

**DRAFT**  
**ENVIRONMENTAL ASSESSMENT**  
**MISSISSIPPI RIVER LEVEE CONSTRUCTION PROJECT**  
**SEEPAGE CONTROL MEASURES**

**INTRODUCTION**

The Corps of Engineers, Memphis District, has prepared this draft environmental assessment (EA) to evaluate potential impacts associated with seepage control measures along the Mississippi River mainline levee. This EA was prepared because of seepage problems at various locations that were not anticipated when the Mississippi River Mainline Levees (MRL) Enlargement and Seepage Control Supplemental Environmental Impact Statement (SEIS), dated July 1998, was completed. A list of the proposed work areas is included in the Appendix; these areas are located in Arkansas, Illinois, Kentucky, Mississippi, Missouri, and Tennessee. Project maps are included in the Appendix.

This EA is prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, and implementation guidance provided by Council on Environmental Quality regulations 40 CFR 1500-1508 and by U.S. Army Corps of Engineers Regulation ER-200-2-2, and employs a systematic, interdisciplinary approach. The following sections include a discussion of the need, authority, and impacts of alternative plans on natural and cultural resources associated with the proposed action.

**PROJECT DESCRIPTION**

Since publication of the SEIS dated July 1998, it has been determined that other seepage control measures need to be installed along the Mississippi River mainline levee in the Memphis District to prevent seepage problems. Seepage control will be achieved primarily through installation of relief wells and associated drainage work. In the event that future project designs call for installation of slurry trenches or construction of berms, these trenches or berms would be primarily placed in prior converted cropland. Borrow areas would also be located within prior converted croplands or other non-wetland agricultural areas.

**NEED FOR ACTION**

Seepage that occurs during flood conditions on the Mississippi River needs to be controlled in order to assure that the levee system does not fail during a project flood event. Seepage could undermine the levee and cause it to breach if unabated. Some sand boils are already present in a few of the project areas landside of the levee.

**AUTHORITY**

The Flood Control Act of 1928, as amended, authorizes this project.

## ALTERNATIVES/ALTERNATIVE SITES CONSIDERED

Four alternatives (see Appendix) were considered for this project.

*Alternative 1: No Action:* The no-action alternative would result in continued seepage during flood conditions. Sands and silts would be carried under the levee causing additional sand boils. This could eventually lead to levee failure during a major flood event. Failure of the levee would result in property damage and could cause human injuries and/or loss of life.

*Alternative 2: Construct a landside berm to control seepage:* This alternative involves constructing a berm along the landside toe of the Mississippi River mainline levee to control seepage under the levee. Large quantities of borrow material would be needed to construct a seepage berm. Suitable soils would need to be obtained from borrow areas located at the project site or hauled in from an off-site location. Consequently, if the berm or borrow areas are located in wooded or farmed wetlands, adverse impacts would result. However, barring unusual circumstances, if the berm and borrow areas are located within existing prior converted agricultural lands or other non-wetland cleared lands, no impacts would occur to bottomland hardwood forests or other significant fish and wildlife habitat. In the event such unusual, site-specific circumstances were found to exist, additional NEPA consideration would be required.

*Alternative 3: Install a slurry trench:* This alternative involves excavating a trench along the riverside toe of the Mississippi River mainline levee, mixing the excavated soil with bentonite powder and refilling the trench with the resulting slurry. The slurry trench reduces permeability and effectively cuts off seepage under the levee. Depending on location, slurry trenches can sometimes be constructed with minimal environmental impacts.

*Alternative 4: Install relief wells with associated drainage work.* This alternative involves installing relief wells along the landside toe of the Mississippi River mainline levee. It sometimes requires cleanout or enlargement of existing ditches or excavation of new outlet ditches to provide adequate drainage for seep water. In the Corps' experience, installation of relief wells is usually the least environmentally damaging method of controlling seepage. Based on previous relief well projects within the Memphis District (total of 1,082 wells over 79 miles of levee) that have been constructed or designed in detail, approximately 13 acres of forested wetlands were impacted. It was determined that 0.012 wetland acre/well was impacted (includes impacts from drainage work). Proposed future work consists of 1,300 wells over 225 miles of levee. Utilizing the ratio generated from the calculations above, it has been determined that 15.6 acres of forested wetlands would be impacted (including drainage work) from future work.

After careful consideration of all alternatives, it was determined that Alternative 1 (no action) was unacceptable because of risks to human life and property. If a seepage problem is not addressed, levee failure resulting in catastrophic impacts could ultimately result. Alternative 2 (landside berm) was not feasible in most cases. Construction of berms is more expensive than relief wells due to the cost of large amounts of needed borrow. On-site borrow areas may not be available and there is the potential for loss of wooded or agricultural land to borrow area construction. However, in some instances where the berm and borrow areas could be located

within prior converted agricultural lands, no additional environmental impacts would occur. Alternative 3 (slurry trench) could be the most efficient means to correct the seepage problem in some areas. However, slurry trenches can often impact bottomland hardwoods because they must be constructed on the riverside of the levee. Generally, the batture (area between levees) contains a higher percentage of bottomland hardwood forest than areas immediately outside of the levees. In instances where slurry trenches could be placed within non-wetland cleared lands, no additional adverse impacts would be likely. Alternative 4 (relief wells and ditch work) may require the removal of vegetation associated with the cleanout of existing ditches or excavation of new outlet ditches, but vegetative clearing would be very limited. Relief wells have higher maintenance costs than the other seepage control measures, but they have overall fewer adverse environmental impacts compared to other alternatives. All factors considered, Alternative 4 was selected as the preferred alternative. However, berms or slurry trenches might be constructed in certain locations if they are economically feasible and there are no significant adverse environmental impacts associated with them. Berms and slurry trenches would not be constructed in areas where their construction would result in greater adverse environmental impacts than relief wells. If it appears that a particular area is more suited to use of a berm or slurry trench, supplemental NEPA analysis would be required.

## FLOODPLAIN MANAGEMENT

Executive Order 11988, Floodplain Management (signed 24 May 1977), requires Federal agencies to recognize the significant values of floodplains and to consider the public benefits that would be realized from restoring and preserving floodplains. The Executive Order has as an objective the avoidance, to the extent possible, of long and short-term adverse impacts associated with the occupancy and modification of the base floodplain and the avoidance of direct and indirect support of development in the base floodplain wherever there is a practical alternative. Under this Order the Corps of Engineers is required to provide leadership and take action to:

- a. Avoid development in the base floodplain unless it is the only practical alternative;
- b. Reduce the hazard and risk associated with floods;
- c. Minimize the impact of floods on human safety, health, and welfare; and
- d. Restore and preserve the natural and beneficial values of the base floodplain.

This project would not modify the base floodplain or support increased development. The project would reduce the hazards and risks associated with floods and minimize the impacts of floods on human safety, health, and welfare. The outlet ditches must tie into existing drainage, thus there is no practical alternative to constructing portions of this project within the floodplain.

## HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)

The Memphis, Vicksburg, and New Orleans Districts conducted HTRW assessments for the 1998 MRL SEIS. The MRL Project boundaries extend from Cape Girardeau, Missouri, to Head of Passes, Louisiana. Based on these assessments, the overall risk associated with HTRW for that project was low.

A record search has been conducted through the Environmental Protection Agency's

(EPA) EnviroMapper Web Page (<http://maps.epa.gov>). The EPA search engine was checked for any superfund sites, toxic releases, or hazardous waste sites within, or directly adjacent to the potential project sites (see appendix). Site inspections were conducted on all locations identified from EnviroMapper Web Page; any listed sites should not be affected by the proposed work. No additional HTRW investigations are recommended. No other analysis is required unless new information is revealed or HTRW is discovered during construction.

## ENVIRONMENTAL SETTING

### **Location**

The 38 proposed seepage control items are located in various counties in Arkansas, Illinois, Mississippi, Kentucky, Missouri, and Tennessee. Items of work vary in length from 1 to 13 miles and have 1 to 130 wells for a total of 1,300 wells.

### **Climate**

Generally counties along the Mississippi River have a humid, warm-temperate climate characterized by mild winters, warm or hot summers, and generally abundant rainfall. The average daily maximum temperature is about 92 degrees Fahrenheit in July and about 51 degrees Fahrenheit in January. The total annual rainfall is about 49 inches and is well distributed throughout the year.

### **Soils**

The majority of the soils in most of the landside proposed work sites is Fluvaquents but is no longer frequently flooded. However, the soils on the riverside of the levee still flood frequently. These soils are somewhat poorly drained and occur chiefly as narrow strips that parallel levees where soil material has been excavated for use in constructing the levee. During high water, sands and silts are carried under the levee causing additional sand boils. Some sand boils are already present in a few of the project areas landside of the levee.

## SIGNIFICANT RESOURCES AND IMPACTS

### **Agricultural Lands**

Most of the surrounding land is largely in agricultural production. The appropriate Natural Resources Conservation Service (NRCS) office will be contacted regarding the presence of any farmed wetlands, prime and/or unique farmlands within the project area. It is not anticipated that unique farmlands will be impacted due to the proposed project. No significant impacts to agricultural land are expected.

### **Vegetation**

Properties on the landside of the levee surrounding the proposed work sites are almost

completely in large, row crop agricultural production. Trees are usually found along the stream/ditch banks. Typical tree species found would be cottonwood, American elm, hackberry, red maple, pecan, sycamore, sweet gum, and various types of oaks. Typical understory plant species would be catbrier, poison ivy, honeysuckle, sumac, Johnson grass, blackberry, ragweed, with various other grasses and wildflowers.

Vegetation in the batture lands (riverside of the levee) typically consists of cottonwood, American elm, sugarberry, silver maple, bitter pecan, sycamore, cypress, black willow and various types of oaks. Typical understory plant species would be poison ivy, ragweed, blackberry and smartweed. Generally, these areas are remnant Mississippi River channels and old levee borrow pits.

Installation of relief wells and projected excavation activities of existing or new outlet ditches would impact 0.012 wetland acre/well; a total of approximately 15.6 acres spread over 225 miles of levee would be impacted for both installation of wells and ditch work. The excavation activities will require the removal of vegetation along the ditch banks.

### **Wildlife Resources**

Wildlife resources that could be expected to inhabit the project area include coyotes, deer, raccoons, opossums, rabbits, gray and fox squirrels, muskrats, mice, rats, shrews, songbirds, turtles, snakes, amphibians, and other small animals typically found along the Mississippi River levee. Project-induced impacts to wildlife are expected to be minimal due to the limited construction area, nature of the proposed construction, and lack of extensive habitat at the proposed work sites.

### **Aquatic Resources**

The substrate of most of the ditches that will receive seep water consist of thick silt with woody and vegetative debris present. Many of these ditches are ephemeral in nature, i.e., only hold water a small portion of the year. No long-term adverse impacts to aquatic habitat will result from the proposed action. Overall, no significant losses to aquatic resources are expected to occur as a result of this work.

### **Endangered Species**

Coordination with the U.S. Fish and Wildlife Service has been initiated. Field investigations have been completed for each location. Three bald eagles were present at one location in Pemiscot County, Missouri, but no nests were evident in the immediate vicinity of the proposed work area. Due to the nature and timing of the work, no threatened or endangered terrestrial species or critical habitats, are expected to be impacted by the proposed work. Corps of Engineers biologists will conduct mussel surveys within any existing ditches deemed necessary during consultation with the U.S. Fish and Wildlife Service. In the event that endangered mussel species are encountered during surveys, the U.S. Fish and Wildlife Service will be contacted and appropriate requirements under Section 7 of the ESA will be implemented at that time.

## **Cultural Resources**

Pursuant to 36 CFR 800, all 38 seepage control items will be intensively surveyed for cultural resources prior to construction. Should cultural resources be encountered during surveys and these sites are considered potentially significant, the site will be avoided if possible. If avoidance is not possible, appropriate testing and mitigation procedures will be developed with the SHPO, Advisory Council on Historic Preservation, and Federally recognized tribes.

## **Wetlands**

Installation of the relief wells and excavation activities of and existing ditches or construction of new outlet ditches will impact 0.012 wetland acre/well; 15.6 acres of wooded wetland will be impacted. A list of impacts by state can be found in the appendix.

## **Air Quality**

The Air Divisions of the appropriate state Department of Environmental Quality were contacted and it was determined that all work sites are in attainment areas. No permits are required for air emissions from mobile sources within attainment areas, and best management practices will be used throughout the construction to minimize air pollution. No adverse impacts are expected.

## **Water Quality**

Turbidity and total suspended solids will be temporarily impacted due to excavation activities conducted in existing outlet ditches. No significant impacts to water quality would occur as a result of the work.

## **CUMULATIVE IMPACTS**

A Mississippi River Mainline Levees (MRL) Enlargement and Seepage Control Supplemental Environmental Impact Statement (SEIS), dated July 1998, was completed to address all remaining work on the project. Benefits resulting from cumulative effects in the SEIS included 1) the mitigation plan and borrow area reforestation which resulted in a net gain of 4,070 acres of bottomland hardwoods; 2) incremental impacts which resulted in a net gain in nationally significant habitat and environmental values; 3) the action would not improve or worsen any cumulative effects associated with the existing Mississippi River levees; 4) the project did not affect the hypoxia zone in the Gulf of Mexico; and 5) the environmental design and compensation features result in a net increase in terrestrial, wetland, waterfowl, and aquatic resource values such that no significant cumulative environmental impact resulted on an ecosystem, landscape, or regional scale.

As previously stated, calculations of the designed projects involving relief wells indicated that 0.003 wetland acre/well (wells only) was impacted and 0.012 wetland acre/well (including drainage work) was impacted. These same calculations were utilized for future relief well

installations. The results indicated that a total of only 15.6 wetland acres (over 225 miles of levee) would be impacted. The majority of the proposed work items that contain wooded wetlands consist of voluntary tree, shrub, vines or herbaceous vegetation. The quality of these wetlands vary. The proposed mitigation would include restoring 47 acres of agricultural land to high quality bottomland hardwood forest resulting in a net gain to environmental values in the project area. In addition, vegetation along the ditches would be allowed to regenerate. Overall this project should have no significant cumulative effects on the environment in addition to those reported in the 1998 MRL SEIS.

## MITIGATION

Approximately 15.6 acres of stream bank vegetation/wooded wetlands on the landside of the levee will be impacted by construction of the proposed projects. Forty-seven acres of cleared agricultural land will be restored to bottomland hardwoods to mitigate this loss. This acreage figure will be in addition to the acreage mitigated in the 1998 MRL SEIS. The required mitigation may be included with the SEIS mitigation tracts in each state.

Mitigation for Arkansas is 16.09 acres (5.36 acres impacted).  
Mitigation for Mississippi is 13.3 acres (4.4 acres impacted).  
Mitigation for Tennessee is 0.288 acres (0.096 acres impacted).  
Mitigation for Missouri is 11.88 acres (3.96 acres impacted).  
Mitigation for Kentucky is 4.356 acres (1.45 acres impacted).  
Mitigation for Illinois is 1.15 acres (0.384 acres impacted).

## COMPLIANCE WITH REGULATIONS

Project compliance with applicable federal and state regulations is shown on Table 1. Review of the draft EA by appropriate agencies and individuals and a finding of no significant impact (FONSI) will bring the project into compliance with the listed laws and regulations

## COORDINATION

Arkansas Department of Environmental Quality, Little Rock, AR  
U.S. Department of the Interior, U.S. Fish and Wildlife Service, Conway, AR  
U.S. Department of Interior, U.S. Fish & Wildlife Service, Frankfort, KY  
U.S. Department of Interior, U.S. Fish & Wildlife Service, Vicksburg, MS  
U.S. Department of Interior, U.S. Fish & Wildlife Service, Columbia, MO  
U.S. Department of Interior, U.S. Fish & Wildlife Service, Marion, IL  
U.S. Department of Interior, U.S. Fish & Wildlife Service, Cookeville, TN  
Arkansas State Historic Preservation Officer, Little Rock, AR  
Illinois State Historic Preservation Officer, Springfield, IL  
Missouri State Historic Preservation Officer, Jefferson City, MO  
Tennessee State Historic Preservation Officer, Nashville, TN  
Kentucky State Historic Preservation Officer, Frankfort, KY  
Mississippi State Historic Preservation Officer, Vicksburg, MS

United States Environmental Protection Agency, Region IV, Atlanta, GA  
United States Environmental Protection Agency, Region VI, Dallas, TX  
United States Environmental Protection Agency, Region VII, Kansas City, KS  
Illinois Environmental Protection Agency, Springfield, IL  
Illinois Department of Natural Resources, Springfield, IL  
Missouri Department of Natural Resources, Jefferson City, MO  
Kentucky Department for Environmental Protection, Frankfort, KY  
Kentucky Department of Fish & Wildlife Resources, Frankfort, KY  
Mississippi Department of Environmental Quality, Jackson, MS  
Mississippi Department of Wildlife, Fisheries & Parks, Jackson, MS  
Arkansas Game & Fish Commission, Little Rock, AR  
Missouri Department of Conservation, Jefferson City, MO  
Absentee-Shawnee Tribe  
Alabama-Quassarte Tribal Town  
Cherokee Nation of Oklahoma  
Chickasaw Nation of Oklahoma  
Choctaw Nation of Oklahoma  
Delaware Nation  
Eastern Shawnee Tribe of Oklahoma  
Kialegee Tribal Town  
Mississippi Band of Choctaw Indians  
Muscogee (Creek) Nation  
Osage Nation of Oklahoma  
Otoe-Missouria Tribe of Oklahoma  
Peoria Tribe  
Ponca Tribe of Oklahoma  
Quapaw Tribe of Oklahoma  
Sac and Fox Nation of Missouri  
Sac and Fox Nation of Oklahoma  
Shawnee Tribe  
Thoptlocco Tribal Town  
Tunica-Biloxi Tribe of Louisiana  
United Keetoowah Band of Cherokee Indians of Oklahoma

**Table 1. Relationship of Plan to Environmental Laws and Regulations**

The relationships of the recommended plan to the requirements of environmental laws, executive orders, and other policies are presented below:

<u>Federal Policies and Acts</u>	<u>Compliance Status</u>
Archaeological Resources Protection Act of 1979	1*
Bald Eagle Protection Act	2*
Clean Air Act Amendments of 1977	1
Clean Water Act of 1977, as amended	1
Endangered Species Act of 1973, as amended	1*
Farmland Protection Policy Act of 1984	1
Fish and Wildlife Coordination Act of 1958	1
Flood Control Act of 1946, as amended	1
Food Security Act of 1985	1
Land and Water Conservation Fund Act	3
National Environmental Policy Act of 1969	2 *
National Historic Preservation Act of 1966, as amended	1
River and Harbor and Flood Control Act of 1970	1
Water Resources Development Act of 1986	1
Water Resources Planning Act of 1965	1
 <u>Executive Orders</u>	
Floodplain Management (E.O. 11988)	1
Protection, Enhancement of the Cultural Environment (E.O. 11593)	1*
Protection of Wetlands (E.O. 11990)	1
Environmental Justice in Minority and Low Income Populations (E.O. 12898)	1
 <u>Other Federal Policies</u>	
Prime and Unique Farmlands	1*
Water Resources Council, Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies	1

- 1/ Full compliance with the policy and related regulations has been accomplished.  
 2/ Partial compliance with the policy and related regulations has been accomplished.  
 3/ Not applicable.

\*Full compliance will be met following the Finding of No Significant Impact.

## **RELATED ENVIRONMENTAL DOCUMENTATION/REFERENCES**

U.S. Army Corps of Engineers, Environmental Desk Reference (IWR Report 96-PS-3), Institute for Water Resources Policy and Special Studies Division, July 1996.

USACE 1998a. July 1998. Volume 1: Supplement No. 1 to the Final Environmental Impact Statement Mississippi River and Tributaries Project Mississippi River Levees and Channel Improvement, Cultural Resources. Prepared by the Memphis District, New Orleans District and Vicksburg District, U S. Army Corps of Engineers.

USACE 1998b. July 1998. Volume 1: Supplement No. 1 to the Final Environmental Impact Statement Mississippi River and Tributaries Project Mississippi River Levees and Channel Improvement, Cumulative Impacts. Prepared by the Memphis District, New Orleans District and Vicksburg District, U S. Army Corps of Engineers.

USACE 1998c. July 1998. Volume 1: Supplement No. 1 to the Final Environmental Impact Statement Mississippi River and Tributaries Project Mississippi River Levees and Channel Improvement, Hazardous, Toxic and Radioactive Wastes. Prepared by the Memphis District, New Orleans District and Vicksburg District, U S. Army Corps of Engineers.

USDA, Food Security Act.

## **CONCLUSION**

This office has assessed the environmental impacts of the proposed actions and has determined that the proposed work will have no significant impacts upon vegetation, fish, wildlife, cultural resources, or the human environment.

## **PREPARER**

For additional information contact Patricia Jones at (901) 544-0705 or Mike Thron at (901) 544-0708.

## **APPENDICES**

Appendix A. Typical Construction Alternatives

Appendix B. List of Projects

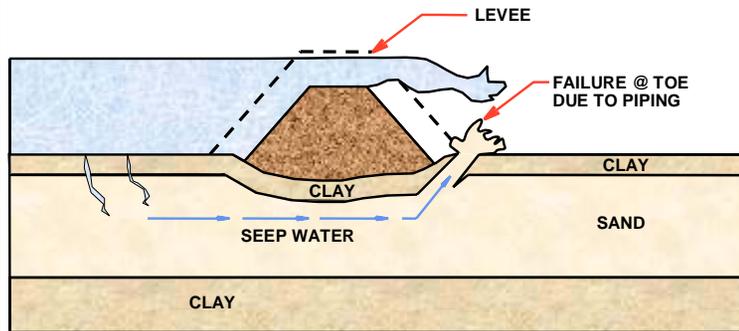
Appendix C. Project Map Indices

Appendix D. Project Maps

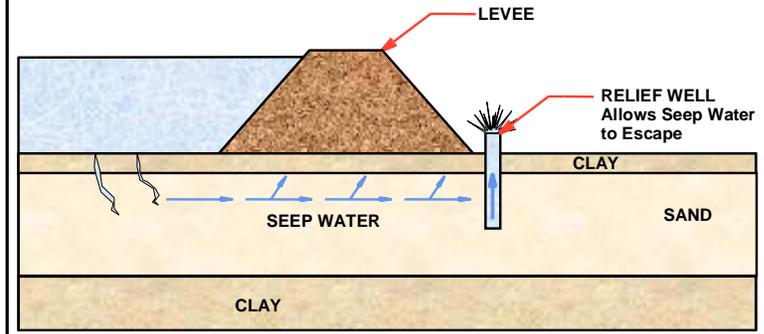
Appendix E. EPA EnviroMapper Web Page Results

## **APPENDIX A**

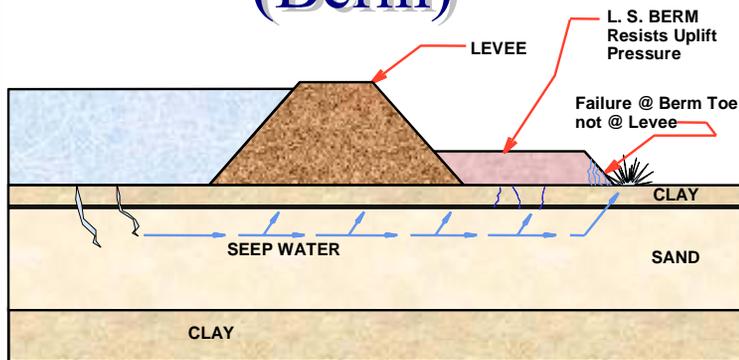
## UNCONTROLLED SEEPAGE



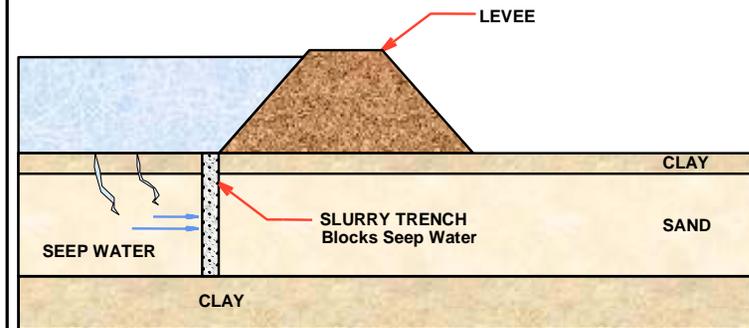
## SEEPAGE CONTROL METHODS (Relief Well)



## SEEPAGE CONTROL METHODS (Berm)



## SEEPAGE CONTROL METHODS (Slurry Trench)



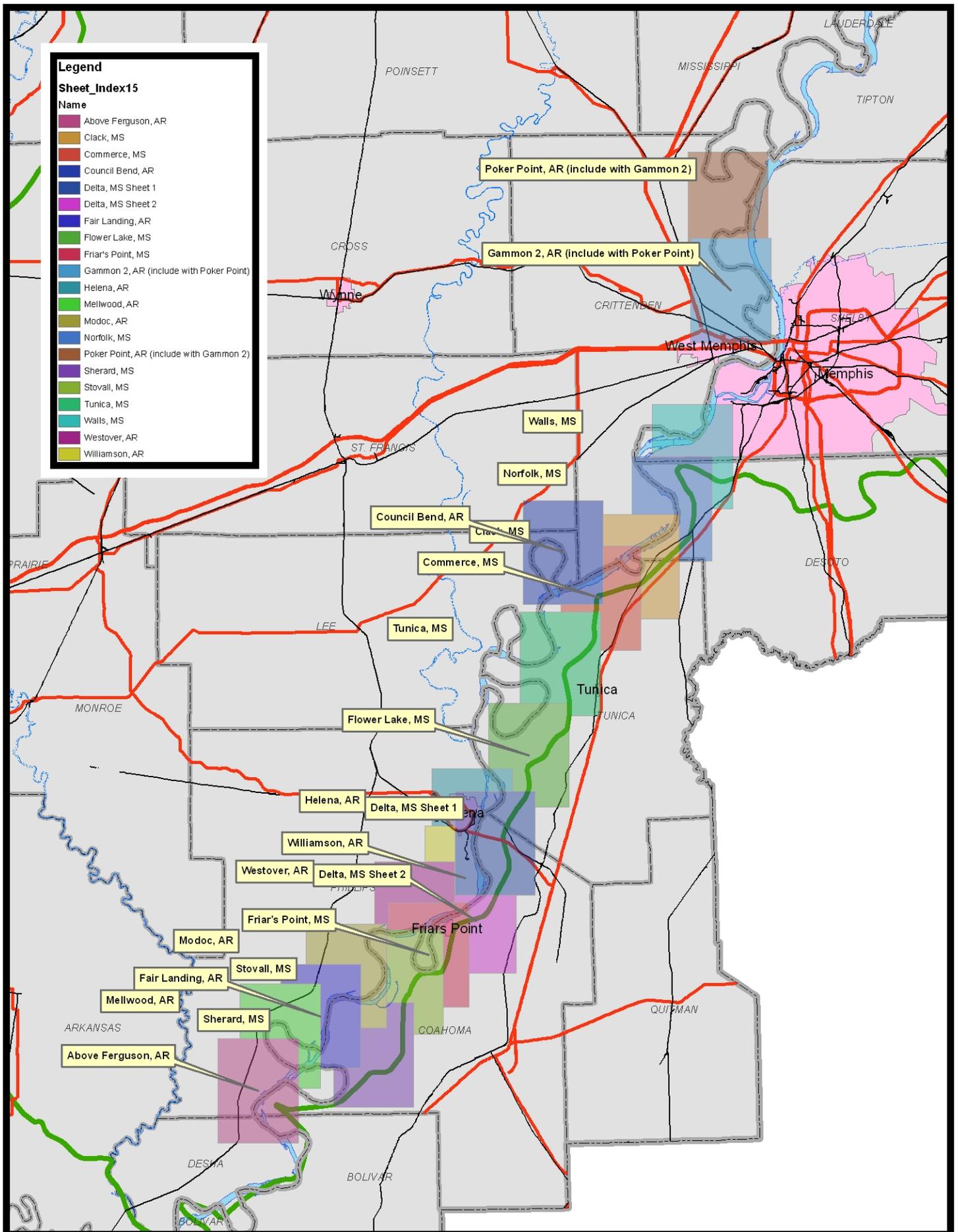
Typical Construction Alternatives

## **APPENDIX B**

Future Study Item	From	To	Miles	Projected # of wells
Huffman, AR	46/49+65	47/25+00	0.5	2
Barfield, AR	56/20+00	64/35+00	8.8	88
Above Luxora, AR	64/35+00	72/0+00	7.6	53
Luxora, AR	72/0+00	79/15+00	7.5	52
Osceola, AR	79/15+00	95/13+00	7.2	50
Wilson, AR	95/13+00	103/66+00	9.1	91
Poker Point, AR (Include w/ Gammon 2)	129/10+00	134/47+00	4.1	21
Gammon 2, AR (Include w/ Poker Point)	140/2+70	141/0+00	1.0	1
Council Bend, AR	188/0+00	189/46+29	1.5	12
Helena, AR	1/0+00N	1/36+05	2.4	5
Williamson, AR	6/0+00	10/0+00	4.0	8
Westover, AR	10/0+00	20/0+00	9.3	9
Old Town, AR	20/0+00	24/0+00	4.1	12
Modoc, AR	24/0+00	30/0+00	6.0	6
Fair Landing, AR	30/0+00	34/0+00	3.5	17
Mellwood, AR	34/0+00	42/6+00	8.6	9
Above Ferguson, AR	42/6+00	50/0+00	7.5	11
<b>AR Total(s)</b>			92.6	447
Walls, MS	0/0+00	5/25+00	5.4	12
Norfolk, MS	7/25+00	18/22+00	11.2	8
Clack, MS	18/22+00	22/0+00	3.6	11
Commerce, MS	22/0+00	27/10+00	4.4	9
Tunica, MS	27/10+00	41/0+00	12.7	127
Flower Lake, MS	45/0+00	47/0+00	2.1	6
Trotters 2, MS	53/0+00	55/0+00	2.0	39
Delta, MS	55/0+00	68/42+00	13.0	130
Friar's Point, MS	68/42+00	76/0+00	7.0	7
Stovall, MS	79/2+00	80/0+00	0.8	3
Sherard, MS	84/4+00	89/0+10	4.9	10
<b>MS Total(s)</b>			67.1	362
Included in Walls, MS	5/25+00	6/25+00	1.0	4
Included in Norfolk, MS	6/25+00	7/25+00	1.0	4
<b>TN Total(s)</b>			2.0	8
Nash, MO	0/0+00	5/0+00	5.0	30
Nash #2, MO	17/0+00	20/0+00	3.0	9
Barnes Ridge, MO - #1	18/48+75	20/8+50	2.0	4
Barnes Ridge, MO - #2	34/19+00	35/23+80	1.0	10
Below New Madrid, MO	10N/0+00	0/0+00	10.0	50
Linda, MO	0/0+00	8/0+00	8.0	80
Stewart, MO	8/0+00	16/0+00	8.0	80
Concord, MO	16/0+00	24/47+00	9.6	67
<b>MO Total(s)</b>			46.6	330
Above Mound City, IL	0/0+00	1/48+00	1.8	18
Cairo, IL Parcel 5	6/17+00	8/9+00	2.0	14
<b>IL Total(s)</b>			3.8	32
Island 8, KY	3/76+70	16/37+82	12.5	121
<b>KY Total(s)</b>			12.5	121
<b>All States Total(s)</b>			224.7	1,300

List of Projects

## **APPENDIX C**



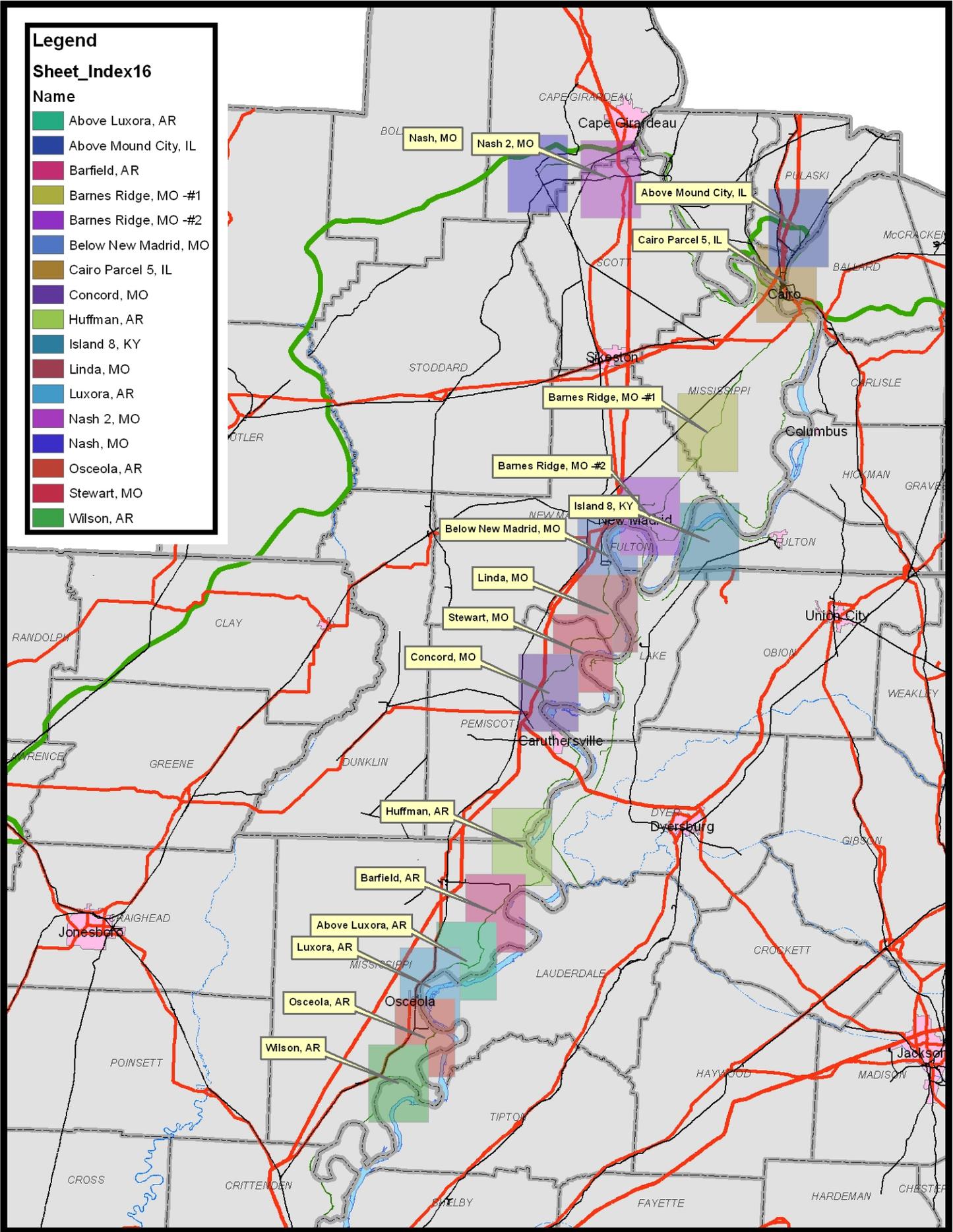
MRL  
 Seepage Control Measure  
 Zone 15 Index

**Legend**

**Sheet\_Index16**

**Name**

- Above Luxora, AR
- Above Mound City, IL
- Barfield, AR
- Barnes Ridge, MO -#1
- Barnes Ridge, MO -#2
- Below New Madrid, MO
- Cairo Parcel 5, IL
- Concord, MO
- Huffman, AR
- Island 8, KY
- Linda, MO
- Luxora, AR
- Nash 2, MO
- Nash, MO
- Osceola, AR
- Stewart, MO
- Wilson, AR



**MRL**  
**Seepage Control Measure**  
**Zone 16 Index**