



**US Army Corps
of Engineers®
Memphis District**

SECTION II

Northwest Tennessee Regional Harbor

DRAFT SECTION 404(b)(1) EVALUATION

April 2004

**DRAFT 404(b)(1) Evaluation
NORTHWEST TENNESSEE REGIONAL HARBOR
LAKE COUNTY, TENNESSEE**

This 404(b)(1) evaluation is being conducted to determine the impacts of placing dredge and fill material into waters of the United States. This evaluation is assessing both the federal and non-federal portions of the project.

I. Project Description

a. Location

The project is located in the vicinity of Cates Landing, at Mississippi River Mile 900, north of Tiptonville, Lake County, Tennessee.

b. General Description

The recommended plan would consist of dredging a channel approximately 9,000 feet long, bottom width of 130 feet transitioning to 225 feet, and a 300-foot turning basin. The design would cover an area of approximately 67 acres and would require approximately 1.02 million cubic yards of dredging. Approximately 30,600 tons of riprap and 15,300 tons of filter material would be used to stabilize the banks.

Dredged material would be placed in two different areas. The first site is a 39-acre site located landside of the levee. The second area is a 66-acre site located in the batture land. These areas would also be used for maintenance dredging during the first five years of the project. Additional disposal areas would be purchased as needed in suitable areas after five years.

Unavoidable environmental impacts from the federal project would include the elimination of 60 acres of wetlands at an associated habitat value of 27 AHUV. An additional 14 acres of farm wetlands would also be impacted. The loss of 27 AHUV and 14 acres of farmed wetlands would be mitigated by planting bottomland hardwoods on 134 acres of prior converted farmland.

The Northwest Regional Port Authority (NTRPA) would be responsible for construction of the port facility. The port facility would be located on an adjacent 44-acre site. Approximately 17,000 cubic yards of fill would be required to raise the 44-acre site to the 100-year Mississippi River floodplain. Fill would be obtained from suitable areas behind the Below Island No. 9 Dikes. The port bulkhead would be constructed on interlocking steel pilings that would require 139,142 cubic yards of sand back fill and 16,310 cubic yards of open grade stone backfill. The port bulkhead would be capped with a 15-inch concrete slab with an embedded railroad. Four mooring cells (16 feet in diameter) would also be constructed. In addition, improvements to road,

railroad, and utilities would extend an additional 3,500 feet from the industrial area. The construction of the port facility would impact 12 acres of wetlands and one acre of farm wetland. Wetland impacts would be mitigated by planting bottomland hardwoods on 25 acres of farmland.

c. Authority and Purpose

This feasibility study and proposed project construction is authorized under the continuing authority of Section 107 of the River and Harbor Act of 1960. Section 107 authorizes construction, operation, and maintenance of small river and harbor improvement projects. The House of Representatives, Energy and Water Development Appropriations Bill, 2001, Report 106-693, Small Navigation Projects (Section 107) provided \$9,000,000 for the Section 107 program. Within the amount provided, the recommendation included \$50,000 for the design of the Northwest Tennessee Regional Harbor Project. Funding for the construction of the harbor would be cost shared between the federal government and the NTRPA. Current funding percentages state that the non-federal partner pays for 10% of general navigation facility costs during construction and 10% over a 30-year period. The maximum federal cost of the entire project is \$4,000,000. The NTRPA would be responsible for 100% of the cost of site development.

The project is intended to provide a public harbor in the northwest section of Tennessee. Industry has expressed interest in the area if adequate harbor facilities are made available. The NTRPA, comprised of Dyer, Lake, and Obion Counties and their municipalities, was formed to investigate the possibility of a harbor locating in the area. There are no public port facilities located in Tennessee on the Mississippi River other than Memphis. Economic analysis has indicated benefits of \$2,401,200 would be generated from 75,000 tons of diesel petroleum, 150,000 tons of bulk calcium carbonate, 20,000 tons of steel coils, 25,000 tons of soybean meal, 23,750 tons of natural rubber, and 50,000 tons of paper being shipped through the proposed harbor instead of current transportation means. The benefit to cost of construction ratio is 1.89 to 1.0.

d. General Description of Dredged or Fill Material

1) General Characteristics of Material

Fill or dredge material for the federal project can be characterized into three categories. The categories are as follows:

- a) Harbor channel protection
- b) Dredge material from harbor construction
- c) Return water

Fill or dredge material for the non-federal portion of the project can be broken down into two categories. They are as follows:

- a) Port Facility
- b) Return water

2) Quantity of Material

Federal

- a) Harbor Channel Protection – 30,600 tons of 125/250 pound riprap and 15,300 tons of crushed stone filter material
- b) Dredge material from harbor construction – 1,020,000 cubic yards of material
- c) Return water – the quantity of return water from hydraulic dredging was not calculated

Non-Federal

- a) Port Facility – 17,000 cubic yards of fill to raise the 44-acre site above the Mississippi River floodplain, port bulkhead – 1,105 linear feet of interlocking steel pilings, 139,142 cubic yards of sand fill, 16,310 cubic yards of open grade stone fill, 3,300 cubic yards of stone toe fill, four mooring cells (16 feet in diameter), and 975 square yards of concrete
- b) Return water – the quantity of return water from hydraulic dredging was not calculated

3) Source of Material

Federal

- a) Harbor channel protection – existing rock quarry
- b) Dredge material from harbor construction – The silted in area of Slab Fill Chute, located in the vicinity of Cates Landing, Mississippi River Mile 900, Lake County, Tennessee
- c) Return water – Return water from hydraulic dredging would return to the Mississippi River via a drop pipe located in the confined disposal area.

Non-Federal

- a) Dredge material for fill – The Mississippi River behind the Island Number 9 Dikes (downstream end of the harbor), Mississippi River Mile 899, Lake County, Tennessee, stone would be obtained from an existing rock quarry, steel pilings,

concrete, and mooring cells would be obtained from commercial sources.

- b) Return water – Return water from hydraulic dredging would return to the Mississippi River via a drop pipe located in the fill area.

e. Description of the Proposed Discharge Site(s)

- 1) Location – The area is located in the vicinity of Cates Landing, Mississippi River 900, Lake County, Tennessee.

- 2) Size

- Federal

- a) Harbor channel protection – riprap protection would be placed on the landside (south) of the harbor for a distance of 9,000 feet.
 - b) Dredge material from harbor construction – Dredge material would be placed in two areas on top bank. The first area is a 39-acre site located landside of the levee. No wetlands occur in this area. The second area is a 66-acres site located in the batture area. This second disposal area contains 14 acres of vegetated wetlands and 14 acres of farm wetlands.
 - c) Return water – Return water from hydraulic dredging would return to the Mississippi River via a drop pipe.

- Non-Federal

- a) Port facility – Fill would be placed on a 44-acres site to raise the area above the Mississippi River floodplain. The 44-acres site contains 12 acres of vegetated wetlands and one acre of farm wetland.
 - b) Return water – Return water from hydraulic dredging would return to the Mississippi River via a drop pipe.
 - 3) Type of Site – The proposed harbor site is located in a backwater area on the Mississippi River at river mile 900. A large stone lateral dike has been constructed north of the area that protects the area from flows except at high river stages. The area has silted in behind the dike and black willows have become established throughout the area. The disposal areas are located on top bank adjacent to the proposed harbor. The port facility would require fill to raise the area above the Mississippi River floodplain to allow for year-round use.

- 4) Type(s) of Habitat – Black willow at various ages is the dominant vegetation found in the proposed harbor site. Discharge of dredge or fill material areas are as follows:
 - a) Riprap protection would be placed on the landside of the harbor. Existing vegetation consists of a thin strip of black willow and cottonwood.
 - b) Dredge material from harbor construction would take place on top bank. Existing habitat is mostly farm land and farm wetlands. Soybeans, wheat, cotton are major crops grown in the area. The disposal areas also contain 14 acres of vegetated wetlands. Habitat consists of black willow and cottonwood.
 - c) The proposed port facility location is mostly farm land with a 12-acre tract of vegetated wetlands. Species found in the area consist of black willow, cottonwood, hackberry, and locust.
 - d) Return water from hydraulic dredging would return to the Mississippi River via a drop pipe. Habitat consists of the typical backwater habitat that is found behind dike fields throughout the lower Mississippi River.
- 5) Timing and Duration of Discharge – Construction of the harbor channel and dredging additional fill material for the port facility is expected to take eight to 15 weeks. Dredging would not take place during reported pallid sturgeon spawning periods (12 April to 30 June) and least tern nesting and fledging periods (15 June to 15 August).
- f. Description of Disposal Method – Existing vegetation within the proposed harbor area, bank protection area, and disposal areas would be mechanically cleared prior to dredging. Proposed disposal areas would be excavated to obtain material to construct containment dikes around the perimeter of the disposal areas. Drop pipes would be constructed within the containment areas. A hydraulic dredge would be used to deepen the proposed channel depth to 250.0 NGVD (-11 low water reference plain). A hydraulic dredge utilizes a cutting and suction device that loosens the soil and pumps it to a disposal area through the dredge pipe. Sediment, along with river water, would be pumped into the disposal areas with the majority of the sediment settling to the bottom. The water level would eventually reach the elevation of the drop structure and return to the river via a drop pipe. Return water is expected to contain suspended sediments.

Upon completion of the harbor, the non-federal sponsor would utilize a hydraulic dredge to obtain sand from the mouth of the harbor to use as fill. A containment area would be constructed around the proposed port facility with sand being pumped into it. Water would return to the river through a drop pipe. The port facility would be constructed of 17,000 cubic yards of fill to

raise the 44-acre site above the Mississippi River floodplain. The port bulkhead would be constructed of 1,105 linear feet of interlocking steel pilings, 139,142 cubic yards of sand fill, 16,310 cubic yards of open grade stone fill, 3,300 cubic yards of stone toe fill, and 975 square yards of concrete.

Riprap protection would be placed along the landside bank of the harbor to protect the area from prop wash. Riparian vegetation would be mechanically cleared and graded prior to placing stone. Stone would be placed on the bank off a floating barge.

II. Factual Determinations (Section 230.11)

a. Physical Substrate Determinations

- 1) Substrate Elevation and Slope – Dredge material is being placed in upland sites. Riprap protection would be placed along the land side bank of the harbor. Channel side slopes would be 1 vertical on 5 horizontal.
- 2) Sediment Type – Sediments to be dredged consist of a high sand content at the mouth of the harbor and high clay content in the upper reach of the proposed channel.
- 3) Dredged/Fill Material Movement – Upland disposal would contain the dredge/fill material. Minimal amounts of dredge/fill material are expected to be suspended in the return water. No movement of riprap is expected.
- 4) Physical Effects on Benthos – Upland disposal would not impact benthos. Riprap protection would cover existing benthos in the area. Recolonization of species adapted to a riprap environment is expected.
- 5) Actions Taken to Minimize Impacts (Subpart H)

The following actions have been taken to minimize impacts:

- a) Harbor footprint has been reduced, thus minimizing wetland impacts.
- b) Reelfoot Lake has been avoided.
- c) Dredge material would be disposed on land as opposed to river disposal.
- d) Disposal area would be confined.
- e) Return water would be tested during construction to ensure water quality standards are not violated

- f) No work would be performed during critical periods for endangered species.
- g) Unavoidable impacts to fish and wildlife resources would be compensated.

b. Water Circulation, Fluctuation, and Salinity Determinations

1) Water. Effects on:

- a) Salinity – no significant impacts to salinity are anticipated from upland disposal and riprap placement.
- b) Water Chemistry – no significant impacts to water chemistry are anticipated from upland disposal and riprap placement.
- c) Clarity – no significant impacts to water clarity are anticipated from upland disposal and riprap placement. However, minimum temporary impacts to water clarity are anticipated from the return water.
- d) Color – no significant impacts are anticipated to the color of water from upland disposal and riprap placement.
- e) Odor – no significant impacts to the odor of the water are anticipated from upland disposal and riprap placement.
- f) Taste – no significant impacts are anticipated to the taste of the water from upland disposal and riprap placement.
- g) Dissolved Gas Levels – No significant impacts to dissolved gas levels are anticipated from upland disposal and riprap placement.
- h) Nutrients – No significant impacts to nutrients are anticipated from upland disposal.
- i) Eutrophication – No significant impacts to eutrophication are anticipated from upland disposal and riprap placement.
- j) Others – Upland disposal will minimize most adverse impacts from dredging.

2) Current Patterns and Circulation

- a) Current Patterns and Flow – the project is in a slack water area no impacts to current patterns and flow are anticipated.

- b) Velocity – the project is in a slack water area. No impacts to velocity are anticipated.
 - c) Stratification – No impacts to water stratification are anticipated from using upland disposal and riprap placement.
 - d) Hydrologic Regime – Upland disposal and riprap placement would not impact the hydrologic regime.
- 3) Normal Water Level Fluctuations – no impacts to normal water level fluctuations are anticipated.
- 4) Salinity Gradients – no impacts to salinity gradients are anticipated.
- 5) Actions That Will Be Taken to Minimize Impacts

The following actions have been taken to minimize impacts:

- a) Harbor footprint has been reduced, thus minimizing wetland impacts.
- b) Reelfoot Lake has been avoided.
- c) Dredge material would be disposed on land as opposed to river disposal.
- d) Disposal area would be confined.
- e) Return water would be tested during construction to ensure water quality standards are not violated
- f) No work would be performed during critical periods for endangered species.
- g) Unavoidable impacts to fish and wildlife resources would be compensated.

c. Suspended Particulate/Turbidity Determinations

- 1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site – upland disposal would minimize impacts to suspended particulates and turbidity levels. Return water is expected to have higher rates of suspended particulates and turbidity levels. Placement of riprap protection would cause minor changes to turbidity and suspended particulate levels during construction. The impacts would be temporary and return to preconstruction levels once construction is complete.
- 2) Effects (degree and duration) on Chemical and Physical Properties of the Water Column

- a) Light Penetration – No significant impacts are expected to light penetration because dredge material would be disposed in upland locations.
 - b) Dissolved Oxygen – Upland disposal and riprap protection would not significantly impact dissolved oxygen levels.
 - c) Toxic Metals and Organics - Sediment analysis has been conducted to test the proposed dredge material for total organic carbon (TOC), polynuclear aromatic hydrocarbons (PAH), PCBs, Pesticides/Herbicides, metals (TAL), and total petroleum hydrocarbons. Elevated levels of pollution were encountered in the samples. However, the level of pollution was not of a significance to determine that state water quality standards would be violated. Upland disposal will minimize impacts. Background levels and return water will be monitored during construction to ensure water quality standards are not violated. Construction would be suspended and modified if water quality standards are violated.
 - d) Pathogens – no significant impacts to pathogens are anticipated from upland disposal or riprap placement.
 - e) Aesthetics – upland disposal would permanently alter the aesthetics to the area.
 - f) Others
- 3) Effects on Biota
- a) Primary Production, Photosynthesis –Riprap protection and upland disposal would not have a significant impact on primary production and photosynthesis.
 - b) Suspension/Filter Feeders – Riprap protection and upland disposal would not have a significant impact on suspension/filter feeders.
 - c) Sight Feeders - Riprap protection and upland disposal would not have a significant impact on sight feeders.
 - d) Actions taken to Minimize Impacts (Subpart H)

The following actions have been taken to minimize impacts:

- Harbor footprint has been reduced, thus minimizing wetland impacts.
- Reelfoot Lake has been avoided.
- Dredge material would be disposed on land as opposed to river disposal.
- Disposal area would be confined.
- Return water would be tested during construction to ensure water quality standards are not violated
- No work would be performed during critical periods for endangered species.
- Unavoidable impacts to fish and wildlife resources would be compensated.

d. Contaminant Determinations

Sediment analysis has been conducted to test the proposed dredge material for total organic carbon (TOC), polynuclear aromatic hydrocarbons (PAH), PCBs, Pesticides/Herbicides, metals (TAL), and total petroleum hydrocarbons. Elevated levels of pollution were encountered in the samples. However, the level of pollution was not of a significance to determine that state water quality standards would be violated. Upland disposal will minimize impacts. Background levels and return water will be monitored during construction to ensure water quality standards are not violated. Construction would be suspended and modified if water quality standards are violated.

e. Aquatic Ecosystem and Organism Determinations

- 1) Effects on Plankton - Upland disposal and riprap protection would not significantly impact plankton
- 2) Effects on Benthos - Upland disposal would not significantly impact benthos. Placement of riprap would destroy existing benthic habitat. However, recolonization of organisms adapted to a riprap environment is expected.
- 3) Effects on Nekton - Upland disposal and riprap protection would not significantly impact nekton.
- 4) Effects on Aquatic Food Web - Upland disposal and riprap protection would not significantly impact the aquatic food web.
- 5) Effects on Special Aquatic Sites
 - a) Sanctuaries and Refuges – No impacts to sanctuaries and refuges are anticipated.

- b) Wetlands – The federal portion of the project would impact 60 acres of wetlands and 14 acres of farm wetlands. The non-federal portion of the project would impact 12 acres of wetlands and 1 acre of farm wetland. Impacts to wetlands would be compensated by planting 134 acres of bottomland hardwoods on frequently flooded farm land for the federal portion of the project and 25 acres for the non-federal portion of the project.
 - c) Mud Flats – No impacts to mud flats are anticipated.
 - d) Vegetated Shallows – No impacts to vegetated shallows are anticipated.
 - e) Coral Reefs – not applicable
 - f) Riffle and Pool Complexes – No impacts to riffle and pool complexes are anticipated.
- 6) Threatened and Endangered Species – No impacts to threatened and endangered species are anticipated. Construction would not take place during critical time periods. **This project is being coordinated with the U.S. Fish and Wildlife Service. A Fish and Wildlife Coordination Act Report and comments to the biological assessment will be provided.**
- 7) Other Wildlife – The Habitat Evaluation System was used to quantify impacts to wildlife resources in the project area. The construction of a harbor would impact 27 annualized habitat unit values over the life of the project.
- 8) Actions Taken to Minimize Impacts (Subpart H)

The following actions have been taken to minimize impacts:

- a) Harbor footprint has been reduced, thus minimizing wetland impacts.
- b) Reelfoot Lake has been avoided.
- c) Dredge material would be disposed on land as opposed to river disposal.
- d) Disposal area would be confined.
- e) Return water would be tested during construction to ensure water quality standards are not violated
- f) No work would be performed during critical periods for endangered species.

- g) Unavoidable impacts to fish and wildlife resources would be compensated.

f. Proposed Disposal Site Determinations

- 1) Mixing Zone Determinations – No mixing zone would be required for upland disposal. Elevated levels of turbidity and total suspended solids are expected in the return water. Construction will take place in a backwater area on the Mississippi River. The mixing zone should be confined to the backwater area. No impacts to flowing water found in the main channel and downstream habitat are anticipated.
- 2) Determination of Compliance with Applicable Water Quality Standards – Sediment analysis has been conducted to test the proposed dredge material for total organic carbon (TOC), polynuclear aromatic hydrocarbons (PAH), PCBs, Pesticides/Herbicides, metals (TAL), and total petroleum hydrocarbons. Elevated levels of pollution were encountered in the samples. However, the level of pollution was not of a significance to determine that state water quality standards would be violated. Upland disposal will minimize impacts. Background levels and return water will be monitored during construction to ensure water quality standards are not violated. Construction would be suspended and modified if water quality standards are violated.
- 3) Potential Effects on Human Use Characteristic
 - a) Municipal and Private Water Supply – No impacts to municipal and private water supply are anticipated.
 - b) Recreational and Commercial Fisheries – No significant impacts to recreational and commercial fish species are anticipated. However, limited impacts are expected to recreation and commercial fishing in the area because of an increase in barge traffic may make the area undesirable for fishing due to safety concerns.
 - c) Water Related Recreation – Water related recreation consists of hunting and fishing in the proposed area. Limited impacts to recreation are expected because of an increase in barge traffic may make the area undesirable for recreation due to safety concerns.
 - d) Aesthetics – The project would impact 13% of the seasonally flooded black willow habitat in the immediate project area.

Black willow habitat is extremely common throughout the Mississippi River. Based on this percentage, no significant impact to the aesthetic value of black willow habitat is expected. Upland disposal would permanently alter the aesthetics of the disposal area.

- e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves – No impacts to parks, National and Historic Monuments, National Seashores, wilderness areas, research sites, and similar preserves are anticipated.

g. Determination of Cumulative Effects on the Aquatic Ecosystem

Cumulative impacts are anticipated in the project area due to an increase in barge, rail, and truck traffic; industrial activity; and port facility operation. These minor cumulative impacts include degradation in water and air quality and increases to noise levels.

h. Determination of Secondary Effects on the Aquatic Ecosystem

The construction of a harbor would promote development of a 500-acre industrial area. Higher rates of pollutants such as nitrogen, phosphorus, BOD, lead, and zinc have been documented in high-intensity industrial and commercial areas. Discharges from industry would require monitoring to ensure state water quality standards are not violated. Limited impacts from industrial development are anticipated to aesthetics, noise levels, air quality, and traffic patterns are expected. However, no significant impacts are anticipated.

III. Findings of Compliance or Non-Compliance With the Restriction on Discharge

a. Adaptation of the Section 404(b)(1) Guidelines to this Evaluation

None

b. Evaluation of Availability of Practical Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem

A draft environmental assessment has been completed that addresses alternatives to the proposed action. The recommended plan was determined to be the most cost effective while minimizing environmental damages.

c. Compliance with Applicable State Water Quality Standards

State of Tennessee water quality certification and an Aquatic resource alteration permit have been applied for. **A determination concerning water quality certification has not been made to date. Those making comments to this 404(b)(1) Evaluation are asked to furnish a copy of their comments to the Tennessee Department of Conservation, Division of Water Pollution Control.**

d. Compliance with Applicable Toxic Effluent Standard or Prohibition Under Section 307 Of the Clean Air Act

Lake County is in attainment for all air quality standards. No significant impacts to air quality are expected. The equipment to be used is a mobile source. Therefore, the project is exempt from air quality permitting requirements.

e. Compliance with Endangered Species Act of 1973

No impacts are anticipated to federally listed or proposed to be listed endangered species. This project is being coordinated with the Department of Interior, Fish and Wildlife Service. Comments from the FWS have not been made to date.

f. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972

Not applicable

g. Evaluation of Extent of Degradation of the Waters of the United States

1) Significant Adverse Effects on Human Health and Welfare

- a) Municipal and Private Water Supplies – No significant impacts are anticipated.
- b) Recreation and Commercial Fisheries – No significant impacts are expected to fish populations. However, the site may become undesirable to commercial and recreational fishing because of the increase in barge traffic and safety concerns.
- c) Plankton – No significant impacts are expected.
- d) Fish – No significant impacts are expected.
- e) Shellfish – No significant impacts are expected.

f) Wildlife – No significant impacts are expected.

g) Special Aquatic Sites – not applicable

2) Significant Adverse Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems

No significant impacts are expected.

3) Significant Adverse Effects on Aquatic Ecosystem Diversity, Productivity, and Stability

No significant impacts are expected.

4) Significant Adverse Effects on Recreational, Aesthetic, and Economic Values

No significant impacts are expected.

h. Appropriate and Practical Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem

The following actions have been taken to minimize impacts:

- 1) Harbor footprint has been reduced, thus minimizing wetland impacts.
- 2) Reelfoot Lake has been avoided.
- 3) Dredge material would be disposed on land as opposed to river disposal.
- 4) Disposal area would be confined.
- 5) Return water would be tested during construction to ensure water quality standards are not violated
- 6) No work would be performed during critical periods for endangered species.
- 7) Unavoidable impacts to fish and wildlife resources would be compensated.

i. On the Basis of the Guidelines, the Proposed Disposal Site(s) for the Discharge of Dredged or Fill Material is:

- 1) Specified as complying with the requirements of these guidelines; or,
- 2) Specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions

to minimize pollution or adverse effects on the aquatic ecosystem;
or,

**All conditions from the Tennessee Department of Environment
and Conservation would be adhered to.**

- 3) Specified as failing to comply with the requirements of these guidelines.