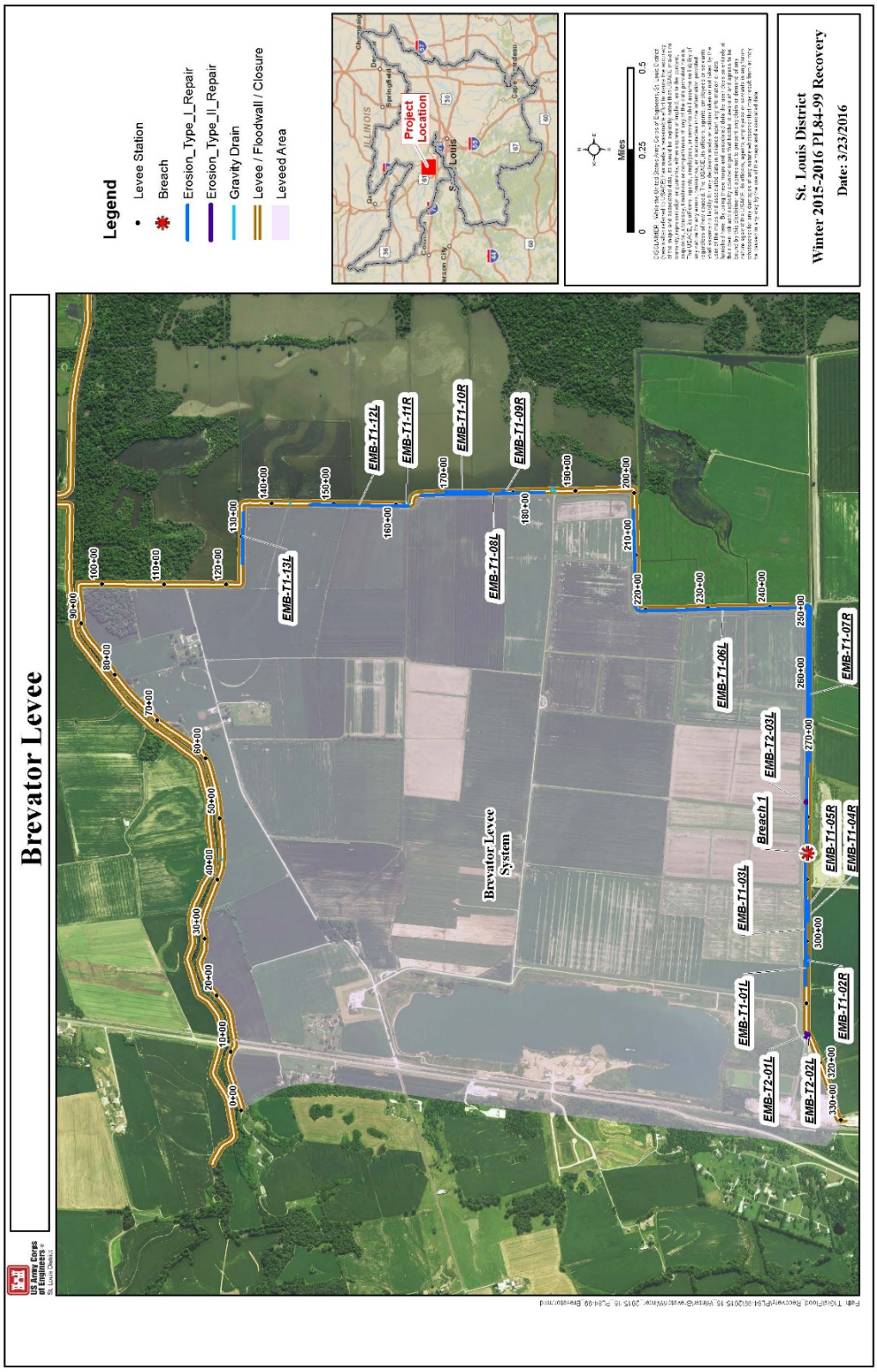

Figure 2: Brevator Levee Damage Locations.

overtopping and is 25’ in length and approximately 15 inches deep located in the top half of the levee slope.

Area 5: Erosion Type I damage EMB-T1-08L, EMB-T1-12L and EMB-T1-13L, are located on the landside and EMB-T1-09R, EMB-T1-10R and EMB-T1-11R are located on the riverside of the main line of Brevator, beginning approximately 0.24 mile south of Argent Club Road. Erosion is 2-6 inches in depth located in the top half of the levee slope caused by wave wash. Total length of erosion damages is 5,400’.

The levee has an authorized level of protection of 14 years. However, given the nature of the damages, the breached section, the levee currently provides no protection from additional flooding.

2. PROJECT ALTERNATIVES CONSIDERED

This section describes and compares the alternatives based on their geotechnical, engineering design, economic, and environmental impact and achievement of project objectives for the damaged Brevator Drainage 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.

Alternative 1 - No Action (Future without Project)
Under the No Action Alternative, the federal government would not repair the damages to the Brevator levee. It is possible that the Drainage District would make repairs without federal assistance. Environmental impacts of repairs made by the Drainage 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 Drainage 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.

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

Alternative 3 – Structural Repair of Levees with Federal Assistance

Under this alternative, at the request of the Brevator Drainage District, the federal government would repair the damaged areas to the pre-flood level of protection. Since the Brevator Drainage 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.

Repair - The damaged areas of the levee will 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 or breached areas, 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.

Borrow Material – Borrow material for levee repairs (Type I and II) and breach repairs will come from a commercial sand quarry within the Brevator Drainage District (Figure 3). The borrow material consists of over burden stripped from the sand quarry (pre-disturbed land and material). Approximately 15 cubic yards (cy^3) of material will be required for Type I levee repairs, 25 cy^3 for Type II levee repairs, and 1,100 cy^3 of material will be used for repair of breaches.

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.

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 & specs will be finalized for construction. Construction will commence as soon as possible thereafter and will be completed within one construction season.

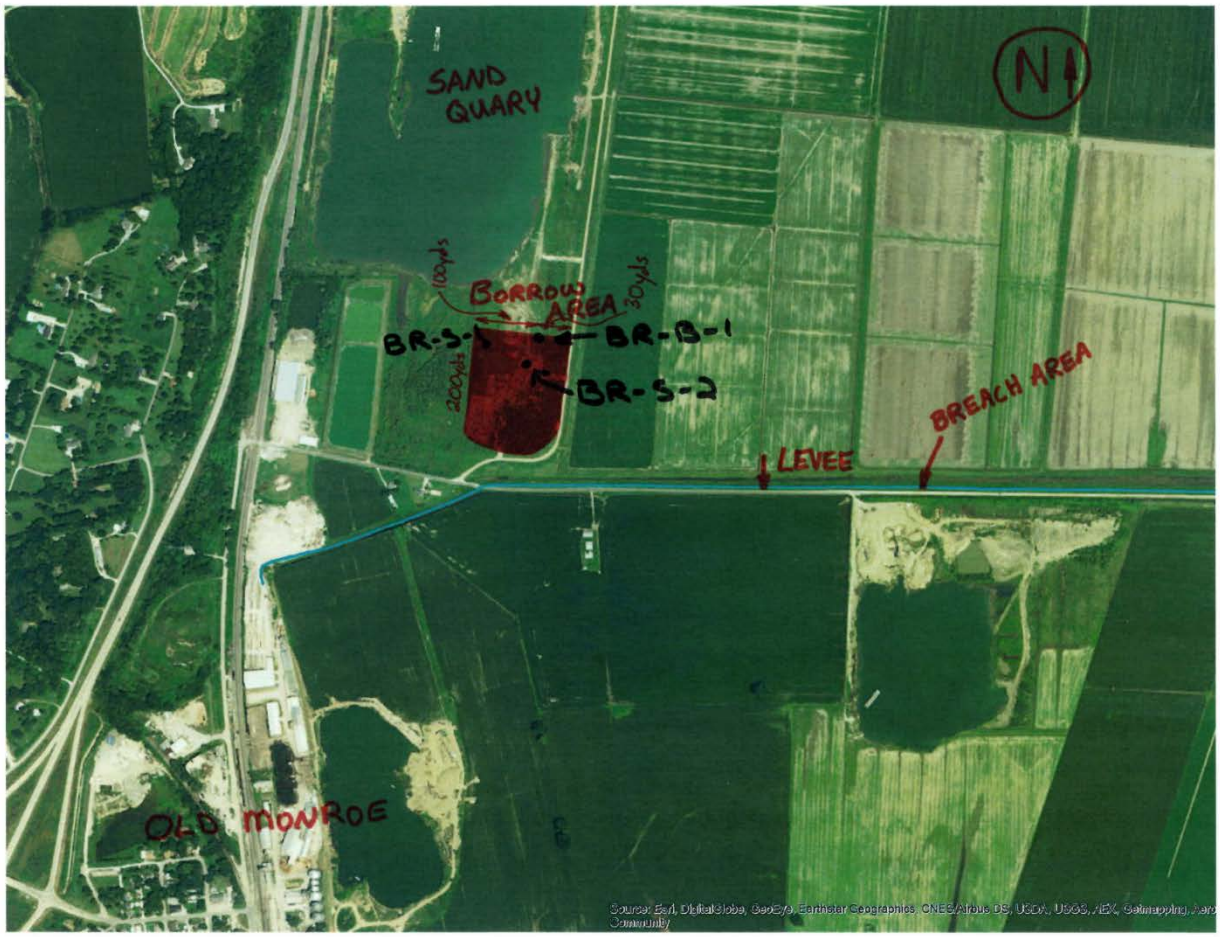

Figure 3: Location of Borrow Material Stockpiled from Overburden from Sand Quarry.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

Physical Resources

The Brevator Drainage District is located on the floodplain of the Mississippi River. 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 14-year return period; and to provide a reasonable amount of certainty of producing crops in most years. Much of the area within the levee is considered prime farmland.

Lincoln County, Missouri, is currently in attainment for all U.S. Environmental Protection Agency air quality criteria. Ambient noise in the study area is generated by wildlife, human activities and vehicular traffic.

Alternative 1 – No Action (Future without Project) - If the Brevator Drainage District levee is not repaired to the federal standard there would be an increased flood risk and more physical damages would occur within the Brevator Drainage District, such as erosion and sedimentation. Given the nature of the damages that occurred across the levee system, the system currently provides little to no flood protection due to a levee breach that extends downward to 2/3 the levee height. 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 would increase the carbon monoxide and carbon dioxide levels in the vicinity of the construction site. The expected increases would be very negligible and would cease after construction.

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 site 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.

Biological Resources

Fish and Wildlife

Fish and wildlife habitats located in and near the leveed area include permanent water, temporary water, bottomland forest / wooded swamp, 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 many species of waterfowl, shorebirds, 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. The borrow material would be acquired from a commercial source (stockpiled material from a sand quarry within the Drainage District).

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 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.

Alternative 1 – No Action (Future without Project) – If the Brevator Drainage District levee is not repaired to the federal standard, and agriculture use diminish, a more diverse and dynamic terrestrial and aquatic habitat may develop. 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, killing vegetation as flood water ponds on typically dry areas currently dominated by agriculture. However over time, wetland vegetation would become established. 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 would benefit the spawning and rearing of many fish species.

Alternative 3 – Repair of Levees with Federal Assistance – If heavy rain occurs during construction, washing soil into the river and other waterways, there could be a short-term increase in turbidity in the immediate area, temporarily displacing fish and other mobile organisms. Following construction, aquatic species would be expected to return. 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.

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 website on 17 May 2016 (USFWS 2016) for Lincoln County, MO (Table 1). Habitat requirements and impacts of the federal action are discussed for each species below.

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

Common Name (Scientific Name)	**Classification**	**Habitat**
Indiana Bat (*Myotis sodalis)*	Endangered	Caves, mines (hibernacula); small stream corridors with well-developed riparian woods; upland forests (foraging)
Northern Long-eared Bat (*Myotis septentrionalis*)	Threatened with 4(d) rule	Caves and mines; rivers and reservoirs adjacent to forests
Least Tern (*Sterna antillarum)*	Endangered	Bare alluvial and dredged spoil islands
Piping Plover (*Charadrius melodus*) – Northern Great Plains Breeding Population	Threatened	Riverine Sandbars
Rufa Red Knot (*Calidris canutus rufa*)	Threatened	Shorebird that migrates through Missouri - irregularly observed feeding on mudflats, sandbars, shallowly flooded areas and pond margins along the Missouri and Mississippi Rivers from May 1 through September 30
Decurrent False Aster *(Boltonia decurrens*)	Threatened	Disturbed alluvial soils
Running Buffalo Clover (*Trifolium stoloniferum*)	Endangered	Disturbed bottomland meadows

<u>Indiana Bat</u>

This species 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 include

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 species or size of tree does not appear to influence whether Indiana bats utilize a tree for roosting provided the appropriate bark structure is present. However, the use of a particular tree does appear to be influenced by weather conditions, such as 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 Brevator Drainage District.

No Action **–** Current status anticipated to remain the same.

Federal Action **–** The proposed project would not affect any caves or foraging habitat. As currently planned, this project involves no tree clearing. Therefore, it is expected that The Tentatively Selected Plan is not likely to adversely affect the Indiana bat.

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. 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 Brevator Drainage District.

No Action **–** Current status anticipated to remain the same.

Federal Action **–** The proposed project would not affect any caves or foraging habitat. As currently planned, this project involves no tree clearing. Therefore, it is expected that The Tentatively Selected Plan is not likely to adversely affect the Northern Long-eared Bat.

Interior Least Tern

Interior Least Tern historic breeding range includes the Mississippi River system (Jones, 2000, USFWS 1990). Surveys of the Mississippi River have found the majority of breeding colonies occur south of Cairo, IL. However, breeding birds have been found in Scott and Mississippi counties. The characteristics required for suitable breeding grounds include "bare alluvial islands or sandbars", food, and appropriate water regime. Least Terns arrive at breeding grounds in late April and the breeding season is complete by early September (USFWS 1990).

No Action **–** Current status anticipated to remain the same.

Federal Action **–** Levee repairs would take place within the footprint of the levee and would not impact any interior least tern habitat. The Tentatively Selected Plan is not likely to adversely affect the interior least tern.

Piping Plover

The Piping Plover is a small shorebird about the size of a robin. It has a sandy colored back and white underparts, with a single black neck band, a short stout orange bill and orange legs. Piping Plovers arrive in the Northern Great Plains to breed around mid-April and fly south by mid to late August.

The Northern Great Plains population of Piping Plovers nest on the shorelines and islands of alkali (salty) lakes in North Dakota and Montana. They nest on sandbar islands and reservoir shorelines along the Missouri River and reservoirs in Montana, North Dakota, South Dakota, and Nebraska. In Nebraska, they nest on the Platte River system, Niobrara, Loup, and Elkhorn Rivers as well as limited locations in Minnesota and Colorado. Most of the Northern Great Plains plovers winter along the Texas coast, extending into Mexico.

For nesting, Piping Plovers make shallow scrapes in the sand which they line with small pebbles or rocks. The female lays three to four eggs and both parents share in incubation duties. The eggs hatch after about 28 days, and the young leave the nest within hours. The chicks can forage for themselves immediately, but remain near their parents for several weeks for protection and temperature control (brooding or shading). Depending on food availability, it takes the young from around 18 to 28 days to begin flying.

In the late 1800's, Piping Plovers' feathers were used in the millinery (hat) trade, and the species was heavily hunted. Starting in the 1930's, dam construction, water diversion and water withdrawals changed river flow regimes and drastically reduced the amount of available nesting habitat. Human-caused changes to the landscape have increased the number and type of predators, decreasing nest success and chick survival. A five-year review of the piping plovers' Endangered Species Act listing was completed in September 2009. The current recovery plan was finalized in 1988. Recovery plan revision began in 2010 (USFWS 2015).

No Action **–** Current status anticipated to remain the same.

Federal Action **–** Levee repairs would take place within the footprint of the levee and would not impact any piping plover habitat. The Tentatively Selected Plan is not likely to adversely affect the Piping Plover.

Rufa Red Knot

Red Knots migrate long distances between nesting areas in mid- and high arctic latitudes and southern nonbreeding habitats as far north as the coastal United States (low numbers) and southward to southern South America. Populations including subspecies *rufa* migrate in large flocks northward through the contiguous United States mainly March-early June, southward July-August (Harrington 2001). Arrival in breeding areas occurs in late May or early June; most have departed breeding areas by mid-August. The migration stops of red knots that spend the boreal winter in Tierra del Fuego and Patagonian Argentina (subspecies *rufa*) are mainly along the Atlantic coast of South America (mainly Chile, Argentina, and Brazil) and the Atlantic and Gulf of Mexico coasts of North America (González et al. 2006), including staging areas on the coasts of Hudson and James bays (Harrington 2001).

No Action **–** Current status anticipated to remain the same.

Federal Action **–** No occurrences of this species are known from the project area. The Tentatively Selected Plan is not likely to adversely affect the Rufa Red Knot.

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).

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).

No Action **–** Current status anticipated to remain the same.

Federal Action **–** No occurrences of this species are known from the project area. The Tentatively Selected Plan is not likely to adversely affect the Decurrent False Aster.

Running Buffalo Clover

Running Buffalo Clover requires periodic disturbance and a somewhat open habitat to successfully flourish, but it cannot tolerate full-sun, full-shade, or severe disturbance. Historically, running buffalo clover was found in rich soils in the ecotone between open forest and prairie. Those areas were probably maintained by the disturbance caused by bison. Today, the species is found in partially shaded woodlots, mowed areas (lawns, parks, cemeteries), and along streams and trails. Clearing land for agriculture and development has led to elimination of populations, loss of habitat, and fragmentation of the clover populations that remain. Small, isolated populations of Running Buffalo Clover are prone to extinction from herbivory, disease, and inbreeding.

Running Buffalo Clover was historically widespread and ranged from Nebraska to West Virginia. It has disappeared from all known historic sites in Missouri. It formerly occurred in the southern two-thirds of the state. There are historical records from Jasper, Wayne, Cooper, and St. Louis Counties. It was considered extirpated from Missouri until as recently as 1989, when some plants were reported growing in an unattended pile of topsoil in St. Louis. One natural site for Running Buffalo Clover was discovered in Madison County in 1994 and another was discovered in Maries County in 1998 (MDC 2008b). The dense turf formed by the cool season grass, regular mowing or agricultural production prevent Running Buffalo Clover from germinating.

No Action **–** Current status anticipated to remain the same.

Federal Action **–** No occurrences of this species are known from the project area. The Tentatively Selected Plan is not likely to adversely affect the Running Buffalo Clover.

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 7 April 2016, Ken Cook conducted a field inspection of the levee district to determine the presence of Bald Eagle nests/nesting within the levee district. No Bald Eagle nests were observed.

No Action **–** Current status anticipated to remain the same.

Federal Action **–** No occurrences of this species are known from the project area. The tentatively selected plan is not likely to adversely affect the Bald Eagle.

3.3 SOCIOECONOMIC RESOURCES

3.3.1 Economic

The Brevator Drainage District encompasses 2,132 acres and protects primarily agricultural lands (1,966 acres). The main occupation in the Brevator Drainage District is farming, and levees are of regional economic importance to maintain the agricultural productivity occurring in the floodplain. The crop distribution within the area is approximately 40 percent soybeans, 40 percent corn, 10 percent wheat and 10 percent grass sod. Most of the agricultural land within the levee is considered prime farmland if drained. The levee system also protects commercial structures, farm structures, residences, farmsteads, homes, roads, ditches, utilities and infrastructure. Levee damage due to the 2015 high water events reduced the degree of protection from a 14-year flood event to a minor flooding event due to the breaching of the levee system. The total rehabilitation project cost is approximately $181,000 with a benefit to cost (b/c) ratio of 45.8 to 1. The non-federal cost share requirement is $30,000.

Alternative 1 – No Action (Future without Project) – If the Brevator Drainage District levee is not repaired to the Federal standard, there would be little to no flood protection due to a levee breach (hole in the levee) that extends downward to 2/3 of the height of the levee. The previously leveed area would continue to be subject to flooding, making the area less suitable and possibly unsuitable for agriculture. This could result in a negative economic effect on the Drainage District and the local economy.

Alternative 3 – Repair of Levees with Federal Assistance – Local agricultural and agri-businesses 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 (Historic and Archaeological)

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 Brevator Drainage District will have no effect upon significant historic properties (archaeological remains or standing structures). The repairs consist of minor earth work and returfing on the levee itself. The breaches will be repaired with borrow material that was stockpiled from a sand quarry operation.

In the unlikely event that earthmoving activities associated with the proposed repairs did 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 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 Brevator Drainage District 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 flood event) levee. This would not disproportionately affect low income or minority populations.

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

3.3.4 Tribal Coordination

The St. Louis District consults with 27 tribes that have an interest in projects along all rivers within our 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 2013.

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 PL84 -99, will be coordinated with all tribes in the following manner: An initial letter to the tribes will describe the locations of existing

flood damaged structures, lands and fills. Maps of the areas and a description of the types of impacts resulting from construction are also included. The tribes are 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. Depending on tribal response, the USACE continues the consultation process until the completion of the project.

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) - Without flooding, there would be no change from current conditions. With flooding, there is the potential for flood water to spread some contaminants.

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 alternative to 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 the "No Action" and tentatively selective alternatives to physical, biological, and socioeconomic resources.

Resources	**Alternatives**	
	No Action	**Tentatively Selected Alternative**
Physical Resources	Flooding will occur if the levees are not repaired and the levee's integrity is compromised during a flood.	Erosion repairs, turf repairs and breach 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.	Meets project design objective of 14-year protection level.
Biological Resources	If levee system is compromised, there is potential for beneficial impacts due to potential increase in floodplain wetland habitat.	Construction would be confined to the levee and borrow area which may result in minor temporary impacts.
	Federal T&E species would not be adversely impacted.	There would be no tree clearing; therefore, proposed action should have no adverse effects on listed species.
	Meets project objective of minimal environmental impacts.	Meets project objective of minimal environmental impacts.
Socioeconomic Resources	The drainage district would be susceptible to future floods and potential negative impacts to the drainage district and regional economy due to levee damages.	Repair of levee would result in the protection of croplands, businesses and structures from floods up to the design (14-year frequency) of the levee system.
	Does not meet project objective of protecting the socioeconomic value of the drainage district.	Meets project objective of protecting the economic value of the drainage district.

CUMULATIVE IMPACTS

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 water pollution 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 Brevator Levee P.L.-84-99 project along with several other levees will require borrow for levee repairs. Borrow sites have been examined and selected in order to

avoid sensitive areas and resources. Borrow for the majority of these projects will come from agriculture areas, low quality farmed wetlands, and previously identified borrow areas. Some P.L.-84-99 projects sustained damage that 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. Borrow sites have been evaluated during field trips to reduce environmental impacts.

4. 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 act, and /or executive orders is shown in Table 3.

Table 3. Relationship of the tentatively selected plan to environmental requirements, environmental act, 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 before construction)

5. COORDINATION, PUBLIC VIEWS, AND RESPONSES

Notification of this Environmental Assessment and unsigned Finding of No Significant Impact were sent to the officials, agencies, organizations, and individuals listed in Table 4 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.

Table 4. Notification of Environmental Assessment and unsigned Finding of No Significant Impact.

U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service, Columbia Field Office
Federal Emergency Management Agency
Senator Roy Blunt
Senator Claire McCaskill
Representative Blaine Leutkemeyer
Missouri Environmental Protection Agency
Missouri Department of Conservation

Missouri Department of Natural Resources
Missouri Emergency Management Agency
State Senator Jeanie Riddle
State Representative Robert Cornejo
Lincoln County Emergency Management Agency
Sierra Club, Missouri Chapter
Izaak Walton League of America
American Bottoms Conservancy
The Nature Conservancy

ENVIRONMENTAL ASSESSMENT PREPARERS

Rick Archeski, Environmental Engineer
Experience: 16 years USFWS, 16 years US Army, 19 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

Bryan Dirks, P.E.
Experience: 8 years Design Branch, USACE
Role: Technical Engineering Lead

Thomas M. Keevin, Ph.D., Aquatic Ecologist
Experience: 5 years private sector; 33 years Environmental Branch, USACE
Role: EA Coordinator, Environmental Impact Analysis, NEPA and Environmental Compliance

Sheila McCarthy, Project Manager
Experience: 8 years USACE-CERL; 8 years USACE-MVS
Role: Project Manager

Danny McClendon, Chief Regulatory Branch
USACE-MVS Regulatory Office
Role: Section 404/401 permit review; NEPA and Environmental Compliance Coordination

Evan Stewart, Economist
Experience: 3 years USACE-MVN
Role: Economics

REFERENCES

González, P. M., A. J. Baker, and M. E. Echave. 2006. Annual survival of Red Knots (*Calidris canutus rufa*) using the San Antonio Oeste stopover site is reduced by domino effects involving late arrival and food depletion in Delaware Bay. Hornero 21(2):109-117.

Harrington, Brian A. 2001. Red Knot. The Birds of North America. Vol. 15, No. 563: American Orinithologists' Union. The Academy of Natural Sciences of Philadelphia.

Jones, K. H. 2000. Population survey of the Interior Least Tern on the Mississippi River from Cape Girardeau, Missouri to Vicksburg, Mississippi. Report prepared for the Memphis District, U.S. Army Corps of Engineers.

MDC (Missouri Department of Conservation). 2008a. http://mdc.mo.gov/nathis/endangered/endanger/aster/index.htm

MDC (Missouri Department of Conservation). 2008b. http://mdc.mo.gov/nathis/endangered/endanger/clover

USFWS (U. S. Fish and Wildlife Service). 1990. Recovery plan for the interior population of the Least Tern (*Sterna antillarum*). U. S. Fish and Wildlife Service, Twin Cities, Minnesota. 90 pp.

USFWS (U.S. Fish and Wildlife Service). 1999. Agency draft Indiana Bat (*Myotis sodalis*) revised recovery plan. U.S. Fish and Wildlife Service, Fort Snelling, Minnesota. 53 pp.

USFWS (U.S. Fish and Wildlife Service). 2007. Species Profile: Bald Eagle (*Haliaeetus leucocephalus*). Available at http://ecos.fws.gov/speciesProfile/SpeciesReport.do?spcode=B008

USFWS (U.S. Fish and Wildlife Service). 2007a. Indiana Bat (*Myotis sodalis*) Draft Recovery Plan: First Revision. U.S. Fish and Wildlife Service, Fort Snelling, MN. 258 pp. Available:http://www.mcrcc.osmre.gov/Bats/PDF/IN%20BAT%20DRAFT%20PLAN%20apr07.pdf (Accessed: 10 November 2015).

USFWS (U.S. Fish and Wildlife Service). 2007b. Protection of Eagles; Definition of ‘‘Disturb’’. Federal Register 72(107): 31132- 3113

USFWS (U.S. Fish and Wildlife Service). 2007c. National Bald Eagle Management Guidelines. https://www.fws.gov/southdakotafieldoffice/NationalBaldEagleManagementGuidelines.pdf

USFWS (U.S. Fish and Wildlife Service). 2016. Missouri Threatened and Endangered Species. Available: http://www.fws.gov/midwest/Endangered/lists/cty_indx.html#missouri (Accessed: 17 May 2016).

FINDING OF NO SIGNIFICANT IMPACT

PUBLIC LAW 84-99
BREVATOR DRAINAGE DISTRICT
LINCOLN COUNTY, MISSOURI

1. I have reviewed the documents concerned with the proposed levee repairs to the Brevator Drainage District. The purpose of this project is to repair levee sections damaged by an extended high water event during the winter of 2015. Repairs would return the drainage 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 levees. It is assumed that, because of the cost of repairs, the levee district would not repair the levee.

b. Nonstructural Alternative: 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. The Brevator Drainage District declined to request the pursuit of a non-structural alternative; therefore, this alternative was eliminated from further consideration.

c. 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 Brevator Drainage 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 the No Action Alternative and Levee Repair Alternative 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. Borrow for the final levee repair will come from a stockpile of material from a sand quarrying operation.

c. No appreciable effects to general environmental conditions (air quality, noise, water quality) would result from the tentatively selected plan.

d. The tentatively selected plan is not expected to cause significant adverse impacts to general fish and wildlife resources.

e. The tentatively selected plan is not expected to cause unacceptable adverse impacts to riparian habitat, bottomland hardwood forest, or other 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. 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 protection.

j. 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