

APPENDIX X

DREDGED MATERIAL MANAGEMENT PLAN

1.0 Project Description

The proposed Northwest Tennessee Regional Harbor would be located in the vicinity of Tiptonville on the left descending bank of the Mississippi River (river mile 900) in the vicinity of Cates Landing, Lake County, Tennessee (Plate 1). Initial construction would involve dredging a channel within navigational servitude. The proposed channel would be nine feet in depth (with an additional two feet of over dredging), 9,000 feet in length, and have a bottom width of 130 feet transitioning to 225 feet for a berthing area. In addition, a 300-foot turning basin would be constructed at the terminus. Side slopes of the channel would be 1 vertical to 5 horizontal. Total construction would involve the excavation of 1,020,000 cubic yards of sediment. Dredged material would be placed adjacent to the harbor on 86 acres of land (66 acres riverside and 20 acres landside of the levee; the 20 acres are included in 39 acres required for subsequent periods of construction) (Plate 2). Table 1 provides economic data for the selected plan.

Maintenance dredging has been estimated to be 122,000 cubic yards per year at a cost of \$170,800. Dredged material from maintenance operations would be placed in upland areas landward of the Mississippi Mainline Levee. Approximately 125 acres of dredged disposal areas have been identified to contain dredged material from maintenance operations over 20 years.

2.0 Scope of Study

This dredged material management plan is being conducted to demonstrate that there is sufficient dredged material disposal capacity to accommodate for 20 years of maintenance dredging.

Estimated Project First Costs:	
Federal	\$3,187,500
Non-Federal	\$1,477,900
Total	\$4,665,430
Average Annual Equiv. Cost:	
Initial Investment	\$280,618
Operation & Maintenance	\$206,652
Site Development Cost	\$870,823
Total Cost	\$1,358,093
Annual Benefits	
Excess Benefits	\$1,148,857
Benefit-Cost Ratio	1.84

3.0 Authorization and Development History

The Northwest Tennessee Regional Harbor study was authorized under Section 107 of the River and Harbor Act of 1960. This Act, as amended, provides authority for the Chief of Engineers to develop and construct small navigation projects that have not been specifically authorized by Congress. The following excerpt from the Section of the amended Act states its background:

“Section 107 of the River and Harbor Act of 1960, as amended, provides authority for the Chief of Engineers to develop and construct small navigation projects that have not already been specifically authorized by Congress. A project is adopted for construction under Section 107 only after detailed investigation clearly demonstrates its engineering feasibility and economic justification. Each project selected must be complete within its own and is limited to a Federal

cost of not more than \$4,000,000. This Federal cost limitation includes all project-related costs and specifications, supervision and administration, and construction operation.”

4.0 Existing Conditions

The project is located in the vicinity of Cates Landing, at Mississippi River Mile 900, north of Tiptonville, Lake County, Tennessee. The area was historically open for navigation and was the site of an articulated concrete mat casting facility. Due to natural conditions of the river and navigational features, an island formed north of Cates Landing called Old Slough Landing. Slab Fill Chute (the area between Cates Landing and Old Slough Landing) has continued to silt in. The casting field was last used in 1983 because of the decline of the revetment program in this area of the river and the chute becoming unsuitable for navigation. An approximate 20,000 linear foot dike was constructed north of Old Slough Landing in the early 1980's to stabilize the navigation channel. Portions of Slab Fill Chute are dry during low water stages. The area is seasonally flooded by the Mississippi River when the New Madrid river gauge reaches 20.0 feet.

Landuse in the maintenance disposal area consists of agricultural fields. Major crops grown in the area include soybeans, cotton, and wheat. There is no commercial or residential development, major utilities, or other improvements in the area. The agricultural areas have been classified as prime and unique farmland by the Natural Resource Conservation Service. There are no wetlands, farmed wetlands, or ecologically significant fish and wildlife habitat within the proposed maintenance disposal areas.

5.0 Future Conditions

Future conditions consist of construction of the harbor, construction of the port facility, industrial development, and maintenance dredging operations.

Initial Harbor Construction

Proposed harbor construction would consist of dredging a channel within navigational servitude. The proposed channel would be nine feet in depth (with an additional two feet of over dredging), 9,000 feet in length, and have a bottom width of 130 feet transitioning to 225 feet for a berthing area. In addition, a 300-foot turning basin would be constructed at the terminus. Side slopes of the channel would be 1 vertical to 5 horizontal. Total construction would involve the excavation of 1,020,000 cubic yards of sediment. Dredged material would be placed adjacent to the harbor on 105 acres of land.

Port Facility

The port facility would include a berthing area with mooring cells and dolphins, port bulkhead constructed of interlocking steel pilings, 15-inch reinforced 975 square feet concrete slab with an embedded railroad; 100-ton mobile crane with winch system; administration building; parking area; and a 100,000 square feet lay-down gravel storage yard. The port facility would be

constructed above the Mississippi River 100-year floodplain to allow the harbor to be usable during high water.

Industrial Area

There are approximately 500 acres of farmland located south of Cates Landing that would be utilized for industrial development. Industrial development would include the modification of roads, construction of a railroad spur, and the construction/modification of utilities.

Improvements to State Route 22 would be required to service the industrial area. Improvements would begin on an existing county road located approximately one mile north of Tiptonville on State Route 78. Improvements would include modifications to the weight carrying capacity of the road. The route will follow the existing county road for a distance of approximately ½ mile until the intersection with State Route 22. The route would continue north on existing State Route 22. Minor improvements would be required.

A proposed rail spur totaling 4.5 miles would be constructed to connect the existing Tenn-Ken short line to the industrial site. In addition, two turnouts would be constructed at the main line intersection. Construction would include laying 28,000 linear feet of track, constructing four grade railroad crossings with signage, constructing four turnouts, and constructing five minor drainage structures. Approximately 834 cubic yards of fill would be required. Approximately 32 acres (70-foot right of way, 20,000 linear feet) of farmland would be required for rights-of-way.

Maintenance Dredging Operations

Maintenance dredging quantities have been estimated at 122,000 cubic yards of material per year. Dredged material would be placed landside of the levee in confined areas. Approximately 125 acres of dredged disposal areas have been identified to contain dredged material from maintenance operations over 20 years.

6.0 Problems and Opportunities

The Tennessee Department of Environment and Conservation would not grant state water quality certification for any proposal that implemented placing dredged material into the Mississippi River. Therefore, all construction alternatives and maintenance areas had to place dredged material on land adjacent to the harbor. No beneficial uses of the dredged material have been identified.

7.0 Alternative Plans

The feasibility study addresses six alternatives for placement of dredged material from initial harbor construction and maintenance dredging for a period of 20 years. The alternatives are as follows:

Mississippi River Disposal

Dredged material would be disposed in the Mississippi River. Mississippi River disposal would reduce project costs because there would be no associated real estate cost. The dredged material would be carried downstream until it settles out naturally. Comments were raised during the scoping process concerning potential impacts to water quality, potential for contaminated sediments, potential aquatic habitat impacts, and expected impacts to endangered and threatened species. The State of Tennessee (TDEC) indicated that they could not issue water quality certification for projects that employ open water disposal of dredged material. Therefore, Mississippi River disposal was not recommended.

Placement in Dike Field

Dredged material would be placed behind the Island No. 9 dike field located north of the project area on the Mississippi River. Placement behind the dike field would reduce project costs because there would be no associated real estate cost. The spoil pile would be contained behind the dike field with minimal loss to flow. This area was estimated to be able to contain approximately 1,400,000 cu/yd of material. TDEC raised concerns over the level of containment the dike field would offer during high water and the potential impacts to aquatic resources that occur in the area. Therefore, placement behind the dike field was not recommended.

Placement on Old Slough Landing

Vegetation would be cleared from the western and central portions of Old Slough Landing in two areas. A retaining dike would be placed around the fill to contain it. Approximately 124 acres would be cleared that could contain approximately 5,367,000 cu/yd of dredged material. The placement of dredged material on Old Slough Landing would lower project cost because there would be no associated real estate cost (area is within navigational servitude) and the length of the dredge pipe (dredge costs rise as length of dredge pipe increases). However, the 124 acres of land required for disposal were classified as wetlands. Due to the environmental impacts and the associated mitigation costs, placement of dredged material on Old Slough Landing was not recommended.

Placement Riverside of Levee (Batture Land)

Three potential areas totaling 125 acres were located in the batture land that could be used for disposal areas. A retention levee would be constructed to prevent the material from washing into the river. Construction costs would rise because of the associated real estate costs, length of dredge pipe, retention levee, and dewatering structure. These areas could contain approximately 1,506,000 cu/yd of dredged material. Water would return to the Mississippi River via a drop pipe. Land use is mostly agricultural fields with small tracts of farmed wetlands and forested wetlands. Batture land disposal was considered viable and was incorporated into the project.

Placement Landside of Levee

Three areas totaling 315 acres were located in an area behind (landward side) the levee that could be used for disposal. Spoil would be placed approximately seven feet high in each area. Construction costs would rise because of the associated real estate costs, length of dredge pipe, retention levee, and dewatering structure. Approximately 3,467,000 cu/yd of material could be contained in this area. Agricultural fields predominates the land use in the area. Placement landside of the levee was determined to have the highest construction costs of the disposal alternatives investigated but had minimal environmental impacts. Placement of dredged material landside of the levee was considered viable and was incorporated into the project.

8.0 Evaluation of Alternative Plans

Placement of dredged material within the batture land and landside of the levee would be utilized during initial construction. The TDEC would not issue water quality certification for all of the other proposals. The batture area site would be completely filled during initial construction. Therefore, placement of dredged material landside of the levee during maintenance operations was the only remaining viable option. All future dredging would place material into this area.

9.0 Trade-Off Analysis

Trade-off analysis is not applicable because placement of dredged material landside of the levee was the only viable option for maintenance operations. Table 2 displays a set of factors considered in determining the most viable alternative for the project Dredge Material Disposal Plan. While a number of resource use factors were considered these alternative plans were considered in the light of the likelihood of the Tennessee Department of Environment and Conservation (TDEC) not granting state water quality certification. This consideration proved to be a pivotal issue, due to the fact that TDEC refused water quality certification to only one of the alternative considered. Among the factors considered were: resource use i.e., land use, required structure construction and material required to provide adequate containment of dredge material. Other factors considered were environmental impacts and containment capacity of each alternative. However, the over-arching concern was Tennessee Department of Environment and Conservation reaction to each of the proposed alternatives

TABLE 2
Decision Matrix DMDP

Alternatives	Acres Cleared	Real Estate Cost	Comparative Impact on Project Cost	Containment Cubic Yards	Environmental Concerns	Endangered Species Impact	Aquatic Habitat Impact	TDEC Grant		
								Water Quality Certification	Mitigation Cost	
Mississippi River Disposal	0	0	lowest	0	++++	++++	++++	deny	0	0
Placement in Dike Field	0	0	+	1,400,000	+++	+++	+++	deny	0	0
Placement on Old Slough Landing	124	+++	+++	5,367,000	++	++	++	deny	++	++
Placement Riverside of Levee (Batture Land)	125	++	++	1,506,000	+	+	+	deny	+	+
Placement Landside of Levee	315	++++	highest	3,467,000	0	0	0	grant	0	0

Alternatives	Acres Cleared	Real Estate Cost	De-watering Structure	Dredge Pipe Length	Potential Contaminated Sediment	Wet Land Impact	Borrow Material Required	Beneficial Use		
								Dredge Material	High Water Impact	
Mississippi River Disposal	0	0	no		+++	0	0	0	0	0
Placement in Dike Field	0	0	no		+++	0	0	0	0	+++
Placement on Old Slough Landing	124	+++	no	increase	0	++	0	0	0	0
Placement Riverside of Levee (Batture Land)	125	++	yes	increase	0	+	0	0	0	0
Placement Landside of Levee	315	++++	yes	increase	0	0	+++	0	0	0

10.0 Selection of Final Plan

TDEC stated that they would not issue 401-water quality certification to any method that employs disposal into the Mississippi River including dike fields. Therefore, Mississippi River disposal and dike field disposal were not selected. Placement on Old Slough Landing would impact wetlands. Therefore compensatory mitigation would be required. Batture land disposal areas would be completely utilized during initial harbor construction. No remaining areas would be available in the vicinity of the harbor. Placement of dredged material landside of the levee is the only remaining viable alternative. Therefore, it has been identified as the base plan.

11.0 Description of Selected Management Plan

Disposal of maintenance-dredged material would take place landside of the Mississippi River Mainline Levee. Approximately 122,000 cubic yards of material would be dredged annually from the harbor. Disposal areas would consist of containment dikes and a drainage structure to allow water to return to the Mississippi River. Disposal areas would be constructed in five-year increments. Each five-year containment area would be approximately 39 acres in size. Containment dikes would be constructed seven feet high, have a crown width of 20 feet, and have side slopes of 1V:3.5H. Borrow material for construction would be obtained on-site within the containment area.

12.0 NEPA Documentation

An environmental assessment (EA) was conducted to determine the impacts of the proposed project including maintenance dredging. NEPA documentation included a 404(b)(1) Evaluation, biological assessment, U.S. Fish and Wildlife Coordination Act Report, HTRW investigations, and other applicable information. The TDEC issued state water quality certification on 16 July 2004 (Attachment 1). State water quality certification would have to be updated every five years. A Finding of No Significant Impact (FONSI) was signed on 13 August 2004. The FONSI is included as Attachment 2.

13.0 Coordination


Coordination was maintained throughout the feasibility study with government agencies, elected officials, Indian tribes, non-governmental organizations, businesses, and the general public. Pursuant to NEPA, the draft EA underwent a 30-day comment period. Letters of support of the project were received from 10 elected officials, six state government agencies, 31 private businesses, 11 non-governmental organizations, and 64 private citizens. Concerns were expressed from the U.S. Fish and Wildlife Service, the Environmental Protection Agency, and the National Resource Conservation Service. All issues have been resolved.

14.0 Recommendation

Maintenance dredging of the proposed Northwest Tennessee Regional Harbor is warranted on the basis of expected usage and indicators of economic productivity, sufficient disposal capacity for 20 years, and compliance with environmental laws and regulations. Therefore, no additional study is necessary beyond this plan. State water quality certification would have to be coordinated every five years.

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Date



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