DEPARTMENT OF THE ARMY
ST. LOUIS DISTRICT, CORPS OF ENGINEERS
1222 SPRUCE STREET
ST. LOUIS, MISSOURI 63103-2833

REPLY TO ATTENTION OF:

9 May 2012

Programs and Project Management Division
Planning and Environmental Branch
Environmental Compliance Section

Dear Sir or Madam:

A copy of the Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for Emergency Levee Repair (Public Law 84-99) Grand Tower, and Degognia and Fountain Bluff Drainage and Levee Districts, Jackson County, Illinois is available online or upon request for your review. Please note that the Draft Finding of No Significant Impact is unsigned. This document will be signed into effect only after having carefully considered comments received as a result of this public review.

The Draft Environmental Assessment serves to notify the public of the proposed project and requests assistance in identifying the probable environmental impacts of the project alternatives. We invite your comments related to the content of the posted environmental assessment by June 11, 2012.

Electronic copies of the EA are available online at:
http://www.mvs.usace.army.mil/pm/pm-reports.html

For questions, or comments, please contact:
Mr. Francis Walton of the Environmental Compliance Section (CEMVP-PD-C)
Telephone number: (314) 331-8102
Facsimile number: (314) 331-8606
E-mail: francis.j.walton@usace.army.mil

Submit written comments to:
Mr. Francis Walton
US Army Corps of Engineers
St. Louis District
Planning and Environmental Branch (PD-E)
1222 Spruce St.
St. Louis, MO 63103-2833

Thank you,

Timothy K. George
Supervisor, Environmental Compliance

EMERGENCY LEVEE REPAIR (PUBLIC LAW 84-99): GRAND TOWER, AND DEGOGNIA AND FOUNTAIN BLUFF DRAINAGE AND LEVEE DISTRICTS JACKSON COUNTY, ILLINOIS

ENVIRONMENTAL ASSESSMENT WITH DRAFT FINDING OF NO SIGNIFICANT IMPACT

Planning and Environmental Branch
Regional Planning and Environmental Division North
U.S. Army Corps of Engineers
St. Louis District
1222 Spruce St.
St. Louis, Missouri 63103

May 2012

US Army Corps
of Engineers®
Saint Louis District

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1. PURPOSE AND NEED FOR ACTION

This document is an Environmental Assessment (EA) with an attached Draft Finding of No Significant Impact (FONSI) for repairs to the Grand Tower and Degognia and Fountain Bluff Drainage and Levee Districts (Grand Tower/Degognia D&LD). Under Public Law (PL) 84-99, D&LDs within the federal levee system can request federal assistance with flood damage repairs. The purpose of this federal action is to repair slide and gravity drain damage that occurred as a result of flooding in 2011. There is a need for repairs because these slides and damaged gravity drains reduce the level of protection provided by the levee, making the districts vulnerable to more frequent flooding. If the damages are not repaired to the Federal standard, flooding could be more frequent in the future causing economic losses. This document describes the damages, repair alternatives, the existing environment, and potential environmental impacts. The environmental impacts of the repairs would include forested wetland tree removal, placement of temporary fill within wetlands, temporary noise, air pollution, localized erosion, and disturbance and removal of vegetation on the levees and associated work areas. This action will include the removing of approximately 10 – 14 medium to large-sized trees along with some scrub vegetation. No permanent impacts to wetlands are anticipated. The limited tree removal will not require mitigation and temporary impacts would cease after construction completion and vegetation is re-established in the repaired areas.

2. LOCATION

The levee districts are located in Jackson County, Illinois, and run along the left descending bank of the Mississippi and the right descending bank of the Big Muddy River (Figs. 1&2). The slide repair areas are for the most part located in portions of the levees adjacent to the Big Muddy River. The three gravity drain repair areas include two in the Grand Tower DLD and one in the Degognia/Fountain Bluff DLD.

3. AUTHORIZATION

Public Law 84-99 (PL-99), an amendment to the Flood Control Act of 1962, authorizes the U.S. Army Corps of Engineers to assist the D&LDs in the repair of both federal (Corps constructed, locally operated and maintained) and non-federal (constructed by non-federal interests or by the Work Projects Administration) flood control projects damaged by flooding.

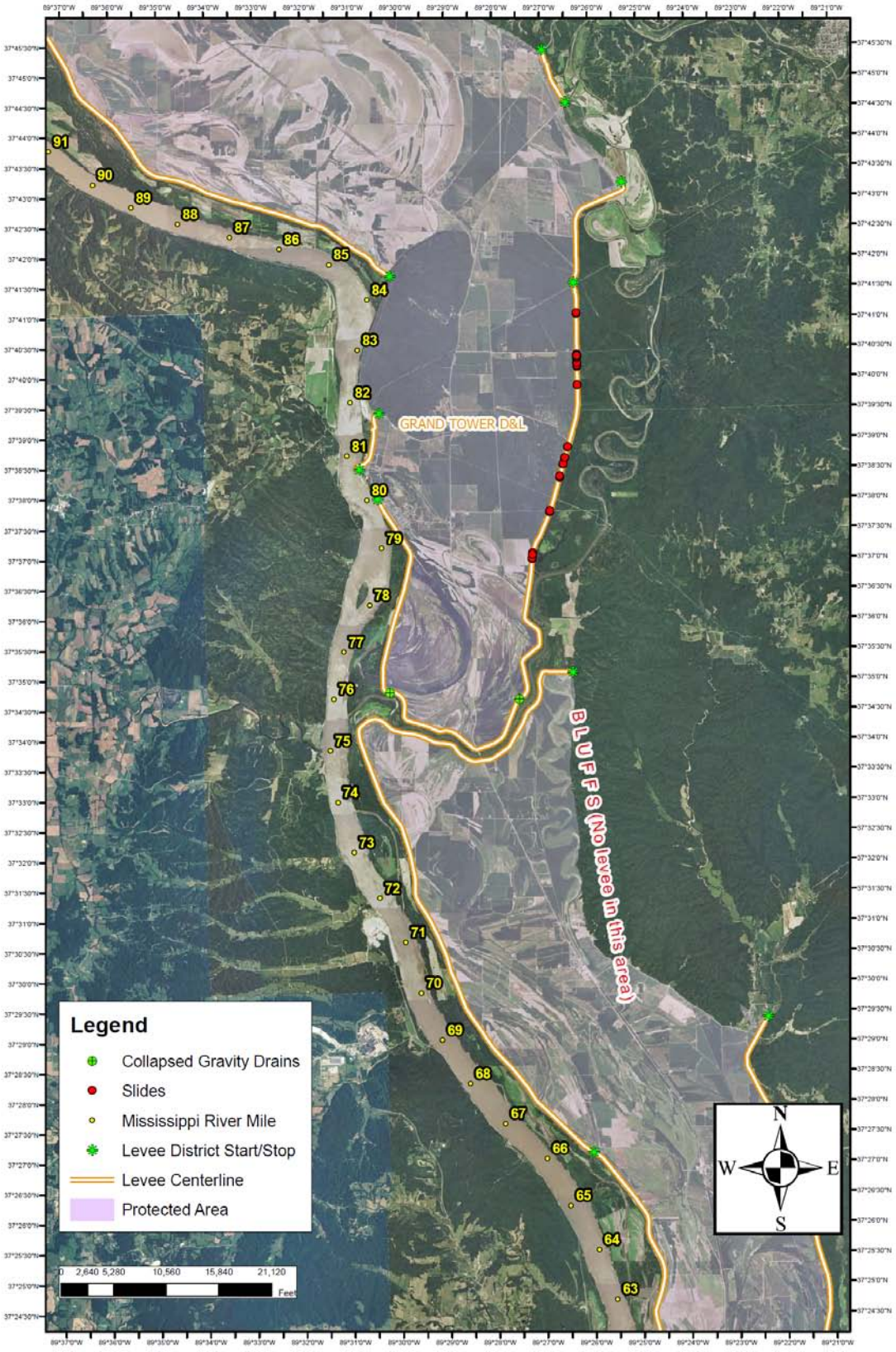

Figure 1 – Grand Tower Drainage and Levee District Slide Repair Locations.

Figure 2 – Degognia Drainage and Levee District Slide and Gravity Drain Repair Locations

4. LEVEE SYSTEM DESCRIPTION

Grand Tower/Degognia D&LDs are in the federal levee system and protect approximately 53,500 acres. These two levee districts are connected such that a levee breach in one district would compromise both systems resulting in the protected areas behind the other district's levees being flooded as well. These D&LDs contain approximately 38,600 acres of agricultural lands with small businesses, outbuildings, residences, and the towns of Gorham and Grand Tower (Figures 1 & 2). The remaining area is primarily owned by the U.S. Forest Service's Shawnee National Forest. Both levee systems were designed for 50-year flood protection with 2 ft. of freeboard. The system consists of 36.6 miles of levee constructed with a 13 - 25 ft. crown width, average height of 25 ft. and in most areas 1 on 3 side slopes. The system also includes relief wells, gravity drain structures, service roads on the levee crown, and railroad closure structures.

5. DESCRIPTION OF ALTERNATIVES

5.1. Cause of Damage

Heavy rainfall in April and May 2011 saturated the Midwest causing much of the additional heavy rains in June to develop directly into runoff. Rainfall totals over Missouri and Illinois ranged from 4-12 inches during the months of May and June. The saturated soil, combined with the heavy rains, created near record river levels throughout the St. Louis District.

The levees proposed for repair are constructed of highly plastic clay soils (Plastic Index values in excess of 40) and very low shrinkage limits that exhibit a loss of strength with time and cause "levee slides." The extreme volume changes, or shrink-swell potential, allows for the formation of deep cracks in the levee during periods of low rainfall. These cracks then fill with water from rain, snowmelt, and floods, which contributes to a reduction of embankment strength. Soils near the bottom of the embankment become saturated and lose their shear strengths. Further, the additional water in the clay reduces its strength and produces an unstable (sliding) embankment.

5.2. Damage Description

As a result of 2011 flooding on the Big Muddy River and the highly plastic clay soils, the levees became saturated and unstable and sustained slide damage (Fig. 3). Some of the slides are into the crown and many are so near the crown that they are expected to be into the crown by the time the slides would be repaired. Gravity drains within both D&LDs are beyond their design life and may have internal damages from previous flood events. Several drains have known damages including ruptured pipes, foundation material loss, and bent or broken gates and associated components (Fig. 1 & 4). It is estimated that the damages have reduced the degree of levee protection to a 10-year flood event.

The damages sustained in the high water event on the Grand Tower DLD consisted of 18 slides: 3 on the riverside slope, 15 on the landside slope. There is an estimated 61,000 cubic yards of treated material required for slide repairs, which will come from the existing levee material and added lime.

The damages sustained in the high water event on the Degognia and Fountain Bluff DLD consisted of 13 slides: 5 on the riverside slope, 8 on the landside slope. There is an estimated 71,600 cubic yards of treated material required for slide repairs, which will come from the existing levee material and added lime.

See Appendix A for a more detailed description of the levee damages and repair impacts.

Figure 3 – Typical levee slides where the clay embankment has begun to slide down the levee slope. The first slide is into the crown and would require removal of part of the road.

Figure 4 – Erosion and damage to gravity drains that would require clay embankment material and partial or complete pipe replacement to repair.

5.3. Alternatives

NEPA requires that in analyzing alternatives to a proposed action a federal agency consider an alternative of "No Action." Likewise, Section 73 of the WRDA of 1974 (PL93-251) requires federal agencies to give consideration to nonstructural 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 pursued by D&LDs include flood proofing homes typically by raising them, relocating structures such as homes and levees, installing flood warning and preparedness systems, and regulating floodplain uses. Non-structural alternatives such as moving levees, relocating homes, or regulating floodplain uses, typically also create a greater distance between the levee and the river. This allows flood waters to spread out over a larger area potentially reducing flood heights and damages downstream. Also, allowing the river to have greater access to the floodplain would re-establish some of the river's historic productivity by providing a connection between and creating wetlands that are essential to the long-term viability of aquatic and terrestrial communities.

Under PL 84-99, the Corps has the authority to pursue a non-structural alternative only if the project sponsor requests such an alternative. The Grand Tower/Degognia D&LDs declined to request the pursuit of a non-structural alternative; therefore, this alternative was eliminated from further consideration.

5.3.1 No Action Alternative

Under the No Action Alternative, the federal government would not repair the slide areas or gravity drains. It is possible that the D&LD's would make repairs without federal assistance. Environmental impacts of the D&LD's repairs would be similar to the recommended alternative; except that the time period required for repairs may be increased and the environmental protections and quality reduced. However, because of the uncertainty of the D&LD's making repairs, this potential alternative was not addressed further.

Instead, the environmental impacts of allowing the slides to remain unrepaired are evaluated as the No Action Alternative. The levees would have a reduced level of structural integrity and be susceptible to further erosion at the damage sites. It is estimated that in their damaged condition, these levees only provide a 4% (25-year) level of protection instead of the 2% (50 year) level for which they were designed.

5.3.2 Recommended Alternative: Repair of Levees with Federal Assistance

Under this alternative, the federal government would repair the slide areas to pre-flood elevations on the original levee alignment. Because these are federal levees, the repair costs would be 100% federal.

To repair the slide areas and bring the levees up to pre-flood protection levels, the following actions would be required (Fig. 4). Construction limits would be determined for the slide repairs. This limit would extend outward 5' from the toe of the levee and run parallel to the levee for the distance needed to repair the slides and stage equipment. A 20 foot wide area will be needed for mixing the removed levee material with lime. Sufficient width locations were found near the slide repairs to accomplish the mixing that will not result in permanent environmental impacts. Established roads and the levee crown would be used to move equipment to the slide area, including excavators, a bulldozer, a sheeps-foot roller, a lime distribution truck, a water truck, a soil pulverizer, a road grader, and a small front end loader. Work would begin by removing the vegetation within the construction work limit that impairs the contractor's ability to repair the slides. At the same time or shortly thereafter, an inspection trench would be excavated in the slide to determine the depth of the failure surface. Following this, the top 8" of topsoil from the slide area and 5' easement perpendicular to the toe of the levee would be removed and stockpiled (Fig. 4). Then the entire slide area would be excavated to a depth of 1 – 2 ft. greater than the failure surface (Fig. 5). This excavated material would be spread approximately 10" thick within the construction work limits. Two applications of lime, at an application rate of 16 lbs per square yard, would be mixed into the excavated material. At many of the slides, the mixing will be done on the riverside berm. A scraper would then pile up the treated material. This material would then be spread over the slide area in increments of 10" and compacted. Because of the addition of lime, there would be enough material for the slide repair. The area within the construction limits will be graded to slope away from the levee. Finally, top soil would be replaced and disturbed sections of the levee below the levee crown would be re-seeded. Geotextile followed by crushed stone would be placed on the crown to restore the existing road. The repaired sections would match the pre-flood levee alignments and grades plus 10% to allow for settling.

Gravity drains - To determine damages and repair gravity drains throughout Grand Tower/Degognia, a camera survey will be done at all of the gravity drain locations shown in Figure 1. To conduct the survey, the pipes must be dry. For gravity drains that are not dry, the gravity drain's gates would be closed if they are water tight on the outlet end of the pipe. A cofferdam would be built on the landside. If the gates are not water tight or located at an intermediate point in the pipe, then a cofferdam would be built on both the land and riverside ends. Material to construct these cofferdams would come from commercial sources.

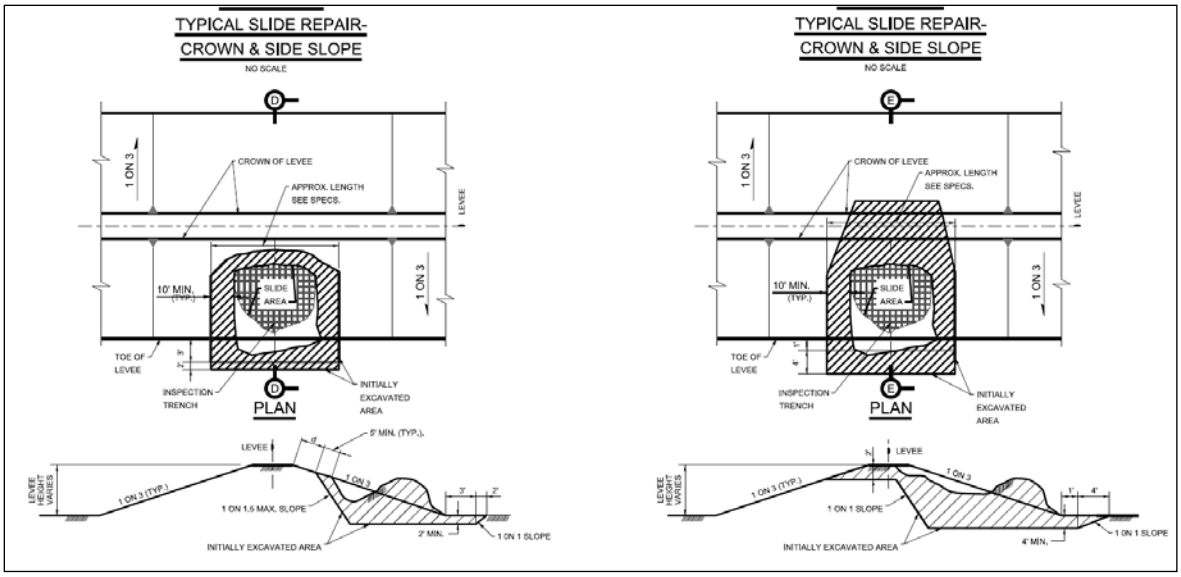

Figure 5 – Typical slide repair plans for slides in the side slope and into the crown of the levee.

Figure 6 – Typical repair of slide damage (at a different project) . Material has been removed beyond the failure plane and spread out 10" deep within the easement for lime treatment.

The extent of damages and necessary repairs would be determined by the camera surveys. If the pipe is greater than 18" and not collapsed, it can be slip lined with high density polyethylene pipe. Construction limits of approximately 115' on either side of the pipes centerline and 125' from the levee toe would be required on both the landside and riverside of the levee. Temporary fill may be placed within these limits and the area may be dewatered, but all fill would be removed upon construction completion.

If the pipe is too heavily damaged or too small, part or all of it would be replaced or the gravity drain would be grouted shut and no longer used. If the drain is grouted shut, it is likely that a new drainage ditch would have to be constructed. If this is necessary a supplemental EA would be prepared to cover this activity. For replacement of the pipe, some or all of the entire levee cross section would be excavated. Excavated material would be temporarily stockpiled within the construction work limits and on the existing levee berm. All suitable material would be used to rebuild the levee after the pipe is replaced. Non-suitable material would be spread at the toe of the levee in the existing easement or hauled offsite to an appropriate disposal location. If the entire levee must be removed, the D&LD's level of protection would be reduced. This would require the construction of a larger riverside cofferdam built to provide a 25 year level of protection and a small landside cofferdam big enough to keep the area dry (Fig. 6). For pipe replacement, the required construction limits are approximately 180' either side of the pipes centerline and 205’ from the toe of the levee.

Figure 7 - Example of a 25 year cofferdam built at Prairie du Rocher.

Borrow areas – A borrow site to furnish earthen material for gravity drain repairs will be needed, but a specific site has yet to be identified yet. It is anticipated that less than 1500 cubic yards of borrow would be necessary to complete repairs for the gravity drains. The following list of factors will be used to select a borrow site(s). If these factors are followed or borrow comes from commercial sources, environmental impacts would be negligible and a supplemental environmental assessment would not be prepared. If they are not met, a supplemental environmental assessment would be prepared.

a. If the borrow area is located on land designated as prime farmland, the borrow area would be excavated and graded so it can be returned to agricultural production.

b. Cultural and hazardous, toxic, and radioactive waste investigations would be conducted and indicate no significant issues.

c. Borrow areas would not be located in high quality wetlands or in forested or recently deforested areas. The St. Louis District has agreed to work with The Nature Conservancy (TNC) to develop borrow sites as an opportunity for ecosystem restoration/enhancement. With the approval of the U.S. Army Corps of Engineers Regulatory Branch, borrow may come from wetlands that would be enhanced by removing accumulated sediment. This work could be accomplished under a nationwide Section 404 permit, which provides for wetland creation/enhancement as long as special conditions are met.

d. Sites occupied by endangered or protected species (Bald Eagle and Indiana bat) or their habitat would not be considered.

e. Haul roads would utilize existing roads, non-forested uplands, or agriculture. Non-forested uplands would be re-vegetated with appropriate native species after construction completion.

f. All relevant agencies including the U.S. Fish and Wildlife Service, National Resource Conservation Service, Illinois Department of Natural Resources, Illinois State Historic Preservation Office, and Illinois Environmental Protection Agency find the selected borrow area acceptable.

5.3.3 Comparison of Alternatives

Under the "Repair of Levees with Federal Assistance" alternative, damaged levees would be repaired to pre-flood conditions. Under the No Action Alternative, the levee system would remain in its damaged state with a reduced level of protection. This would increase the frequency and risk of monetary damages to croplands and structures in the event of future flooding. It is for these reasons that the "Repair of Levees with Federal Assistance" alternative is the recommended alternative.

6. ANTICIPATED SCHEDULE OF WORK AFTER PROJECT INFORMATION REPORT APPROVAL

Following the signing of the FONSI, plans and specifications would be finalized for construction. Construction would commence in 2012 as soon as possible thereafter and would be completed within one construction season**.**

7. IMPACT ASSESSMENT

This section describes the existing environmental and socioeconomic conditions and consequences of both the No-Action and the Action Alternatives on those conditions.

7.1 Threatened and Endangered Species

Existing – In compliance with Section 7(c) of the Endangered Species Act of 1973, as amended, the St. Louis District, Environmental Compliance Section viewed the U.S. Fish and Wildlife Service internet website to obtain a listing of federally threatened or endangered species that may occur in the vicinity of the proposed project (Jackson Co., IL).

No Action – Under this alternative, it is assumed that there would be no adverse impacts to any federally listed threatened or endangered species.

7.1.1 Indiana bat (*Myotis sodalis*) forage on flying insects typically along the shorelines of rivers and lakes, in the canopy of trees in floodplains (Humphrey et al. 1977), and in upland forests (Brack and LaVal 1985). In summer, habitat consists of wooded or semi-wooded areas, mainly along streams. Females bear their offspring in hollow trees or under loose bark of living or dead trees. Trees standing in sunny openings are attractive because of warmer air spaces and crevices under the bark. Maternity sites have been reported in riparian areas, floodplain forests, and

upland habitats. Limestone caves with pools are preferred for hibernacula during winter (Hall 1962).

Table 1. Federally threatened and endangered species listed by USFWS website on April 10, 2012 for Jackson Co., Illinois.

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)
Gray Bat (*Myotis grisescens*)	Endangered	Caves; feeding-rivers/reservoirs adjacent to forests
Interior Least Tern (*Sterna antillarum*)	Endangered	Bare alluvial and dredge spoil islands
Pallid Sturgeon (*Scaphirhynchus albus)*	Endangered	Large rivers

Oakwood Bottoms is utilized by at least one, possibly two, large maternity colonies of the Indiana bat (USFWS, personal communication with F. Walton). Only one tree cleared for the project could have possibly served as nursery (primary) roost tree; however, there are many other snags of sufficient size and quality to provide alternate roosting habitat for the maternity colony and for bachelor males that remain in the area during the summer months. The forested wetlands also provide high quality foraging habitat for the bats. Additionally, the area is located within 5-miles of the large Indiana bat winter hibernacula at Magazine Mine. The forested wetlands in the project area provides foraging and roosting habitat for both male and female Indiana bats during the critical fall swarming period.

Federal Action – To avoid the potential of "take" of endangered Indiana bats, the potential bat tree at GT-07-11 was surveyed for bats, none were detected, and the tree was removed within 48 hours thereafter. Although 14 other medium to large trees would be removed, a large area of forested wetland with suitable roosting trees would remain. Therefore, the proposed project may affect, but is not likely to adversely affect the Indiana Bat.

7.1.2 Gray bat (*Myotis grisescens*) occurs in several Illinois and Missouri counties where it inhabits caves both during summer and winter. This species forages over rivers and reservoirs adjacent to forests. Caves may be located in the bluffs to the east of the D&LDs.

Federal Action – No caves would be impacted. The proposed project may affect, but is not likely to adversely affect the Gray Bat.

7.1.3 Interior least tern (*Sterna antillarum*) historic breeding range includes the Mississippi River system (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).

Federal Action – Levee repairs would take place within the footprint of the levee and designated work areas and would not impact any Interior Least Tern habitat. The proposed project would have no affect on the Interior Least Tern.

7.1.4 Pallid sturgeon (*Scaphirhynchus albus*) are found in the Mississippi River downstream of its confluence with the Missouri River. Pallid sturgeon forage for fish along the bottom of large rivers (USFWS 1993). Pallid sturgeon are most frequently caught over a sand bottom, which is the predominant bottom substrate within the species' range on the Mississippi River. Recent tag returns have shown that the species may be using a range of habitats in off-channel areas and tributaries of the Mississippi River.

Federal Action – Levee repairs would take place within the footprint of the levee and designated work areas and would not impact any pallid sturgeon habitat. The proposed project would have no affect on the pallid sturgeon.

7.2 Water Resources

Existing – The slide areas proposed for repair are located for the most part in the portion of the levee that runs along the Big Muddy River and tributary streams. Adjacent to the repair sites, on the landside, are wetlands including Oakwood Bottoms Greentree Reservoir; on the riverside are wetlands and backwater areas of the Big Muddy and Mississippi rivers.

No Action – Some increase in sedimentation, due to exposed soils, is likely if levee slides and gravity drains are left unrepaired.

Federal Action – Soil would be mixed with lime on the landside toe or riverside berm and then placed on the levees. Temporary fill would also be placed in wetlands around the gravity drains. This fill would be removed and water resources in these areas are expected to return to pre-project conditions. Because of erosion from repairs and placement of fill, a temporary increase in water turbidity may occur in the waters around the repair operations. After the repairs are complete these areas are expected to return to pre-project conditions. Repairs would be completed following all applicable regulations including the installation of silt fencing to ensure water quality protection. Repair areas would be re-seeded with fast germinating mixtures of cool-season grasses to reduce any further erosion potential. At Grand Tower DLD approximately 0.23 acres of emergent wetland and 3.14 acres of mowed emergent wetland would be temporarily impacted. At Degognia/Fountain Bluff DLD approximately 0.23 acres of emergent wetland and 2.20 acres of mowed emergent wetland will be temporarily impacted. The proposed work in these wetlands has been authorized by the Regulatory Branch of the St. Louis District under Section 404 of the Clean Water Act by existing Department of the Army nationwide permits for *Maintenance* (NWP 3) and *Temporary Construction Access, and Dewatering* (NWP 33).

7.3 Topography, Geology, Soils and Land Use

Existing – The levee district lies in the flood plain of the Mississippi and Big Muddy rivers. The landscape is typical ridge and swale topography created by the river as it migrated across the flood plain. The low ridges in the flood plain typically are composed of sandy or silty material, while the lower swales have surface soils that are typically silty clays. The levees protect roughly 53,500 acres of which approximately 40,320 is prime farmland. Land cover data from 2000 indicates that approximately 38,600 acres are being farmed.

No Action – Because of the increased risk of levee failure under the current conditions, future high water events could have adverse impacts such as scour and sedimentation and temporary or permanent changes in land use.

Federal Action – Slide repair and gravity drain repair would significantly reduce the chance of adversely affecting the resources protected by the levee. Soil conditions in the borrow areas would change as a result of borrow material removal. For purposes of the Farmland Protection Policy Act, NRCS does not consider creation of artificial wetlands, such as borrow areas that retain water, conversion to non-agricultural use due to the fact that these areas could be returned to crop production if the landowner chose to do so.

7.4 Flora

Existing – Vegetation on the riverside of the levee is dominated by floodplain forest, emergent wetlands and shrub species. Habitat along the landside of the levee includes bottomland forest, emergent wetlands, agriculture, and developed land. The habitat on the levee is mowed cool season grasses.

Adjacent to the slide areas is bottomland forest wetlands dominated by pin oaks, locust, and ash, but also including a mixture of other hardwood trees, bald cypress, younger forest growth, and dead snags. Flora adjacent to the gravity drains includes mowed cool season grasses, willows, and emergent wetland species.

No Action – Without flooding, the damaged areas would re-vegetate and no other impacts would occur. With flooding during the growing season, flood waters could kill vegetation behind the levees as flood water ponds on typically dry areas dominated by upland plant species. Over time with continued periodic inundation, wetland vegetation would establish within the D&LDs.

Federal Action – At some of the slides, there are trees growing adjacent to and on the construction limits (Fig. 7). Standard operating procedures for Corps projects require that all activities be conducted to avoid and minimize environmental impacts; however, to conduct the slide repairs and restore the pre-flood level of protection, these trees (approximately 10 to 14 medium to large-sized) would need to be removed. These trees are within Oakwood Bottoms Greentree Reservoir, a forested wetland in the Shawnee National Forest managed primarily for wildlife.

All trees to be removed were visited by the USFWS, USFS and Corps to determine if there were any threatened and endangered species issues. Only one tree was noted that would require a bat exit survey. This tree has been surveyed and removed. The remainder of the vegetation and tree removal work and other construction activities will be performed under the Nationwide Permit 3 for "maintenance" to existing structures".

There are small to medium sized willows around the gravity drains, a small number of these willows would likely be removed during gravity drain repair (Fig. 4). It is expected that these areas, would quickly revegetate and therefore no mitigation would be required.

Levee vegetation (predominantly cool season grasses) would be removed during repairs. Bottomland forest within the slide repair construction work limits would be removed. These levee areas would quickly revegetate, resulting in no long-term vegetation impacts. Emergent wetland vegetation and a few willows would likely be removed during gravity drain inspection and repair. These gravity drain areas and levee areas would be reseeded resulting in no long term vegetation impacts.

Figure 8. – Trees adjacent to the toe of the levee and an up close picture of these trees in one area.

7.5 Fauna

Existing – Floodplain and bottomland forest, swamps, and aquatic habitats support a great variety of insects, crustaceans, mollusks, reptiles, amphibians, fish, birds, and mammals. Typical terrestrial species utilizing this habitat include turkey (*Meleagris gallopavo*), white-tailed deer (*Odocoileus virginianus*), beaver (*Castor Canadensis*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), wood duck (*Aix sponsa*), and many songbirds.

The federally endangered Indiana bat (*Myotis sodalis*), the federally protected bald eagle (*Haliaeetus leucocephalus*), the state listed timber rattlesnake and the marsh rice rat have all been documented in the vicinity of the levee repair areas.

No Action – Because the level of flood protection is reduced, flooding may occur more frequently displacing upland species. Over time, wetland species would become more prevalent.

Federal Action – Wildlife populations in the vicinity of the repair areas would be disturbed by noise, habitat loss, increased water turbidity, and exhaust. Additionally, disturbed areas would be revegetated, and other impacts would end shortly after construction.

7.6 Fisheries

Existing – Some of the common fishes that occur within the Mississippi River, Big Muddy River, and associated tributaries and backwaters include sturgeon, paddlefish, gar, shad, carp, buffalo, catfish, freshwater drum, and numerous minnow and sunfish species.

No Action – Because the level of flood protection is reduced, flooding may occur more frequently. This would benefit spawning and rearing of many fish species.

Federal Action – Species utilizing big river aquatic habitats typically inhabit a diversity of water velocities, depths, and turbidity levels during various life stages. Any temporary increase in turbidity during repairs should have no long term adverse impacts to fish or their habitat.

7.7 Air Quality

Existing – Jackson County, Illinois, meets all Illinois Environmental Protection Agency air quality requirements.

No Action – No adverse impacts are foreseen.

Federal Action – Repair activities would result in dust and exhaust from equipment. Therefore, a short-term reduction in air quality is expected. This would terminate after repair completion.

7.8 Hazardous, Toxic and Radioactive Waste Sites

Existing – There are no Recognized Environmental Conditions that would indicate a risk of HTRW contamination within the project area. The likelihood of hazardous substances existing within the project area or adversely affecting the project area due to the proposed construction activities is very low. The St. Louis District conducted a modified Phase I assessment including a site investigation and found no HTRW contamination exists within the project area.

No Action – Because the level of flood protection is reduced, flooding may occur more frequently increasing the risk of contamination from household and agricultural chemicals.

Federal Action – Restoration of a pre-flood level of flood protection would reduce the chances of chemical contamination.

7.9 Noise

Existing – Ambient noise in the study area is generated by wildlife, human activities and vehicular traffic.
No Action – No change is anticipated.

Federal Action – The proposed project would be expected to temporarily increase noise levels near repair sites. 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 by the Corps of Engineers in the past, noise above this level would not be expected to occur for periods longer than eight hours.

7.10 Recreation

Existing – Popular recreational activities in the Shawnee National Forest, Oakwood Bottoms Greentree Reservoir, and nearby recreational areas include hunting, bird watching, nature study, and hiking.

No Action – Because the level of flood protection is reduced, flooding may occur more frequently. This would prevent most recreation activities until flood waters receded.

Federal Action – Construction equipment and activities would cause temporary disruption to recreation activities (hunting and bird watching) within the vicinity of the repair area. Upon construction completion, all disruption would end.

7.11 Aesthetics

Existing – The levee repair area is within and near natural areas and nearby agricultural fields. Bottomland forest, floodplain forest, and wetlands are conspicuous features directly adjacent to the repair areas.

No Action – With flooding, flood damage, sedimentation and scour would cause degradation to the landscape.

Federal Action -– Construction equipment and activities would cause short-term visual modification of the landscape. Once construction is complete, all equipment would leave the area, and the seeded repair area would re-vegetate to closely resemble pre-flood conditions.

7.12 Socioeconomic

Existing – The protected area is primarily agricultural and national forest land. Included in the protected area are two small towns and several residential and commercial structures.

No Action – The current level of protection puts this area at greater risk of flooding. Without the federal action, the level of protection provided by the levee would be reduced putting property and crops at risk.

Federal Action – Local agricultural, agri-businesses and residential/commercial structures would benefit from levee repair and subsequent restoration of the pre-flood level of protection. The

proposed levee repairs would not require residential displacement and could provide short-term employment for local contractors and laborers for up to one year.

7.13 Environmental Justice

Existing – The standard unit of analysis for environmental justice is the Census-designated Block Group. Grand Tower/Degognia fall within four Block Groups. However, the majority of the D&LDs are within two Block Groups that cover an area of 121 square miles. Current census data (2010) indicates that the population within these D&LDs has increased 1 percent since 2000.

No Action – No population group would be differentially affected under this alternative.

Federal Action – Under the recommended Action Alternative repairs would be 100% federal. The local community would gain short-term employment funded by federal money. Additionally, levee damage would be repaired in a shorter time period, decreasing risk to crops and livelihoods.

7.14 Cultural Resources

Existing – The repair sites are unlikely to contain any culturally significant resources since this is previously disturbed materials. The as yet to be identified borrow site(s) and haul roads may have unknown culturally significant resources.

No Action – Without flooding, there would be no change from current conditions. With flooding, damage to culturally significant sites protected by the levee could occur.

Federal Action – Under the current proposed plan, repair of the damaged areas would utilize material from three potential locations: (1) previously disturbed material from the damaged areas, (2) commercial sources and (3) undisturbed material from new borrow sites.

Mechanical disturbance (reuse) of material located on the previously disturbed existing levees and easements and use of commercial material would have no effect upon potentially significant cultural resources. Likewise, activities around gravity drains would be occurring on areas of recently deposited material and are unlikely to affect any cultural resources. The removal of material from previously undisturbed sites has the potential to impact presently unknown archaeological remains. Therefore, comprehensive archaeological investigations would be conducted prior to the removal of any material from these borrow sites. Additionally, archaeological investigations would be required on all equipment staging areas and haul roads prior to initiation of any construction/repair activities.

In the unlikely event that potentially significant archeological/historic remains were discovered during construction activities, all 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 State Historic Preservation Officer's representatives in the Illinois Historic Preservation Agency.

7.15 Tribal Coordination

The St. Louis District consults with 27 tribes that have an interest in projects along all rivers within district boundaries. 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 will be sent to the tribes describing the repairs and locations of existing flood damaged structures, lands and fills. This letter will include maps of the areas and a list of the laws that give us permission to begin the work. This letter will request that the tribes contact the Corps of Engineers if there are known tribal areas of concern in any of the project areas and if they desire further consultation on this project. All tribes requesting further consultation will be informed of all land disturbing activities that occur. Consultation will be by letter(s), phone calls, and meeting(s) if necessary.

7.16 Cumulative Impacts

Existing – Planning for flood damage repairs to numerous D&LDs is currently underway. At this time, there are no plans to reduce the amount of floodplain or increase levee heights as part of these projects. Therefore, there would be no adverse cumulative impacts to flooding from these PL84-99 projects. Final repairs would involve returning the levees to the same level of protection as existed prior to the 2011 flooding. Temporary impacts from noise, air, and water pollution would occur; however, repair sites are widely scattered throughout the St. Louis District. Therefore, additive effects of these impacts would be negligible. Other PL84-99 projects currently being planned include projects that require borrow and some that are infeasible to repair on the original alignment, such as the Len Small levee. Borrow sites are being carefully evaluated to avoid negative environmental and cultural impacts. New levee alignments involve setting the levee back from the river and thus open up more of the floodplain to floodwaters. Setbacks would remove some acreage from agricultural use causing a minor loss to overall farm production. The widely scattered nature of repair sites and shallow excavation depth of borrow sites would reduce impacts and no long term adverse impacts are expected.

No Action – No long term adverse impacts are expected.

Federal Action – No long term adverse impacts are expected.

8. EXECUTIVE ORDER 11988 (FLOODPLAIN MANAGEMENT)

Under this Executive Order, federal agencies are to "provide leadership and shall take action to reduce the risk of flood loss, to minimize the impacts of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains". The St. Louis District, Corps of Engineers has evaluated the emergency levee repairs proposed for the slides and gravity drains in the Grand Tower and Degognia and Fountain Bluff D&LD during the flooding of 2011. Based on the extent of the damages, it is prudent to repair the levee to restore the level of flood protection that existed prior to the flood event.

By reducing the future risk of flood loss and minimizing the impacts on existing vegetation in the floodplain, this proposed project is in full compliance with this Executive Order.

9. EXECUTIVE ORDER 11990 (PROTECTION OF WETLANDS)

Under this Executive Order, federal agencies shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities."

Impacts to wetlands around gravity drains are expected to be temporary and minimal. Therefore, the proposed levee repairs are in full compliance with this Executive Order.

10. BALD AND GOLDEN EAGLE PROTECTION ACT OF 1940

Bald Eagles (*Haliaeetus leucocephalus)* range over most of North America. They build huge nests in the tops of large trees near rivers, lakes, marshes, or other aquatic areas. The staple food of most bald eagle diets is fish, but they will also feed on waterfowl, rabbits, snakes, turtles, other small animals, and carrion. In winter, eagles that nest in northern areas migrate south and gather in large numbers near open water areas where fish or other prey are plentiful (USFWS 2006).

On August 9, 2007, the bald eagle was removed from the federal list of threatened and endangered species. It remains protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The Bald and Golden Eagle Protection Act prohibits unregulated take of bald eagles. The Fish and Wildlife Service recently finalized a rule defining “take” that includes “disturb.” “Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior” (USFWS 2007).

Construction is currently scheduled to begin in August 2012. Bald eagles typically fledge young by August and begin nest building activities in late January. Currently, there are no known bald eagle nesting locations in or adjacent to the project area. Therefore, the proposed project is not likely to disturb bald eagles.

11. ENVIRONMENTAL REGULATORY CONSTRAINTS

The Recommended Alternative was subject to compliance review with all applicable environmental regulations and guidelines. The Recommended Alternative was determined to be in full or partial compliance with all applicable acts and legislation.

12. RELATIONSHIP OF PLANS TO ENVIRONMENTAL LAWS AND REGULATIONS

Federal Policies	Compliance
Bald Eagle Protection Act, 42 USC 4151-4157	Full
Clean Air Act, 42 USC 7401-7542	Full
Clean Water Act, 33 USC 1251-1375	Full
Comprehensive Environmental Response, Compensation, and Liability Act, 42 USC 9601-9675	Full
Endangered Species Act, 16 USC 1531-1543	Full
Farmland Protection Policy Act, 7 USC 4201-4208	Not applicable
Fish and Wildlife Coordination Act, 16 USC 661-666c	Full
Food Security Act of 1985, 7 USC varies	Full
Land and Water Conservation Fund Act, 16 USC 460d-4601	Full
National Environmental Policy Act, 42 USC 4321- 4347	Partial[1]
National Historic Preservation Act, 16 USC 470 *et seq.*	Partial[2]
Noise Pollution and Abatement Act, 42 USC 7691-7642	Full
Resource, Conservation, and Rehabilitation Act, 42 USC 6901-6987	Full
Rivers and Harbors Appropriation Act, 33 USC 401-413	Full
Water Resources Development Acts of 1986 and 1990	Full
Floodplain Management (EO 11988 as amended by EO 12148)	Full
Prevention, Control, and Abatement of Air and Water Pollution at Federal Facilities (EO 11282 as amended by EO's 11288 and 11507)	Full
Protection and Enhancement of Environmental Quality (EO 11991)	Full
Protection and Enhancement of the Cultural Environment (EO 11593)	Full
Protection of Wetlands (EO 11990 as amended by EO 12608)	Full

Full compliance: having met all requirements of the statute for the current stage of planning
Not applicable: compliance with the statute not required
1 Full compliance to be achieved with the District Engineer's signing of the Finding of No Significant Impact
2 Full compliance to be achieved with the State Historic Preservation Officer's concurrence in the District's EA conclusions.

13. COORDINATION WITH OTHER STATE AND FEDERAL AGENCIES

Coordination has been ongoing for this project.

13.1 March 27, 2012 – USACE St. Louis District met with Matt Mangan of the Fish and Wildlife Service (FWS) to discuss impacts of the project, especially regarding the Indiana bat summer habitat.

13.2 April 11, 2012 – USACE St. Louis District conducted a site visit with USFWS, USFS, and the Corps Southern Construction Office representatives at the Grand Tower and Degognia DLDs to discuss identified environmental impacts (generally permanent impacts to larger trees and possible bat summer habitat).

This EA and draft FONSI will be provided to the following state and federal agencies for their review, comments, and concurrence during the 30 day public comment period. 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.

U.S. Fish and Wildlife Service
U.S. Environmental Protection Agency
U.S. Forest Service
Federal Emergency Management Agency
Illinois Department of Natural Resources
Illinois State Historic Preservation Office
Illinois Emergency Management Agency
Natural Resources Conservation Service

14. LIST OF PREPARERS

St. Louis District	**Role**
Mr. Michael Rodgers, Civil Engineer	Project Manager
Mr. Tyson Zobrist, Regulatory Specialist	Regulatory Permits
Dr. Jim Barnes, District Archaeologist	Archeological Compliance
Mr. Francis Walton, Biologist	Environmental Assessment
Ms. Nancy Tokraks, Civil Engineer	Environmental Engineering

15. REFERENCES

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DRAFT FINDING OF NO SIGNIFICANT IMPACT

EMERGENCY LEVEE REPAIR (PUBLIC LAW 84-99):
GRAND TOWER, AND DEGOGNIA AND FOUNTAIN BLUFF
DRAINAGE AND LEVEE DISTRICTS
JACKSON COUNTY, ILLINOIS

1. I have reviewed and evaluated the documents concerning the proposed repair of 31 slide areas in the Grand Tower and Degognia and Fountain Bluff Drainage and Levee Districts, Jackson County, Illinois. The purpose of this federal action by the St. Louis District, Corps of Engineers, is to repair slide damage that occurred as a result of flooding in 2011. There is a need for repairs because these damages reduce the level of protection provided by the levee, making the levee protected areas vulnerable to more frequent flooding and increasing the risk of economic losses. The St. Louis District proposes excavation of each slide area to 1 – 2 ft. deeper than the failure surface. Excavated material will then be mixed with hydrated lime (approximately 16 lbs per yd^2). Treated material will then be used to fill the excavated area. For the most part, all work will be performed within the existing levee footprint and the levee restored to pre-flood grade, cross section, and alignment.

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: Under the no-action alternative, the Federal government would not repair the flood damaged levees.

b. Action Alternative (Recommended Plan): Under this alternative, which is the recommended plan, the levee would be repaired and restored to the pre-2011 level of protection by the Federal Government. Repair costs are 100 percent federal.

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

a. The no action plan was evaluated and subsequently rejected primarily based upon the higher potential for levee failure and subsequent flooding and damage to area farms, transportation facilities, homes and businesses.

b. No long term effects to the general environmental conditions (air quality, noise, water quality) will result from the recommended plan.

c. The recommended plan is not expected to cause significant adverse impact to the aesthetic quality, recreational use, general fish and wildlife resources, or any federally listed .endangered or threatened species.

d. No prime farmland will be adversely impacted as a result of the recommended plan.

e. No significant impacts to historic properties (cultural resources) are anticipated as a result of the recommended plan.

f. Under the action alternative, local economies will benefit through an increased labor demand to carry out levee repairs. Agricultural land and structures within the drainage district will be provided with pre-2011 flood protection.

4. The following environmental commitments are a part of the preferred alternative:

a. If any suspected hazardous materials are found, the St. Louis District will notify the Illinois Environmental Protection Agency, and the hazardous materials will be removed in an approved manner before proceeding with the project.

b. If any suspected culturally significant resources are found, the St. Louis District will notify the State Historic Preservation Officer's representatives in the Illinois Historic Preservation Agency to develop a cultural investigations plan.

c. For those areas where some erosion may occur from borrow excavations, levee repairs, and staging or storage areas, silt screens or hay bales will be used to reduce siltation into surrounding waterways based on a pre-approved Environmental Protection Plan which includes provisions for erosion control and the protection of natural habitat.

d. The St. Louis District will use fast germinating grass mixtures on restored levee areas to reduce any further erosion potential.

5. Based upon the EA of the recommended 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

Christopher G. Hall.
Colonel, U.S. Army
District Commander

Appendix A

Grand Tower DLD Slide Damage Repair Description

GT-01-11 L: There is no wetland impact associated with this slide repair or lay-down location.

GT-02-11 L: There will be a 0.03 acre emergent wetland impact due to the slide repair at this location. The contractor may need to tree trim trees that overhang the work area. There will be no impact within the riverside lay-down area.

GT-03-11 L: A 0.03 acre mowed, emergent wetland will be impacted by the slide repair. The riverside lay-down site will cause no impacts to wetlands.

GT-01-10 R: There will be no impact associated with the slide repair or lay-down site.

GT-07-10 L: 0.008 acre of mowed, emergent wetland will be impacted by the slide repair. Tree trimming may be required at this location. The riverside lay-down site will not impact wetlands.

GT-04-11 L: 0.01 acre of mowed, emergent wetland will be impacted by the slide repair. The riverside lay-down site will not impact wetlands.

GT-10-05 L: 0.008 acre of mowed, emergent wetland will be impacted by the slide repair. The landside lay-down site will not have wetland impacts.

GT-05-11 L: 0.008 acre of mowed, emergent wetland will be impacted by the slide repair. The riverside lay-down site will have a temporary wetland impact of 0.22 acre.

GT-06-11 L: 0.01 acre of scrub/shrub and emergent wetland will be impacted by the slide repair. Small scrub trees and some brush will need to be removed to access repair site. The riverside lay-down site will have a temporary wetland impact of 0.22 acre.

GT-07-11 L: 0.01 acre of scrub/shrub and emergent wetland will be impacted by the slide repair. Small scrub trees and some brush will need to be removed to access repair site. Additionally, 1 to 3 large trees may need to be removed to access the repair site. The riverside lay-down site will have a temporary wetland impact of 0.22 acre.

GT-08-11 L: 0.008 acre of scrub/shrub and emergent wetland will be impacted by the slide repair. Small scrub trees and some brush will need to be removed to access repair site. Additionally, 1 to 2 large trees may need to be removed to access the repair site. The riverside lay-down site will have a temporary wetland impact of 0.22 acre.

GT-09-11 L: 0.01 acre of mowed, emergent wetland will be impacted by the slide repair. The riverside lay-down site will have a temporary wetland impact of 0.46 acre.

GT-10-11 R: 0.02 acre of mowed, emergent wetland will be impacted by the slide repair. The riverside lay-down site will have a temporary wetland impact of 0.22 acre.

GT-12-07 L: 0.04 acre of mostly emergent wetland with a small section of forested and scrub shrub wetland will be impacted by the slide repair. Small scrub trees and some brush will need to be removed to access repair site. Additionally, 4 large trees may need to be removed to access the repair site. The material from the slide has moved past the construction limits so this site has a slightly larger impact area. The riverside lay-down site will have a temporary wetland impact of 0.46 acre.

GT-03-10 R: 0.01 acre of mowed, emergent wetland will be impacted by the slide repair. The riverside lay-down site will have a temporary wetland impact of 0.46 acre.

GT-11-11 L: 0.01 acre of mowed, emergent wetland will be impacted by the slide repair. The riverside lay-down site will have a temporary wetland impact of 0.22 acre.

GT-12-11 L: 0.006 acre of scrub/shrub wetland will be impacted by the slide repair. Small scrub trees and some brush will need to be removed to access repair site. The riverside lay-down site will have a temporary wetland impact of 0.22 acre.

GT-13-11 L: 0.02 acre of scrub/shrub and forested wetland will be impacted by the slide repair. Small scrub trees and some brush will need to be removed to access repair site. Additionally, 6 to 7 large trees may need to be removed to access the repair site. The riverside lay-down site will have a temporary wetland impact of 0.22 acre.

42 inch Gravity Drain: The repair of the 42" gravity drain will require the use of a cofferdam. The cofferdam will require a permit from the regulatory branch to be constructed. Additionally, any repair to the outfall or intake ends of the drains will require a nationwide permit 7 authorization.

18 inch Gravity Drain: The repair the 18" gravity drain outfall will require a nationwide permit 7 authorization.

Degognia DLD Slide Damage Repair Description

DG-01-10 L: There is no wetland impact associated with this slide repair or lay-down location.

DG-02-10 L: There is no wetland impact associated with this slide repair or lay-down location.

DG-09-11 L: There is no wetland impact associated with this slide repair or lay-down location.

DG-08-11 R: There will be no impact associated with the slide repair. The riverside lay-down site will have a temporary wetland impact of 0.22 acre.

DG-07-11 R: There will be no impact associated with the slide repair. The riverside lay-down site will have a temporary wetland impact of 0.22 acre.

DG-06-11 R: 0.01 acre of mowed, emergent wetland will be impacted by the slide repair. The riverside lay-down site will have a temporary wetland impact of 0.22 acre.

DG-05-11 L: 0.10 acre of mowed, emergent wetland will be impacted by the slide repair. The riverside lay-down site will have a temporary wetland impact of 0.22 acre.

DG-04-11 L: 0.04 acre of mowed, emergent wetland will be impacted by the slide repair. The riverside/landside lay-down site will have a temporary wetland impact of 0.22 acre.

DG-03-11 L: 0.01 acre mowed, emergent wetland will be impacted by the slide repair. The riverside lay-down site will have a temporary wetland impact of 0.22 acre.

DG-02-11 R: 0.01 acre of mowed, emergent wetland will be impacted by the slide repair. The riverside lay-down site will have a temporary wetland impact of 0.22 acre.

DG-01-11 L: 0.02 acre of mowed, emergent wetland will be impacted by the slide repair. Some tree limbs will need to be removed to access the repair site. The riverside lay-down site will have a temporary wetland impact of 0.22 acre.

DG-03-10 R: 0.03 acre of mowed, emergent wetland will be impacted by the slide repair. The riverside lay-down site will have a temporary wetland impact of 0.22 acre.

DG-04-10 L: 0.01 acre of mowed, emergent wetland will be impacted by the slide repair. The riverside lay-down site will have a temporary wetland impact of 0.22 acre.